United States
Department of
Agriculture

Natural
Resources
Conservation
Service

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

Soil Survey of Pike County, Alabama

How to Use This Soil Survey

General Soil Map

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

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

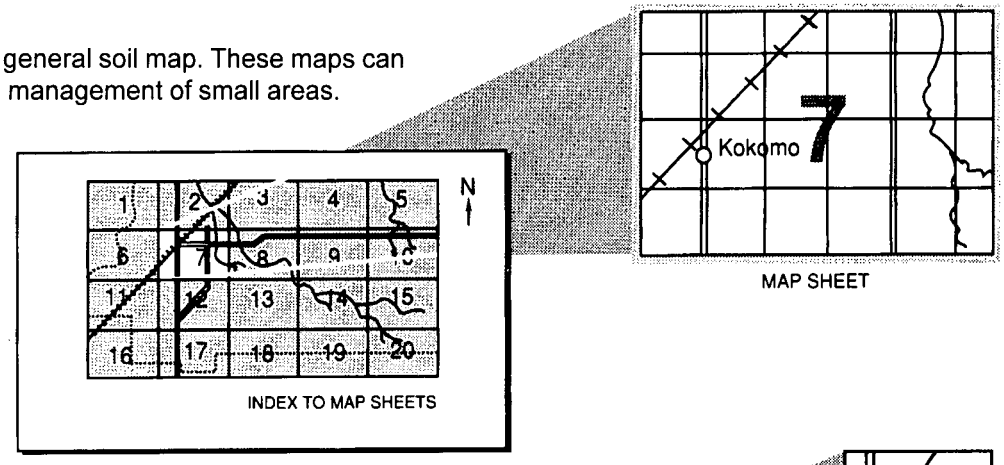
Detailed Soil Maps

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

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

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

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



MAP SHEET

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

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

Major fieldwork for this soil survey was completed in 1987. Soil names and descriptions were approved in 1996. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1987. This survey was made cooperatively by the Natural Resources Conservation Service and the Alabama Agricultural Experiment Station, the Alabama Cooperative Extension Service, the Alabama Soil and Water Conservation Committee, and the Alabama Department of Agriculture and Industries. The survey is part of the technical assistance furnished to the Pike County Soil and Water Conservation District.

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

Cover: Peanuts, which are one of the main cultivated crops in Pike County, have been planted in this area of Bonifay loamy sand, 1 to 5 percent slopes. The pecan trees in this field provide food and shelter for birds and squirrels, and they also provide extra income for the landowner.

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Issued November 1997

Summary of Tables

Foreword

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

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

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

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

Ronnie D. Murphy
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Soil Survey of Pike County, Alabama

By Harold B. Neal, Natural Resources Conservation Service

Fieldwork by Harold B. Neal, Robert M. Beaty, and Norman P. Marable, Natural Resources Conservation Service

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

PIKE COUNTY is in the south-central part of Alabama (fig. 1). It is bounded on the north by Montgomery and Bullock Counties, on the east by Barbour County, on the south by Coffee and Dale Counties, and on the west by Crenshaw County. Troy, the county seat, is near the center of the county, about 50 miles south of Montgomery. The total area of the county is 430,280 acres. About 429,960 acres of this total consists of land areas and small areas of water, and about 320 acres consists of large areas of water in the form of lakes and rivers.

Pike County is mostly rural, and it had a population of 28,175 in 1980. Troy had a population of 12,500 in 1980. The main communities in the county are Troy, Brundidge, and Goshen. Troy State University is located in the city of Troy.

Most of the acreage in the county is used as woodland; however, a significant acreage is used for cultivated crops, pasture, and hay.

The elevation ranges from about 250 feet above sea level on a flood plain in the southern part of the county to about 680 feet near Becks Mountain in the northern part of the county.

This soil survey updates an earlier survey of Pike County published in 1911 *(15)*. It provides additional information and larger maps, which show the soils in greater detail.

General Nature of the County

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

Climate

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

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

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

In winter, the average temperature is 49 degrees F and the average daily minimum temperature is 38 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -1 degree. In summer, the average temperature is 79 degrees and the average daily maximum temperature is 90 degrees. The highest recorded temperature, which occurred on July 24, 1952, is 107 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50

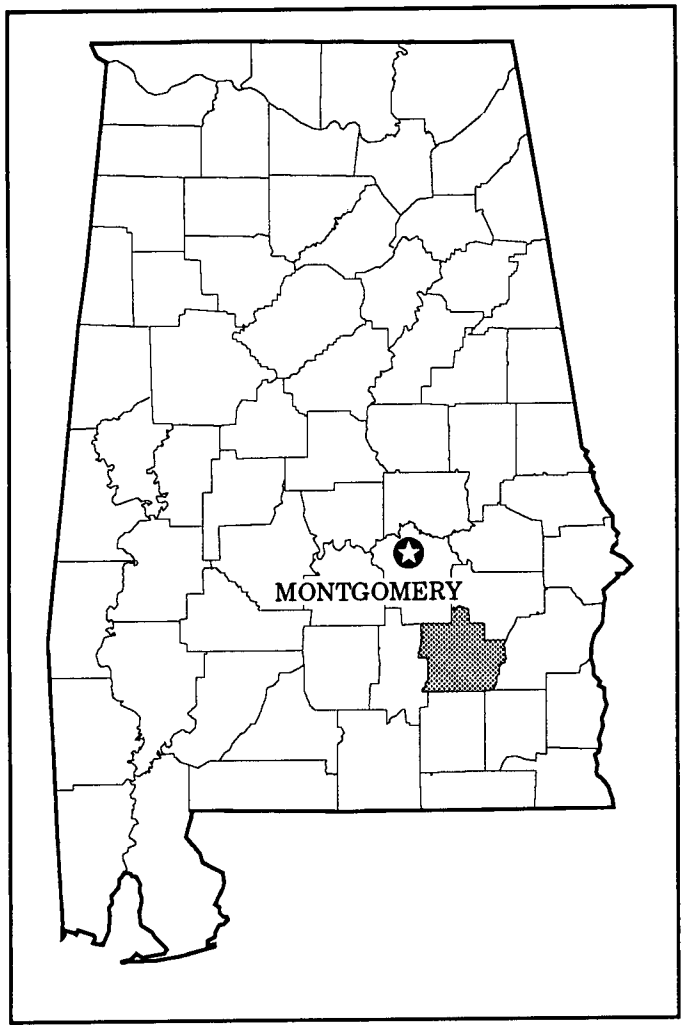

Figure 1.—Location of Pike County in Alabama.

degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 52 inches. Of this, 28 inches, or 53 percent, usually falls in April through October. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through October is less than 13 inches. The heaviest 1-day rainfall during the period of record was 8.5 inches on March 17, 1990. Thunderstorms occur on about 59 days each year, and most occur in summer.

The average seasonal snowfall is about 0.6 inches. The greatest snow depth at any one time during the period of record was 11 inches. On the average, less than 1 day of the year has at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

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

Early History

Pike County was organized in 1821, four years after Alabama became a territory and two years after it became a state. The county was created from parts of Montgomery and Henry Counties. It was named for General Zebulon Montgomery Pike, a famous soldier and explorer, who served in the frontier army for a number of years *(11)*.

The first settlers established farms in the vicinity of the present-day villages of Monticello and Orion. The early settlers were mostly from the lower Atlantic and Eastern Gulf States. They grew a variety of crops and raised livestock for subsistence. Early occupations included raising livestock, farming, and logging *(11)*.

Transportation Facilities

Pike County has two U.S. Highways and numerous hard-surfaced state and county roads. Two railroads provide freight service to all of the cities in the county, and two major motor freight carriers have terminals in Troy. Daily passenger and parcel service is provided by two major bus services. Airports near Troy and Brundidge serve small private and commercial aircraft. The county has no navigable waterways.

Geology

The geologic units exposed in Pike County range in age from Cretaceous to Quaternary. They are of sedimentary origin and consist mainly of sand, gravel, clay, silt, siltstone, sandstone, and limestone. The units, from oldest to youngest, are the Ripley Formation and the Providence Sand, which are of Cretaceous age; the Clayton and Nanafalia Formations and the Tuscahoma Sand, which are of Tertiary age; and terrace and alluvial deposits, which are of Quaternary age.

The formations are exposed in bands that generally strike east-southeast. Most of the beds dip to the south-southwest at a rate of about 25 to 35 feet per mile, although the Tuscahoma Sand dips at a rate of about 12 to 15 feet per mile.

The Ripley Formation is the oldest formation, and it crops out in the northern part of the county. The outcrop consists mainly of thick beds of glauconitic sand that contain lenses of carbonaceous sandy clay. The sand grades upward through clayey sand to calcareous silty clay that has thin limestone ledges. The soils that formed

in this material include the sandy Alaga, Troup, and Lucy soils and the clayey Conecuh, Luverne, and Oktibbeha soils.

The Providence Sand overlies the Ripley Formation in the northern part of the county. It consists of thin-bedded, dark gray carbonaceous clay that has thin lenses of ironstone and sandstone and thick beds of gravelly sand interbedded with kaolinitic clay. The soils that formed in this material include Cowarts, Luverne, Springhill, and Troup soils.

The Clayton Formation overlies the Providence Sand, and it crops out in the central and southern parts of the county. It consists of layers of fine- to coarse-grained sand, gravel, lignite, clay, limestone, and iron ore. The soils that formed in this material include Springhill, Nankin, Greenville, Orangeburg, Troup, and Luverne soils.

The Nanafalia Formation overlies the Clayton Formation, and it crops out in the southern part of the county. It consists of thin to thick beds of crossbedded sand that have lenses of gravel and clay, glauconitic sand, siltstone, and purplish clay. The soils formed in this material include Cowarts, Lucy, Troup, Nankin, Arundel, Luverne, and Springhill soils.

The Tuscahoma Sand occurs as outliers on hills in the southeastern part of the county. It consists of glauconitic sandy marl and micaceous sand in the lower part and thin-bedded sandy clay and sand with lenses of ironstone in the upper part. The soils that formed in this material include Cowarts, Bonifay, Fuquay, Troup, and Lucy soils.

The Quaternary System consists of high terraces, low terraces, and alluvium. The high terrace deposits, which indicate that the level of the flood plain was previously higher, occur west of the Pea and Conecuh Rivers. These deposits consist of sand, gravel, and sandy clay. They are as much as 40 feet thick. The soils that formed in this material include Compass, Bonifay, Greenville, and Orangeburg soils. The low terrace deposits and alluvium are found on the flood plains of major streams. They consist of layers of sand, clay, and gravel. They are generally thinner than the high terrace deposits. The soils that formed in low terrace deposits include Bonneau, Eunola, and Cahaba soils. The soils that formed in alluvium include Iuka, Kinston, and Mantachie soils *(13)*.

Water Resources

Pike County has an adequate, although limited, amount of surface water suitable for domestic and recreational uses. The main streams in the county are the Conecuh and Pea Rivers, Patsaliga Creek, Whitewater Creek, Big Creek, Buckhorn Creek, and Mannings Creek. Lakes, which provide water for livestock and recreational uses, include Pike County Lake, Mandy Warren Lake, Pine Lake, and L & L Lakes. Numerous farm ponds also provide water for livestock and recreational uses.

Large quantities of ground water for municipal, industrial, or irrigation uses is available in the Ripley Formation in the southern part of the county. Adequate quantities of water for domestic uses can be obtained from the Ripley Formation and the Providence Sand in the northern part of the county and from the Clayton and Nanafalia Formations and the Tuscahoma Sand in the southern part *(13)*.

Mineral Resources

Economically important minerals in Pike County include brown iron ore, limestone, lignite, sand, gravel, and clay. Brown iron ore, which mainly consists of goethite and limonite, is mined from the upper beds of the Clayton Formation in the southern part of the county. Limestone is present in the southern part of the county. It is a potential source of agricultural lime. Lignite occurs in the Nanafalia Formation in the southwestern part of the county, but it is not currently mined. Sand and gravel are present in terrace deposits along the major streams, and extensive deposits of sand are found in all of the geologic units. Deposits of kaolinitic clay are in the Ripley Formation, the Providence Sand, and the Clayton and Nanafalia Formations *(13)*.

How This Survey Was Made

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

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were

formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

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

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

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

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

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

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

Soil Survey Procedures

The general procedures followed in making this survey are described in the "National Soil Survey Handbook" of the Natural Resources Conservation Service. The soil survey of Pike County, published in 1911 *(15)*, and the "Generalized Geologic Map of Pike County, Alabama" *(13)* were among the references used.

Before the fieldwork began, preliminary boundaries of landforms were plotted stereoscopically on high-altitude aerial photographs. United States Geological Survey topographic maps were studied to relate land and image features.

Traverses were made on foot and by vehicle, mostly at intervals of about one-fourth mile. They were made at closer intervals in areas of high variability. Soil examinations along the traverses were made 50, 100, and 300 feet apart, depending on the landscape and the soil patterns *(12, 14)*. Observations of landforms, uprooted trees, vegetation, roadbanks, and animal burrows were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretation. The soil material was examined with the aid of a spade, a hand

auger, or a truck-mounted probe to a depth of 5 feet or more. The pedons described as typical were observed and studied in excavations.

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

High-altitude aerial photography base maps were used to map soil and surface drainage in the field. Cultural features were transferred from the U.S. Geological Survey 7.5-minute topographic maps and were recorded from visual observations. Soils, drainage patterns, and cultural features recorded on the base maps were then transferred to half-tone film positives by cartographic technicians before the final map-finishing process.

General Soil Map Units

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

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

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

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

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

1. Troup-Alaga-Luverne

Dominantly gently sloping to moderately steep, somewhat excessively drained and well drained soils that have a sandy surface layer and a loamy subsoil, that are sandy throughout the profile, or that have a loamy surface layer and a clayey subsoil; on uplands

Setting

Location in the survey area: Northern and central parts
Landscape: Coastal Pain
Landform: Uplands
Landform position: Gently sloping, narrow ridgetops and moderately sloping to moderately steep side slopes
Slope range: 2 to 20 percent

Composition

Percent of the survey area: 6
Troup soils—55 percent
Alaga soils—15 percent
Luverne soils—15 percent
Minor soils—15 percent (includes Cowarts, Iuka, Kinston, Lucy, and Springhill soils)

Soil Characteristics

Troup

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown and light yellowish brown loamy sand; lower part—very pale brown sand
Subsoil: Yellowish red sandy clay loam
Depth class: Very deep
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy and loamy sediments

Alaga

Surface layer: Brown loamy sand
Substratum: Upper part—brownish yellow and strong brown loamy sand; lower part—strong brown sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy sediments

Luverne

Surface layer: Reddish brown and yellowish red clay loam
Subsoil: Upper part—yellowish red clay; lower part—yellowish red clay loam that has brownish yellow and light gray mottles
Substratum: Upper part—yellowish red clay loam that has thin strata of sandy loam; lower part—mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam

Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Stratified clayey and loamy sediments

Minor soils

- Areas of loamy Cowarts and Springhill soils on ridgetops and side slopes
- The moderately well drained Iuka and poorly drained Kinston soils on narrow flood plains
- Random areas of Lucy soils that have sandy surface and subsurface layers ranging from 20 to 40 inches thick

Use and Management

Major Uses: Woodland, pasture, and hayland

Cropland

Management concerns: Slope, low fertility, and droughtiness

Pasture and hayland

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

Woodland

Management concerns: Competition from undesirable plants, erodibility, restricted use of equipment; Troup and Alaga—seedling mortality rate

Urban development

Management concerns: Restricted permeability and slope in the steeper areas; Luverne—low strength and shrink-swell potential

2. Luverne-Conecuh-Oktibbeha

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

Setting

Location in the survey area: Northern part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Gently sloping, broad ridgetops and gently sloping to moderately sloping side slopes
Slope range: 2 to 8 percent

Composition

Percent of the survey area: 4
Luverne soils—40 percent
Conecuh soils—30 percent
Oktibbeha soils—12 percent
Minor soils—18 percent (includes Cowarts, Eunola, Kinston, Mantachie, and Troup soils)

Soil Characteristics

Luverne

Surface layer: Reddish brown and yellowish red clay loam
Subsoil: Upper part—yellowish red clay; lower part—yellowish red clay loam that has brownish yellow and light gray mottles
Substratum: Upper part—yellowish red clay loam that has thin strata of sandy loam; lower part—mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Stratified clayey and loamy sediments

Conecuh

Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red clay; middle part—mottled red, yellowish red, and gray clay; lower part—mottled gray, red, yellowish red, and strong brown clay
Substratum: Light brownish gray clay
Depth class: Very deep
Drainage class: Moderately well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Clayey sediments

Oktibbeha

Surface layer: Reddish brown clay
Subsoil: Upper part—red clay with strong brown and yellowish brown mottles; middle part—mottled strong brown, red, yellowish brown, and light gray clay that has large slickensides; lower part—mottled light gray, pale brown, and yellowish brown clay that has large slickensides and common masses of calcium carbonate
Depth class: Very deep
Drainage class: Moderately well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Acid, clayey sediments overlying calcareous clay or chalk

Minor soils

- Areas of loamy Cowarts soils on narrow ridges
- Areas of loamy Eunola soils on low terraces
- The poorly drained Kinston and somewhat poorly drained Mantachie soils on narrow flood plains
- Areas of sandy Troup soils on high ridgetops

Use and Management

Major Uses: Woodland, pasture, and hayland

Cropland

Management concerns: Erodibility and slope in the steeper areas

Pasture and hayland

Management concerns: Erodibility and slope in the steeper areas

Woodland

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

Urban development

Management concerns: Restricted permeability, low strength, and shrink-swell potential

3. Mantachie-Kinston-Eunola

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

Setting

Location in the survey area: Throughout the county
Landscape: Coastal Plain
Landform: Flood plains and low stream terraces
Landform position: Level to slightly concave slopes
Slope range: 0 to 2 percent

Composition

Percent of the survey area: 14
Mantachie soils—35 percent
Kinston soils—30 percent
Eunola soils—12 percent
Minor soils—23 percent (includes Bonneau, Cahaba, and Iuka soils)

Soil Characteristics

Mantachie

Surface layer: Brown loam
Subsoil: Upper part—mottled light gray, brownish yellow, light yellowish brown, and yellowish brown loam; middle part—light gray sandy clay loam that has yellowish brown and red mottles; lower part—gray sandy clay loam that has strong brown and brownish yellow mottles
Depth class: Very deep
Drainage class: Somewhat poorly drained
Seasonal high water table: Apparent, at a depth of 1 to 1.5 feet from December through April
Parent material: Loamy alluvium

Kinston

Surface layer: Dark grayish brown fine sandy loam that has strong brown mottles
Substratum: Upper part—grayish brown loam that has strong brown mottles; middle part—dark gray sandy clay loam that has brownish yellow mottles; lower part—gray loam
Depth class: Very deep
Drainage class: Poorly drained
Depth to seasonal high water table: Apparent, at the surface to a depth of 1 foot from December through April
Parent material: Stratified loamy and sandy alluvium

Eunola

Surface layer: Brown loamy sand
Subsurface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam that has yellowish red and light gray mottles; lower part—mottled light brownish gray, yellowish red, strong brown, and yellowish brown sandy clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Seasonal high water table: Apparent, at a depth of 1.5 to 2.5 feet from December through March
Parent material: Stratified loamy and sandy sediments

Minor soils

- Areas of sandy, well drained Bonneau soils on the high parts of low terraces
- The well drained Cahaba soils on low terraces
- The moderately well drained Iuka soils on the high parts of natural levees adjacent to stream channels

Use and Management

Major uses: Woodland and wildlife habitat

Cropland

Management concerns: Flooding, wetness, and low fertility

Pasture and hayland

Management concerns: Flooding and wetness

Woodland

Management concerns: Competition from undesirable plants and restricted use of equipment; Kinston and Mantachie—seedling mortality

Urban development

Management concerns: Flooding, wetness, and low strength

4. Cowarts-Troup-Luverne

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

Setting

Location in the survey area: Northern part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Gently sloping, narrow ridgetops and gently sloping to moderately steep side slopes
Slope range: 2 to 20 percent

Composition

Percent of the survey area: 19
Cowarts soils—40 percent
Troup soils—30 percent
Luverne soils—10 percent
Minor soils—20 percent (includes Alaga, Bonifay, Iuka, Kinston, and Springhill soils)

Soil Characteristics

Cowarts

Surface layer: Brown sandy loam
Subsurface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam; middle part—yellowish brown sandy clay loam that has pale brown, strong brown, and yellowish red mottles; lower part—mottled strong brown, red, pale brown, and light gray sandy clay loam
Substratum: Mottled strong brown, red, pale brown, and light gray sandy loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Loamy sediments

Troup

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown and light yellowish brown loamy sand; lower part—very pale brown sand
Subsoil: Yellowish red sandy clay loam
Depth class: Very deep
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy and loamy sediments

Luverne

Surface layer: Reddish brown and yellowish red clay loam
Subsoil: Upper part—yellowish red clay; lower part—yellowish red clay loam that has brownish yellow and light gray mottles
Substratum: Upper part—yellowish red clay loam that has thin strata of sandy loam; lower part—mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Stratified clayey and loamy sediments

Minor soils

- Areas of sandy Alaga and Bonifay soils on the smoother parts of broad ridgetops
- The moderately well drained Iuka and poorly drained Kinston soils on narrow flood plains
- Random areas of Springhill soils that have a red subsoil

Use and Management

Major uses: Woodland, pasture, and hayland

Cropland

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

Pasture and hayland

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

Woodland

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

Urban development

Management concerns: Restricted permeability and slope in the steeper areas; Luverne—low strength and shrink-swell potential

5. Compass-Bonifay-Cowarts

Dominantly nearly level to moderately sloping, moderately well drained and well drained soils that have a sandy or loamy surface layer and a loamy subsoil; on uplands

Setting

Location in the survey area: Northern part, runs parallel to the Conecuh River
Landscape: Coastal Plain
Landform: Uplands and high terraces
Landform position: Nearly level to gently sloping, broad ridgetops and moderately sloping side slopes
Slope range: 1 to 8 percent

Composition

Percent of the survey area: 4.5
Compass soils—35 percent
Bonifay soils—25 percent
Cowarts soils—20 percent
Minor soils—20 percent (includes Dothan, Eunola, Greenville, Iuka, Kinston, and Orangeburg soils)

Soil Characteristics

Compass

Surface layer: Dark grayish brown loamy sand
Subsurface layer: Light yellowish brown loamy sand
Subsoil: Upper part—yellowish brown sandy loam; lower part—brownish yellow sandy clay loam that has strong brown, light gray, and red mottles and nodules of plinthite
Depth class: Very deep
Drainage class: Moderately well drained
Seasonal high water table: Perched at a depth of 2.5 to 3.5 feet from December through March
Parent material: Loamy sediments

Bonifay

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown loamy sand; lower part—pale brown loamy sand that has yellowish brown and brownish yellow mottles
Subsoil: Upper part—yellowish brown sandy loam that has strong brown and yellowish red mottles and nodules of plinthite; lower part—strong brown sandy clay loam that has yellowish brown, red, and light brownish gray mottles and nodules of plinthite
Depth class: Very deep
Drainage class: Well drained
Seasonal high water table: Perched at a depth of 4 to 5 feet from December through March
Parent material: Sandy and loamy sediments

Cowarts

Surface layer: Brown sandy loam
Subsurface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam; middle part—yellowish brown sandy clay loam that has pale brown, strong brown, and yellowish red mottles; lower part—mottled strong brown, red, pale brown, and light gray sandy clay loam
Substratum: Mottled strong brown, red, pale brown, and light gray sandy loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Loamy sediments

Minor soils

- Areas of loamy Dothan and Orangeburg soils on the high parts of broad ridgetops
- The moderately well drained Eunola soils on low stream terraces
- The moderately well drained Iuka and poorly drained Kinston soils on narrow flood plains
- Areas of clayey Greenville soils on broad ridgetops

Use and Management

Major uses: Cultivated crops, pasture, and hayland

Cropland

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

Pasture and hayland

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

Woodland

Management concerns: Plant competition; Bonifay—seedling mortality rate and restricted use of equipment

Urban development

Management concerns: Restricted permeability, droughtiness, and slope in the steeper areas

6. Fuquay-Bonifay-Cowarts

Dominantly nearly level to moderately sloping, well drained soils that have a sandy or loamy surface layer and a loamy subsoil; on uplands

Setting

Location in the survey area: Southeastern part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Nearly level to gently sloping, broad ridgetops and gently sloping to moderately sloping side slopes

Slope range: 1 to 8 percent

Composition

Percent of the survey area: 4
Fuquay soils—40 percent
Bonifay soils—25 percent
Cowarts soils—20 percent
Minor soils—15 percent (includes Compass, Dothan, Kinston, Lucy, Luverne, and Troup soils)

Soil Characteristics

Fuquay

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown loamy sand; lower part—brownish yellow loamy sand
Subsoil: Upper part—yellowish brown sandy loam; lower part—mottled strong brown, brownish yellow, light gray, and red sandy loam and sandy clay loam that has nodules of plinthite
Depth class: Very deep
Drainage class: Well drained
Seasonal high water table: Perched at a depth of 4 to 6 feet from December through March
Parent material: Sandy and loamy sediments

Bonifay

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown loamy sand; lower part—pale brown loamy sand that has yellowish brown and brownish yellow mottles
Subsoil: Upper part—yellowish brown sandy loam that has strong brown and yellowish red mottles and nodules of plinthite; lower part—strong brown sandy clay loam that has yellowish brown, red, and light brownish gray mottles and nodules of plinthite
Depth class: Very deep
Drainage class: Well drained
Seasonal high water table: Perched at a depth of 4 to 5 feet from December through March
Parent material: Sandy and loamy sediments

Cowarts

Surface layer: Brown sandy loam
Subsurface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam; middle part—yellowish brown sandy clay loam that has pale brown, strong brown, and yellowish red mottles; lower part—mottled strong brown, red, pale brown, and light gray sandy clay loam
Substratum: Mottled strong brown, red, pale brown, and light gray sandy loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Loamy sediments

Minor soils

- Areas of loamy Compass and Dothan soils on the high parts of broad ridgetops
- Random areas of Lucy and Troup soils that have a red subsoil
- The poorly drained Kinston soils on narrow flood plains
- Areas of clayey Luverne soils on the lower parts of side slopes

Use and Management

Major uses: Cultivated crops, pasture, hayland, and woodland

Cropland

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

Pasture and hayland

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

Woodland

Management concerns: Plant competition; Fuquay and Bonifay—seedling mortality rate and restricted use of equipment

Urban development

Management concerns: Restricted permeability, droughtiness, and slope in the steeper areas

7. Cowarts-Luverne-Lucy

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

Setting

Location in the survey area: Central part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Gently sloping, narrow ridgetops and moderately sloping to moderately steep side slopes
Slope range: 2 to 20 percent

Composition

Percent of the survey area: 19.5
Cowarts soils—38 percent
Luverne soils—24 percent
Lucy soils—18 percent

Minor soils—20 percent (includes Greenville, Kinston, Nankin, Springhill, and Troup soils)

Soil Characteristics

Cowarts

Surface layer: Brown sandy loam
Subsurface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam; middle part—yellowish brown sandy clay loam that has pale brown, strong brown, and yellowish red mottles; lower part—mottled strong brown, red, pale brown, and light gray sandy clay loam
Substratum: Mottled strong brown, red, pale brown, and light gray sandy loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Loamy sediments

Luverne

Surface layer: Reddish brown and yellowish red clay loam
Subsoil: Upper part—yellowish red clay; lower part—yellowish red clay loam that has brownish yellow and light gray mottles
Substratum: Upper part—yellowish red clay loam that has thin strata of sandy loam; lower part—mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Stratified clayey and loamy sediments

Lucy

Surface layer: Brown loamy sand
Subsurface layer: Yellowish brown loamy sand
Subsoil: Upper part—yellowish red sandy loam; middle part—red sandy clay loam; lower part—yellowish red sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy and loamy sediments

Minor soils

- Areas of clayey Greenville and Nankin soils on narrow ridgetops
- The poorly drained Kinston soils on narrow flood plains
- Random areas of Springhill soils that have a red subsoil
- Random areas of Troup soils that have sandy surface and subsurface layers ranging from 40 to 80 inches thick

Use and Management

Major uses: Woodland, pasture, and hayland

Cropland

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

Pasture and hayland

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

Woodland

Management concerns: Competition from undesirable plants and erodibility; Lucy—seedling mortality rate and restricted use of equipment

Urban development

Management concerns: Restricted permeability and slope in the steeper areas; Luverne—low strength and shrink-swell potential

8. Orangeburg-Lucy-Dothan

Dominantly nearly level to moderately sloping, well drained soils that have a sandy or loamy surface layer and a loamy subsoil; on uplands

Setting

Location in the survey area: Southwestern part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Nearly level to gently sloping, broad ridgetops and gently sloping to moderately sloping side slopes
Slope range: 1 to 8 percent

Composition

Percent of the survey area: 6.5
Orangeburg soils—40 percent
Lucy soils—20 percent
Dothan soils—15 percent
Minor soils—25 percent (includes Bonifay, Cowarts, Iuka, Kinston, Luverne, and Troup soils)

Soil Characteristics

Orangeburg

Surface layer: Brown loamy sand
Subsoil: Upper part—yellowish red sandy clay loam; lower part—red sandy clay loam
Depth class: Very deep
Drainage class: Well drained

Depth to seasonal high water table: More than 6 feet
Parent material: Loamy sediments

Lucy

Surface layer: Brown loamy sand
Subsurface layer: Yellowish brown loamy sand
Subsoil: Upper part—yellowish red sandy loam; middle part—red sandy clay loam; lower part—yellowish red sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy and loamy sediments

Dothan soils

Surface layer: Yellowish brown sandy loam
Subsoil: Upper part—yellowish brown sandy clay loam; middle part—strong brown sandy clay loam that has yellowish red, brownish yellow, and red mottles; lower part—mottled brownish yellow, strong brown, yellowish red, and light gray sandy clay loam that has nodules of plinthite
Depth class: Very deep
Drainage class: Well drained
Seasonal high water table: Perched at a depth of 3 to 5 feet from December through March
Parent material: Loamy sediments

Minor soils

- Random areas of Bonifay and Troup soils that have sandy surface and subsurface layers ranging from 40 to 80 inches thick
- Random areas of Cowarts soils that have a yellowish brown subsoil and a solum less than 40 inches thick
- The moderately well drained Iuka and poorly drained Kinston soils on narrow flood plains
- Areas of clayey Luverne soils on the lower parts of side slopes

Use and Management

Major uses: Woodland, pasture, and hayland

Cropland

Management concerns: Erodibility and low fertility; Lucy—droughtiness

Pasture and hayland

Management concerns: Low fertility

Woodland

Management concerns: Plant competition; Lucy—seedling mortality rate and restricted use of equipment

Urban development

Management concerns: Dothan—restricted permeability

9. Springhill-Nankin-Greenville

Dominantly nearly level to strongly sloping, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; on uplands

Setting

Location in the survey area: East-central part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Nearly level to gently sloping, broad ridgetops and gently sloping to strongly sloping side slopes
Slope range: 1 to 15 percent

Composition

Percent of the survey area: 15
Springhill soils—31 percent
Nankin soils—25 percent
Greenville soils—16 percent
Minor soils—28 percent (includes Cowarts, Kinston, Luverne, Mantachie, and Orangeburg soils)

Soil Characteristics

Springhill

Surface layer: Brown sandy loam
Subsurface layer: Yellowish red sandy loam
Subsoil: Upper part—red sandy clay loam; lower part—red sandy loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Loamy and sandy sediments

Nankin

Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red sandy clay; lower part—red sandy clay loam
Substratum: Mottled red, reddish yellow, and light gray sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Clayey and loamy sediments

Greenville

Surface layer: Dark red sandy clay loam
Subsoil: Upper part—dark red clay; lower part—dark red sandy clay

Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Clayey sediments

Minor soils

- Random areas of Cowarts soils that have a yellowish brown subsoil
- The poorly drained Kinston and somewhat poorly drained Mantachie soils on narrow flood plains
- Random areas of Luverne soils that have a mixed clay mineralogy

Use and Management

Major uses: Cultivated crops, pasture, hayland, and woodland

Cropland

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

Pasture and hayland

Management concerns: Low fertility and slope in the steeper areas

Woodland

Management concerns: No significant limitations

Urban development

Management concerns: Restricted permeability and slope in the steeper areas

10. Arundel-Luverne-Troup

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

Setting

Location in the survey area: Southern part
Landscape: Coastal Plain
Landform: Uplands
Landform position: Gently sloping, narrow ridgetops and moderately sloping to steep side slopes
Slope range: 2 to 30 percent

Composition

Percent of the survey area: 7.5
Arundel soils—28 percent
Luverne soils—25 percent
Troup soils—20 percent
Minor soils—27 percent (includes Kinston, Lucy, Mantachie, Nankin, and Orangeburg soils)

Soil Characteristics

Arundel

Surface layer: Dark brown loamy sand
Subsurface layer: Yellowish brown loamy sand
Subsoil: Yellowish red clay that has red, strong brown, and pale brown mottles
Substratum: Mottled yellowish red, gray, strong brown, and pale brown clay
Bedrock: Weathered siltstone or claystone
Depth class: Moderately deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Clayey residuum derived from siltstone or claystone

Luverne

Surface layer: Reddish brown and yellowish red clay loam
Subsoil: Upper part—yellowish red clay; lower part—yellowish red clay loam that has brownish yellow and light gray mottles
Substratum: Upper part—yellowish red clay loam that has thin strata of sandy loam; lower part—mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam
Depth class: Very deep
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Parent material: Stratified clayey and loamy sediments

Troup

Surface layer: Brown loamy sand
Subsurface layer: Upper part—yellowish brown and light yellowish brown loamy sand; lower part—very pale brown sand
Subsoil: Yellowish red sandy clay loam
Depth class: Very deep
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Parent material: Sandy and loamy sediments

Minor soils

- The poorly drained Kinston and somewhat poorly drained Mantachie soils on narrow flood plains
- Random areas of Lucy soils that have sandy surface and subsurface layers ranging from 20 to 40 inches thick

• Random areas of Nankin soils that have a kaolinitic mineralogy
• Areas of loamy Orangeburg soils on the high parts of ridgetops

Use and Management

Major uses: Woodland, pasture, and hayland

Cropland

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

Pasture and hayland

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

Woodland

Management concerns: Erodibility and restricted use of equipment; Troup—seedling mortality rate

Urban development

Management concerns: Restricted permeability, shrink-swell potential, low strength, and slope in the steeper areas

Detailed Soil Map Units

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

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dothan sandy loam, 1 to 3 percent slopes, is a phase of the Dothan series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Fuquay-Bonifay complex, 5 to 8 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous

areas, or it can be made up of all of them. Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes, frequently flooded, is an undifferentiated group in this survey area.

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

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

ArE—Arundel-Luverne-Troup complex, 8 to 25 percent slopes

This map unit consists of the moderately deep, well drained Arundel soil; the very deep, well drained Luverne soil; and the very deep, somewhat excessively drained Troup soil. It is on narrow ridges and side slopes in the uplands. Deeply incised, intermittent drainageways dissect the unit in most places. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Arundel soil makes up about 35 percent of the map unit, the Luverne soil makes up about 30 percent, and the Troup soil makes up about 25 percent. Slopes are generally short and complex. Individual areas are irregular in shape. They range from about 25 to 300 acres in size.

The Arundel soil is generally on the upper parts of slopes and on narrow benches or ridges in the lower parts of the landscape. Typically, the surface layer is dark brown loamy sand about 3 inches thick. The subsurface layer is yellowish brown loamy sand about 6 inches thick. The subsoil, to a depth of 26 inches, is yellowish red clay that has mottles in shades of red and brown. The substratum, to a depth of 29 inches, is mottled yellowish red, gray, strong brown, and pale brown clay. The next layer is weathered siltstone or claystone bedrock.

Important properties of the Arundel soil—

Permeability: Very slow
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 20 to 40 inches
Root zone: 20 to 40 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: High
Flooding: None

The Luverne soil is generally on the middle and lower parts of slopes. Typically, the surface layer is grayish brown loamy sand about 7 inches thick. The subsoil, to a depth of 40 inches, is yellowish red clay in the upper part and yellowish red clay loam that has yellowish brown and grayish brown mottles in the lower part. The substratum, to a depth of 65 inches, is stratified sandy clay loam, sandy loam, and loamy sand. Individual strata are yellowish red, yellowish brown, and light gray.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Moderate
Flooding: None

The Troup soil is generally on narrow ridgetops or on toe slopes. Typically, the surface layer is brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 46 inches, is yellowish brown, light yellowish brown, and very pale brown loamy sand and sand. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Natural fertility: Low
Organic matter content: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Iuka, Kinston, Lucy, and Springhill soils. The moderately well drained Iuka soils and the poorly drained Kinston soils are on narrow flood plains. Lucy soils are in landscape positions similar to those of the Troup soil. They have loamy sand surface and subsurface layers ranging from 20 to 40 inches thick. Springhill soils are in landscape positions similar to those of the Luverne soil. They are loamy throughout the profile. Included soils make up about 15 percent of the map unit, but individual areas generally are less than 5 acres in size.

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

This map unit is unsuited to most cultivated crops. The complex topography and the strongly sloping to moderately steep slopes are limitations for the use of equipment. Erosion is a severe hazard. The sandy texture

and droughtiness are additional limitations in areas of the Troup soil. If the soils are cultivated, all tillage should be on the contour or across the slope.

This map unit is poorly suited to pasture and hay. The complex slopes, droughtiness, and the severe hazard of erosion are the main limitations. The use of equipment is restricted by the sloping, complex topography and the sandy texture of the Troup soil. The seedbed should be prepared on the contour or across the slope if practical. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during very wet or dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and southern red oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85 for the Arundel soil, 90 for the Luverne soil, and 80 for the Troup soil. The understory vegetation consists mainly of greenbrier, poison oak, huckleberry, muscadine grape, flowering dogwood, sweetgum, and water oak.

This map unit has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, and exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope and the sandy texture of the Troup soil restricts the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate to high seedling mortality rate in areas of Arundel and Troup soils can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

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

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

Arundel, Luverne, and Troup soils are in capability subclass VIIe. The woodland ordination symbol is 8R for the Arundel and Troup soils and 9R for the Luverne soil.

BnB—Bonifay loamy sand, 1 to 5 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to more than 100 acres in size.

Typically, the surface layer is brown loamy sand about 12 inches thick. The subsurface layer, to a depth of 57 inches, is yellowish brown loamy sand in the upper part and pale brown loamy sand in the lower part. The subsoil, to a depth of 80 inches, is yellowish brown sandy loam in the upper part and strong brown sandy clay loam that has mottles in shades of red and gray in the lower part. Nodular plinthite makes up about 10 percent of the matrix.

Important properties of the Bonifay soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 4.0 to 5.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Dothan, Fuquay, Orangeburg, and Troup soils. Dothan and Orangeburg soils are on slightly higher parts of ridges. They do not have thick sandy surface and subsurface layers. Fuquay and Troup soils are in landscape positions similar to those of the Bonifay soil. Fuquay soils have a loamy subsoil within a depth of 20 to 40 inches. Troup soils have a reddish subsoil and do not have plinthite

within a depth of 60 inches. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is suited to most cultivated crops. The main limitations are the low fertility and the low available water capacity. Erosion is a moderate hazard in cultivated areas. If this soil is used for row crops, conservation tillage, contour farming, and cover crops help to conserve moisture and control runoff and erosion. Returning crop residue to the soil helps to maintain tilth, improves fertility, and increases the water holding capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

This soil is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are well suited to this soil. The leaching of plant nutrients is a management concern. Split applications of nitrogen fertilizer are recommended to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation consists mainly of greenbrier, common persimmon, poison oak, blackjack oak, flowering dogwood, turkey oak, and little bluestem.

This soil has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or by prescribed fire.

This soil is well suited to most urban uses. The thick, sandy surface layer, the low fertility, and the low available water capacity are the main management concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants. An additional concern is the moderate permeability. Septic tank absorption fields may not function properly during rainy periods because of the moderate permeability. Increasing the size of the absorption field helps to compensate for this limitation.

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

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

BoB—Bonneau-Eunola, occasionally flooded complex, 0 to 3 percent slopes

This map unit consists of the very deep, well drained Bonneau soil and the moderately well drained Eunola soil. It is on low terraces along rivers and large streams throughout the county. The Eunola soil is subject to occasional flooding. The soils in this unit occur as areas so intricately intermingled that it was not practical to separate them at the scale selected for mapping. The Bonneau soil makes up about 50 percent of the map unit, and the Eunola soil makes up about 35 percent. Individual areas are oblong in shape. They range from 10 to 100 acres in size.

The well drained Bonneau soil is on high parts of the terrace. Typically, the surface layer is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 26 inches, is light yellowish brown loamy sand. The subsoil, to a depth of 65 inches, is yellowish brown sandy clay loam in the upper part and light yellowish brown sandy clay loam in the lower part. Mottles are in shades of red, brown, and gray.

Important properties of the Bonneau soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 3.5 to 5.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

The moderately well drained Eunola soil is on low parts of the terrace. Typically, the surface layer is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 12 inches, is yellowish brown loamy sand. The subsoil, to a depth of 50 inches, is yellowish brown sandy clay loam in the upper part and mottled light brownish gray, yellowish red, strong brown, and yellowish brown sandy clay loam in the lower part. The substratum, to a depth of 65 inches, is mottled yellowish brown, light gray, and red loamy sand.

Important properties of the Eunola soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.5 to 2.5 feet from December through March
Shrink-swell potential: Low
Flooding: Occasional

Included in mapping are a few small areas of Cahaba and Kinston soils. Cahaba soils are in landscape positions similar to those of the Bonneau soil. They do not have thick, sandy surface and subsurface layers and have a reddish subsoil. The poorly drained Kinston soils are on narrow flood plains and in small depressions. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is well suited to cultivated crops. The main limitations are the low available water capacity of the Bonneau soil and the flooding and wetness of the Eunola soil. Planting of early season crops may be delayed in some years because of flooding. Shallow ditches help to remove excess surface water. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that includes grasses and legumes increase the available water, decrease crusting, and improve soil fertility. Using supplemental irrigation and selecting crop varieties that are adapted to droughty conditions increase the production of crops. Most crops respond well to applications of lime and fertilizer.

These soils are well suited to pasture and hay. The low available water capacity is a limitation in areas of the Bonneau soil. Drought-tolerant grasses, such as bahiagrass and bermudagrass, are well suited. The wetness and flooding are limitations in areas of the Eunola soil. Shallow ditches help to remove excess surface water. Proper stocking rates, pasture rotation, and restricted grazing during very wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote the growth of forage plants.

These soils are well suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, yellow-poplar, water oak, and sweetgum. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90 for the Bonneau and Eunola soils. The understory vegetation consists mainly of greenbrier, blackberry, panicums, poison ivy, flowering dogwood, sweetgum, and water oak.

These soils have moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soils are very dry. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate seedling mortality rate in areas of the Bonneau soil is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without adequate site preparation and maintenance. Site preparation controls the initial plant competion, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. Flooding is the main limitation. Although it is generally not feasible to control flooding, buildings can be placed on pilings or mounds to elevate them above the expected flood level. If possible, buildings should be constructed in areas of the Bonneau soil.

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

The Bonneau soil is in capability subclass IIs, and the Eunola soil is in capability subclass IIw. The woodland ordination symbol is 9S for the Bonneau soil and 9W for the Eunola soil.

CaA—Cahaba sandy loam, 0 to 2 percent slopes

This very deep, well drained soil is on low terraces that parallel the rivers and large streams throughout the

county. Slopes are generally long and smooth. Individual areas are oblong in shape. They range from 5 to 50 acres in size.

Typically, the surface layer is dark brown sandy loam about 8 inches thick. The subsoil, to a depth of 52 inches, is red and yellowish red sandy clay loam in the upper part and yellowish red sandy loam in the lower part. The substratum, to a depth of 65 inches, is strong brown sandy loam.

Important properties of the Cahaba soil—

Permeability: Moderate in the subsoil; moderately rapid in the substratum
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Bonneau, Eunola, and Kinston soils. Also included are areas of Cahaba soils that are subject to rare flooding. Bonneau soils are on slightly higher knolls and have thick, sandy surface and subsurface layers. Eunola soils are in slightly lower, more concave landscape positions and have a yellowish brown subsoil. The poorly drained Kinston soils are on narrow flood plains and in small depressions. Included soils make up about 10 percent of the map unit, but individual areas generally are less than 5 acres in size.

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

This soil is well suited to cultivated crops. There are few limitations for this use; however, low fertility is a management concern. Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This soil is well suited to pasture and hay. There are few limitations for these uses. Grasses such as coastal bermudagrass and bahiagrass are well suited. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote good growth of forage plants.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, yellow-poplar, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of greenbrier, little bluestem, panicums, American holly, longleaf uniola, and flowering dogwood.

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

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

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

This Cahaba soil is in capability class I. The woodland ordination symbol is 9A.

CmB—Compass loamy sand, 1 to 3 percent slopes

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

Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 19 inches. The subsoil, to a depth of 65 inches, is yellowish brown and brownish yellow sandy loam in the upper part and brownish yellow sandy clay loam that has plinthite and mottles in shades of red, brown, and gray in the lower part. Nodular plinthite makes up about 10 percent of the matrix in the lower part.

Important properties of the Compass soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 2.5 to 3.5 feet from December through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Dothan, Fuquay, and Orangeburg soils. Dothan soils are in

Figure 2.—Peanuts in an area of Compass loamy sand, 1 to 3 percent slopes. This soil is well suited to peanuts, and high yields can be produced in most years.

landscape positions similar to those of the Compass soil. They have more clay in the upper part of the subsoil. Orangeburg soils are on slightly higher knolls or more convex slopes. They have a reddish subsoil. Fuquay soils are in slightly lower landscape positions and have thick sandy surface and subsurface layers. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is well suited to cultivated crops (fig. 2). It has few limitations for this use; however, erosion is a hazard in the more sloping areas. Peanuts and corn, which are generally grown in rotation, are the most common crops. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This soil is well suited to pasture and hay, and it has few limitations for these uses. Grasses such as coastal bermudagrass or bahiagrass are well suited. Applications of lime and fertilizer improve fertility and increase the production of forage and hay. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good conditions.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of blackberry, muscadine grape, little bluestem, common persimmon, greenbrier, huckleberry, flowering dogwood, oak, and hickory.

This soil has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This soil is well suited to most urban uses. It has slight limitations for building sites and local roads and streets and has moderate or severe limitations for most kinds of sanitary facilities. The main limitations are the wetness and the moderate permeability. Septic tank absorption fields will not function properly during rainy periods because of the wetness and the moderate permeability. A subsurface drainage system reduces the wetness. Enlarging the size of the absorption field helps to overcome the limitations.

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

This Compass soil is in capability subclass IIe. The woodland ordination symbol is 9A.

CnC2—Conecuh sandy clay loam, 3 to 8 percent slopes, eroded

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

Typically, the surface layer is reddish brown sandy clay loam about 2 inches thick. The subsoil, to a depth of 55 inches, is red clay in the upper part and is mottled gray, red, yellowish red, and strong brown clay in the lower part. The substratum, to a depth of 60 inches, is light brownish gray clay that has yellowish brown and red mottles.

Important properties of the Conecuh soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Luverne, Kinston, and Oktibbeha soils. Luverne soils are on slightly higher knolls or ridges. They have mixed mineralogy. Oktibbeha soils are on lower parts of slopes. They are alkaline in the lower part of the subsoil and in the substratum. The poorly drained Kinston soils are in drainageways. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

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

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

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of muscadine grape, poison ivy, yellow jessamine, flowering dogwood, longleaf uniola, and panicums.

This soil generally has slight limitations for the management of timber. The plant competition, however, is a severe limitation. Plant competition from undesirable plants reduces the growth of trees and can prevent

adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial growth of undesirable vegetation, and herbicides can be used to control the vegetation. Exposing the surface by removing ground cover increases the hazard of erosion, and exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding.

This soil is poorly suited to most urban uses. It has moderate to severe limitations for building sites, local roads and streets, and most kinds of sanitary facilities. The main limitations are the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets can be built if they are designed to compensate for the low strength and instability of the subsoil. Septic tank absorption fields will not function properly because of the very slow permeability. An alternate method of sewage disposal is needed to dispose of sewage properly.

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

This Conecuh soil is in capability subclass IVe. The woodland ordination symbol is 9C.

CoC—Cowarts sandy loam, 3 to 8 percent slopes

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands. Slopes are generally short and complex but may be long and smooth in some areas. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is brown sandy loam about 4 inches thick. The subsurface layer, to a depth of 9 inches, is yellowish brown sandy loam. The subsoil, to a depth of 34 inches, is yellowish brown sandy clay loam in the upper and middle parts and is mottled strong brown, red, pale brown, and light gray sandy clay loam in the lower part. The substratum, to a depth of 60 inches, is mottled strong brown, red, pale brown, and light gray sandy loam. In some areas, the texture of the surface layer is sandy clay loam.

Important properties of the Cowarts soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Lucy, Luverne, Springhill, and Troup soils. Lucy and Troup soils are on slightly higher parts of ridgetops and have thick sandy surface and subsurface layers. Luverne soils are on lower parts of slopes and are clayey in the upper part of the subsoil. Springhill soils are in landscape positions similar to those of the Cowarts soil. They have a reddish subsoil. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is suited to cultivated crops. The main limitations are the slope, low fertility, and a severe hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion (fig. 3). Drop-inlet structures, installed in grassed waterways, help to prevent gullying. Returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This soil is well suited to pasture and hay. The main limitations are the low fertility and the severe erosion hazard. Grasses such as coastal bermudagrass and bahiagrass are well suited. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote the good growth of forage plants.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, bracken fern, and flowering dogwood.

This soil has few limitations affecting woodland management; however, competition from understory

Figure 3.—An area of Cowarts sandy loam, 3 to 8 percent slopes. Using terraces and planting on the contour reduce the runoff rate and help to control erosion.

plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has slight limitations for building sites and local roads and streets and slight to severe limitations for most kinds of sanitary facilities. The main limitation is the slow permeability. Septic tank absorption fields will not function properly because of the slow permeability. Enlarging the size of the absorption area helps to overcome this limitation.

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

This Cowarts soil is in capability subclass IIIe. The woodland ordination symbol is 9A.

CtE—Cowarts-Troup complex, 8 to 20 percent slopes

This map unit consists of the very deep, well drained Cowarts soil and the somewhat excessively drained Troup soil. It is on side slopes and narrow ridges in the uplands. Deeply incised intermittent drainageways dissect the unit in most places. The soils occur as areas so intricately intermingled that they could not be mapped separately at

the scale selected for mapping. The Cowarts soil makes up about 50 percent of the map unit, and the Troup soil makes up about 35 percent. Slopes are generally short and complex. Individual areas are irregular in shape. They range from 100 to 1,000 acres in size.

The Cowarts soil is generally on the steeper side slopes and on narrow ridges in the lower parts of the landscape. Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsoil, to a depth of 40 inches, is yellowish brown sandy clay loam in the upper part and yellowish brown sandy clay loam that has reddish mottles in the lower part. The substratum, to a depth of 65 inches, is mottled strong brown, red, pale brown, and light gray sandy loam.

Important properties of the Cowarts soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

The Troup soil is generally on the higher parts of ridgetops and on the upper parts of slopes. Typically, the surface layer is brown loamy sand about 7 inches thick. The subsurface layer is very pale brown loamy sand to a depth of 58 inches. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Kinston, Lucy, Luverne, and Springhill soils. The poorly drained Kinston soils are on narrow flood plains. Lucy soils are in landscape positions similar to those of the Troup soil and are sandy to a depth of 20 to 40 inches. Luverne soils are on the lower parts of slopes and have a clayey subsoil. Springhill soils are in landscape positions similar to those of the Cowarts soil and have a reddish subsoil. Also included are soils that have slopes of less than 8 percent or more than 20 percent. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is unsuited to most cultivated crops. The complex topography and the moderately sloping to moderately steep slopes are limitations for the use of equipment. Erosion is a severe hazard. The sandy texture and droughtiness are additional limitations in areas of the Troup soil. If the soils are cultivated, all tillage should be on the contour or across the slope.

This map unit is poorly suited to pasture and hay. The main limitations are the slope, droughtiness, and the severe hazard of erosion. The use of equipment is restricted by the sloping, complex topography and the sandy texture of the Troup soil. The seedbed should be prepared on the contour or across the slope if practical. Drought-tolerant grasses, such as coastal bermudagrass and bahiagrass, are well suited. Proper stocking rates, pasture rotation, and restricted grazing during very wet or dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for the Cowarts soil is 90 and the site index for the Troup soil is 80. The understory vegetation consists mainly of greenbrier, bracken fern, poison oak, little bluestem, panicums, muscadine grape, flowering dogwood, and sweetgum.

This map unit has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion. Exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The complex slopes and the sandy texture of the Troup soil restricts the use of equipment. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate in areas of the Troup soil is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or by prescribed fire.

This map unit is poorly suited to most urban uses. It has moderate limitations for building sites and local roads and streets and has moderate to severe limitations for most kinds of sanitary facilities. The main limitations are the slope and the slow permeability of the Cowarts soil.

Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut-slopes are stabilized. The slow permeability of the Cowarts soil increases the probability that septic tank absorption fields will fail. Effluent from absorption areas may surface in downslope areas and create a hazard to health. Alternative methods of sewage disposal should be used, or the absorption lines should be constructed in areas of the Troup soil.

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

The capability subclass is VIe for the Cowarts soil and VIs for the Troup soil. The woodland ordination symbol is 9A for the Cowarts soil and 8S for the Troup soil.

DoB—Dothan sandy loam, 1 to 3 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands. Slopes are generally long and smooth. Individual areas are generally oblong in shape. They range from 5 to more than 200 acres in size.

Typically, the surface layer is yellowish brown sandy loam about 6 inches thick. The subsoil, to a depth of 60 inches, is yellowish brown sandy clay loam in the upper part, strong brown sandy clay loam in the next part, and mottled brownish yellow, strong brown, yellowish red, and light gray sandy clay loam in the lower part. The content of nodular plinthite in the lower part of the subsoil is 15 percent.

Important properties of the Dothan soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 3.0 to 5.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Compass, Fuquay, and Orangeburg soils. Compass soils are in landscape positions similar to those of the Dothan soil. They have less clay in the upper part of the subsoil. Fuquay soils are in slightly lower landscape positions than the Dothan soil. They have thick sandy surface and subsurface layers. Orangeburg soils are on slightly higher knolls or on more convex slopes. They have a reddish subsoil. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is well suited to cultivated crops. It has few limitations for this use; however, erosion is a hazard in the more sloping areas. Peanuts and corn, which are generally grown in rotation, are the most common crops (fig. 4). Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintains tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This soil is well suited to pasture and hay, and it has few limitations for these uses. Coastal bermudagrass and bahiagrass are the main grasses grown. Applications of lime and fertilizer improve fertility and increase the production of forage and hay. Proper stocking rates, pasture rotation, and restricted grazing during very wet or dry periods help to keep the pasture in good condition.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of little bluestem, yellow jessamine, panicums, flowering dogwood, oak, and huckleberry.

This soil has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This soil is well suited to most urban uses. It has slight or moderate limitations for building sites and local roads and streets. It has moderate or severe limitations for most kinds of sanitary facilities. The main limitations are the wetness and the moderately slow permeability. A subsurface drainage system reduces the wetness. Septic tank absorption fields will not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This soil has good potential as habitat for openland and

Figure 4.—Corn in an area of Dothan sandy loam, 1 to 3 percent slopes. This soil is well suited to corn, peanuts, and soybeans. Corn is generally grown in rotation with peanuts or soybeans.

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

This Dothan soil is in capability subclass IIe. The woodland ordination symbol is 9A.

EuA—Eunola sandy loam, 0 to 2 percent slopes, occasionally flooded

This very deep, moderately well drained soil is on low terraces that are parallel to rivers and large streams throughout the county. Slopes are generally long and smooth. Individual areas are generally oblong in shape. They range from 5 to about 100 acres in size.

Typically, the surface layer is brown sandy loam about 5 inches thick. The subsoil, to a depth of 50 inches, is

Figure 5.—Peanuts in an area of Eunola sandy loam, 0 to 2 percent slopes, occasionally flooded. This soil is well suited to most crops and is capable of producing high yields of peanuts.

yellowish brown sandy loam in the upper part, yellowish brown sandy clay loam that has light brownish gray mottles in the next part, and mottled yellowish brown, yellowish red, and light brownish gray sandy clay loam in the lower part. The substratum, to a depth of 65 inches, is mottled yellowish brown, light gray, and red loamy sand.

Important properties of the Eunola soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.5 to 2.5 feet from December through March
Shrink-swell potential: Low
Flooding: Occasional

Included in mapping are a few small areas of Bonneau, Cahaba, and Kinston soils. Bonneau and Cahaba soils are in slightly higher, more convex landscape positions. Bonneau soils have thick, sandy surface and subsurface layers. Cahaba soils have a reddish subsoil. The poorly drained Kinston soils are on narrow flood plains and in small depressions. Also included are small areas of Eunola soils that are not subject to flooding. Included soils make up about 10 percent of the map unit, but individual areas generally are less than 5 acres in size.

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

This soil is well suited to cultivated crops (fig. 5). The main limitations are flooding and wetness. Planting of early-season crops may be delayed in some years because of flooding. This soil is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Shallow ditches help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness and occasional flooding are the main limitations. Grasses such as bermudagrass and bahiagrass are well suited. Excessive surface water can be removed by shallow ditches. Deferred or restricted grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote the good growth of forage plants.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, yellow-poplar, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of greenbrier, blackberry, panicums, longleaf uniola, poison ivy, sweetgum, and water oak.

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

This map unit is poorly suited to most urban uses. The main limitations are flooding and wetness. Although it is generally not feasible to control flooding, buildings can be placed on pilings or mounds to elevate them above the expected flood level.

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

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

FaB—Fuquay loamy sand, 1 to 5 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands. Slopes are long and smooth. Individual areas are oblong to irregular in shape. They range from 5 to more than 80 acres in size.

Typically, the surface layer is brown loamy sand about 10 inches thick. The subsurface layer, to a depth of 29 inches, is yellowish brown and brownish yellow loamy sand. The subsoil, to a depth of 65 inches, is yellowish brown sandy loam in the upper part; mottled brownish yellow, strong brown, light gray, and red sandy loam in the next part; and mottled yellowish brown, strong brown, light brownish gray, and red sandy clay loam in the lower part. Nodular plinthite makes up about 10 percent of the matrix in the lower part of the subsoil.

Important properties of the Fuquay soil—

Permeability: Rapid in the surface layer and subsurface layer; slow in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 4.0 to 6.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Bonifay, Dothan, and Orangeburg soils. Bonifay soils are in landscape positions similar to those of the Fuquay soil. They have a sandy surface and subsurface layer more than 40 inches thick. Dothan and Orangeburg soils are in slightly higher landscape positions. They do not have a thick sandy surface layer. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

Most areas of this soil are used for cultivated crops or woodland. Some areas are used for pasture, hay, or as sites for homes.

This soil is well suited to most cultivated crops. The main limitations are the low available water capacity and the low fertility. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that includes grasses and legumes increase the available water, decrease crusting, and improve soil fertility. Using supplemental irrigation and selecting crop varieties that are adapted to droughty conditions increase the

production of crops. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

This soil is well suited to pasture and hay. The main limitations are the low available water capacity and the low fertility. Drought-tolerant grasses such as bahiagrass and coastal bermudagrass are well suited. The leaching of plant nutrients is a management concern. Split applications of nitrogen fertilizer are recommended to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of greenbrier, poison oak, flowering dogwood, common persimmon, blackjack oak, and little bluestem.

This soil has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, herbicides, or prescribed fire.

This soil is suited to most urban uses. The main limitations are the slow permeability and droughtiness. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants. Septic tank absorption fields may not function properly during rainy periods because of the slow permeability. Enlarging the size of the absorption field helps to compensate for this limitation.

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

This Fuquay soil is in capability subclass IIs. The woodland ordination symbol is 9S.

FtC—Fuquay-Bonifay complex, 5 to 8 percent slopes

This map unit consists of the very deep, well drained Fuquay and Bonifay soils. It is on narrow ridgetops and on side slopes in the uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Fuquay soil makes up about 55 percent of the map unit, and the Bonifay soil makes up about 35 percent. Slopes are generally long and smooth. Individual areas are generally long and narrow. They range from 10 to 400 acres in size.

The Fuquay soil is generally on the upper parts of slopes. Typically, the surface layer is grayish brown loamy sand about 7 inches thick. The subsurface layer is pale brown and very pale brown loamy sand to a depth of 36 inches. The subsoil, to a depth of 70 inches, is yellowish brown sandy loam in the upper part; yellowish brown sandy clay loam in the next part; and yellowish brown sandy clay loam that has plinthite and mottles in shades of red, brown, and gray in the lower part.

Important properties of the Fuquay soil—

Permeability: Rapid in the surface layer and subsurface layer; slow in the subsoil.
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 4.0 to 6.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

The Bonifay soil is generally on lower parts of slopes. Typically, the surface layer is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 53 inches, is yellowish brown, pale brown, light yellowish brown, and brownish yellow loamy sand. The subsoil, to a depth of 70 inches, is strong brown sandy loam and sandy clay loam that has plinthite and mottles in shades of brown, red, and gray.

Important properties of the Bonifay soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low

Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 4.0 to 5.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Dothan and Orangeburg soils. Dothan soils are in landscape positions similar to those of the Fuquay soil. They do not have thick, sandy surface and subsurface layers. Orangeburg soils are on slightly higher knolls. They do not have thick sandy surface and subsurface layers and have a reddish subsoil. The included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is suited to most cultivated crops. The main limitations are the low available water capacity, the low fertility, and the hazard of erosion. Conservation tillage, contour farming, and cover crops reduce the runoff rate and help to control erosion. Returning all crop residue to the soil helps to maintain tilth and increases the water-holding capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

These soils are well suited to pasture and hay. Coastal bermudagrass and bahiagrass are well suited. The main limitations are the low fertility, the low available water capacity, and the hazard of erosion. The leaching of plant nutrients is a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90 for the Fuquay soil and 85 for the Bonifay soil. The understory vegetation consists mainly of water oak, flowering dogwood, sweetgum, panicums, little bluestem, greenbrier, bracken fern, and poison oak.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, herbicides, and prescribed fire.

These soils are suited to most urban uses. They have slight limitations for building sites and local roads and streets and have moderate to severe limitations for most kinds of sanitary facilities. The main limitations are the wetness, seepage, and the moderate or slow permeability. Septic tank absorption fields may not function properly during rainy periods because of wetness and the moderate or slow permeability. Effluent from absorption fields can surface in downslope areas and create a hazard to health. A subsurface drainage system helps to overcome the wetness. Enlarging the size of the absorption area helps to compensate for these limitations. The thick, sandy surface layer, the low fertility, and the low available water capacity are additional concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

The potential as habitat for openland wildlife is good in areas of the Fuquay soil and poor in areas of the Bonifay soil. These soils have fair potential as habitat for woodland wildlife and very poor potential as habitat for wetland wildlife. The low available water capacity and the low natural fertility are limitations. Habitat can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey.

The capability subclass is IIIs for the Fuquay soil and IVs for the Bonifay soil. The woodland ordination symbol is 9S for the Fuquay soil and 8S for the Bonifay soil.

FuC—Fuquay-Urban land complex, 2 to 8 percent slopes

This map unit consists of the very deep, well drained Fuquay soil and areas of Urban land. The areas are so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Fuquay soil makes up about 50 percent of the map unit, and the Urban land makes up about 40 percent. Individual areas are rectangular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer of the Fuquay soil is brown

loamy sand about 10 inches thick. The subsurface layer, to a depth of 29 inches, is yellowish brown and brownish yellow loamy sand. The subsoil, to a depth of 65 inches, is yellowish brown sandy loam in the upper part; mottled brownish yellow, strong brown, light gray, and red sandy loam in the next part; and mottled yellowish brown, strong brown, light brownish gray, and red sandy clay loam in the lower part. Nodular plinthite makes up about 10 percent of the matrix in the lower part of the subsoil.

Important properties of the Fuquay soil—

Permeability: Rapid in the surface layer and subsurface layer; slow in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched at a depth of 4.0 to 6.0 feet from December through March
Shrink-swell potential: Low
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Bonifay, Dothan, and Orangeburg soils. Also included are areas of soils that have been manipulated to such an extent that the soil series cannot be identified. Bonifay soils are in landscape positions similar to those of the Fuquay soil. They have sandy surface and subsurface layers 40 to 80 inches thick. Dothan and Orangeburg soils are in slightly higher landscape positions and do not have thick sandy surface and subsurface layers. The included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

Areas of the Fuquay soil cannot be easily managed for crops, pasture, or timber or used as wildlife habitat because of the limited size of the areas, the intermittent areas of Urban land, and areas of highly disturbed soils.

Areas of the Fuquay soil are suited to most urban uses. The main limitation is the slow permeability. Septic tank absorption fields may not function properly during rainy periods because of the slow percolation. Enlarging the size of the absorption field helps to compensate for this limitation. The thick, sandy surface layer, the low fertility, and the low available water capacity are additional concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit is not assigned to a capability subclass or a woodland ordination symbol.

GrB2—Greenville sandy clay loam, 1 to 3 percent slopes, eroded

This very deep, well drained soil is on broad ridgetops in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes are long and smooth. Individual areas are generally broad. They range from 5 to more than 150 acres in size.

Typically, the surface layer is dark red sandy clay loam about 7 inches thick. The subsoil, to a depth of 60 inches, is dark red clay and sandy clay.

Important properties of the Greenville soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Nankin and Orangeburg soils. Nankin soils are in slightly lower landscape positions than the Greenville soil. The subsoil of the Nankin soil is not dark red, and the lower part of the subsoil is loamy. Orangeburg soils are in slightly higher landscape positions than those of the Greenville soil. They have a loamy subsoil. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is well suited to cultivated crops. It has few limitations for this use, although low fertility and the hazard of erosion are management concerns. Peanuts and corn, which are generally grown in rotation, are the most common crops. The surface layer of this soil is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Cover crops, contour farming, minimum tillage, and returning all crop residue to the soil or regularly adding organic matter are conservation practices that improve fertility, help to maintain tilth, and help to maintain the content of organic matter (fig. 6). Most crops respond well to systematic applications of lime and fertilizer.

This soil is well suited to pasture and hay. It has no significant limitations for these uses, although low fertility

Figure 6.—An area of Greenville sandy clay loam, 1 to 3 percent slopes, eroded. This soil is well suited to most crops, and it can produce high yields of wheat. The wheat is also used as a cover crop during fall, winter, and spring.

is a management concern (fig. 7). Coastal bermudagrass and bahiagrass are the commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve the fertility and increase the production of forage.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation consists mainly of little bluestem, yellow jessamine, longleaf uniola, huckleberry, flowering dogwood, and greenbrier.

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

This soil is well suited to most urban uses. It has slight to moderate limitations for most uses. The main limitation is the moderate permeability. Septic tank absorption fields may not function properly because of the moderate permeability. Enlarging the size of the absorption field can help to overcome this limitation.

This soil has good potential as habitat for openland and woodland wildlife and very poor potential as habitat for wetland wildlife. Habitat for woodland wildlife can be improved by planting appropriate vegetation, by

maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey.

This Greenville soil is in capability subclass IIe. The woodland ordination symbol is 8A.

LcB—Lucy loamy sand, 1 to 5 percent slopes

This very deep, well drained soil is on narrow to broad ridgetops in the uplands. Slopes are generally long and smooth, but they may be short and complex. Individual areas are irregular in shape. They range from 5 to more than 100 acres in size.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 34 inches, is light yellowish brown and yellowish brown loamy sand. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Lucy soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Nankin,

Figure 7.—An area of Greenville sandy clay loam, 1 to 3 percent slopes, eroded. This soil is well suited to pecan trees and pasture.

Figure 8.—An area of Lucy loamy sand, 1 to 5 percent slopes. This soil is well suited to loblolly pine. Areas of this soil are used for timber production and as habitat for quail, turkey, and deer.

Orangeburg, Springhill, and Troup soils. Orangeburg soils are in slightly higher landscape positions than the Lucy soil. They do not have thick sandy surface and subsurface layers. Nankin soils are on lower slopes. They do not have a thick sandy surface layer, and they have a clayey subsoil. Springhill soils are commonly in slightly lower landscape positions than the Lucy soil. They do not have thick sandy surface and subsurface layers. Troup soils are in landscape positions similar to those of the Lucy soil. They have sandy surface and subsurface layers more than 40 inches thick. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

Most areas of this soil are used as woodland or pasture. Some areas are used for hay or as sites for homes.

This soil is suited to cultivated crops. Peanuts and corn, which are generally grown in rotation, are the most common crops. The moderate hazard of erosion, the low fertility, and the low available water capacity are the main limitations. Contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Returning crop residue to the soil helps to maintain tilth and increases the water-holding capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

This soil is well suited to pasture and hay. Coastal

bermudagrass and bahiagrass are well suited to this soil. The main limitations are the low fertility and the low available water capacity. The leaching of plant nutrients is a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This soil is well suited to loblolly pine and slash pine (fig. 8). Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation is mainly little bluestem, panicums, greenbrier, common persimmon, flowering dogwood, and blackjack oak.

This soil has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire.

This soil is well suited to most urban uses. The thick, sandy surface layer, the low fertility, and the low available water capacity are the main management concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

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

This Lucy soil is in capability subclass IIs. The woodland ordination symbol is 8S.

LcC—Lucy loamy sand, 5 to 8 percent slopes

This very deep, well drained soil is on side slopes in the uplands. Slopes are generally short and complex, but may be long and smooth in some areas. Individual areas are generally long and narrow. They range from 5 to more than 100 acres in size.

Typically, the surface layer is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 24 inches, is yellowish brown loamy sand. The subsoil, to a depth of 65 inches, is yellowish red sandy loam in the upper part and red and yellowish red sandy clay loam in the lower part.

Important properties of the Lucy soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Nankin, Orangeburg, Springhill, and Troup soils. Nankin soils are on lower parts of slopes. They have a clayey subsoil. Orangeburg and Springhill soils are on the upper parts of slopes and on narrow ridges. They do not have thick sandy surface and subsurface layers. Troup soils are in landscape positions similar to those of the Lucy soil. They have sandy surface and subsurface layers more than 40 inches thick. Included soils make up about 15 percent of the map unit, but individual areas generally are less than 5 acres in size.

Most areas of this soil are used for pasture, hay, and woodland. A few areas are used for cultivated crops.

This soil is suited to most cultivated crops. The low available water capacity, the low fertility, and the hazard of erosion are the main limitations. Conservation tillage, contour farming, and cover crops reduce the runoff rate and help to control erosion. Returning all crop residue to the soil helps to maintain tilth and increases the water-holding capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

This soil is well suited to pasture and hay. Coastal bermudagrass and bahiagrass are well suited to this soil. The main limitations are the low fertility, the low available water capacity, and the hazard of erosion. The leaching of plant nutrients is a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, common persimmon, blackjack oak, and flowering dogwood.

This soil has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate can be reduced by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire. Exposing the surface by removing ground cover increases the hazard of erosion. Roads, landings, and skid trails can be protected from erosion by constructing diversions, mulching, and seeding.

This soil is suited to most urban uses. The thick, sandy surface layer, the low fertility, and the low available water capacity are the main management concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants. The hazard of erosion is also a concern. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut-slopes are stabilized.

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

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

LdC—Lucy-Urban land complex, 2 to 8 percent slopes

This map unit consists of the very deep, well drained Lucy soil and areas of Urban land. The areas are so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Lucy soil makes up about 50 percent of the unit, and the Urban land makes up about 40 percent. Individual areas are rectangular. They range from 10 to 200 acres in size.

Typically, the surface layer of the Lucy soil is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 24 inches, is yellowish brown loamy sand. The subsoil, to a depth of 65 inches, is yellowish red sandy loam in the upper part and red and yellowish red sandy clay loam in the lower part.

Important properties of the Lucy soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Cowarts, Springhill, and Troup soils. Also included are areas of soils that have been manipulated to such an extent that the soil series cannot be identified. Cowarts and Springhill soils are in slightly higher landscape positions than the Lucy soil. They do not have thick sandy surface and subsurface layers. Troup soils are in landscape positions similar to those of the Lucy soil. They have sandy surface and subsurface layers more than 40 inches thick. Included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres in size.

Areas of the Lucy soil cannot be easily managed for crops, pasture, or timber or used as wildlife habitat because of the limited size of the areas, the intermittent areas of Urban land, and areas of highly disturbed soils.

Areas of the Lucy soil are well suited to most urban uses. The thick sandy surface layer, low fertility, and the low available water capacity are the main management concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit is not assigned to a capability subclass or a woodland ordination symbol.

LeE—Luverne sandy loam, 8 to 20 percent slopes

This very deep, well drained soil is on narrow ridges and side slopes in the uplands. Most areas are dissected

by deeply incised, intermittent drainageways. Slopes are generally short and complex. Individual areas are irregular in shape and range from 25 to 250 acres in size.

Typically, the surface layer is dark brown sandy loam about 6 inches thick. The subsoil, to a depth of 35 inches, is red clay in the upper part and red clay loam that has strong brown mottles in the middle and lower parts. The substratum, to a depth of 65 inches, is stratified clay loam, sandy loam, and loam. Individual strata are light grayish brown, brownish yellow, and yellowish brown.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Cowarts, Kinston, Springhill, and Troup soils. Cowarts and Springhill soils are in landscape positions similar to those of the Luverne soil and are loamy throughout the profile. The poorly drained Kinston soils are on narrow flood plains. Troup soils are on narrow ridgetops. They have thick sandy surface and subsurface layers. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

Most areas of this soil are used as woodland. A few areas are used for pasture or hay.

This map unit is unsuited to most cultivated crops. The complex topography and the moderately sloping to moderately steep slopes are severe limitations for the use of equipment. Erosion is a severe hazard. Gullies form readily in areas that have a concentrated flow of water on the surface. If the soils are cultivated, all tillage should be on the contour or across the slope.

This soil is poorly suited to pasture and hay. The complex slope and the severe hazard of erosion are the main limitations. The use of equipment is limited by the sloping, complex topography. Tillage should be on the contour or across the slope if practical. Grasses requiring low maintenance are best suited to the more steeply sloping areas. Proper stocking rates, pasture rotation, and restricted grazing during wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote good growth of forage plants.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, poison ivy, huckleberry, muscadine grape, wax myrtle, and flowering dogwood.

This map unit has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion. Exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Management activities should be conducted during seasons of the year when the soil is dry. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire.

This soil is poorly suited to most urban uses. It has moderate to severe limitations for building sites and severe limitations for roads and streets and most sanitary facilities. The main limitations are the slope, the moderate shrink-swell potential, the moderately slow permeability, and low strength if used for roads and streets. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut-slopes are stabilized. Roads should also be designed to offset the limited ability of this soil to support a load. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Septic tank absorption fields may not function properly because of the slope and the moderately slow permeability. Effluent from absorption fields may surface in downslope areas and create a hazard to health. Alternative methods of sewage disposal should be used to properly dispose of waste.

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

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

LnC2—Luverne clay loam, 2 to 8 percent slopes, eroded

This very deep, well drained soil is on side slopes and narrow ridgetops in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes are generally short and complex. Most areas are irregular in shape. They range from 20 to 250 acres in size.

Typically, the surface layer is reddish brown and yellowish red clay loam about 8 inches thick. The subsoil, to a depth of 40 inches, is yellowish red clay in the upper part and yellowish red clay loam that has mottles in shades of yellow, brown, and gray in the lower part. The substratum, to a depth of 65 inches, is yellowish red clay loam in the upper part and is mottled gray, strong brown, yellowish red, and yellowish brown clay loam, sandy loam, and loam in the lower part.

Important properties of the Luverne soil—

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

Included in mapping are a few small areas of Cowarts, Lucy, and Springhill soils. Also included are small areas of severely eroded soils. Cowarts and Lucy soils are on slightly higher parts of ridges. Cowarts soils are loamy throughout the profile. Lucy soils have thick sandy surface and subsurface layers. Springhill soils are in landscape positions similar to those of the Luverne soil. They are loamy throughout the profile. The included soils make up about 15 percent of the map unit, but individual areas generally are less than 5 acres in size.

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

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

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

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, poison ivy, huckleberry, muscadine grape, wax myrtle, and flowering dogwood.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment and plant competition. The clayey texture of the surface layer and subsoil restricts the use of equipment, especially when wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

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

This soil has good potential as habitat for openland and

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

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

LrC—Luverne-Arundel complex, 2 to 8 percent slopes

This map unit consists of very deep and moderately deep, well drained soils on narrow ridgetops and on side slopes in the uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Luverne soil makes up about 50 percent of the map unit, and the Arundel soil makes up about 35 percent. Slopes are generally short and complex. Individual areas range from 10 to 250 acres in size.

The very deep Luverne soil is generally on the smoother parts of ridges and in saddles between knolls. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsoil, to a depth of 36 inches, is yellowish red clay loam in the upper part; yellowish red clay in the next part; and yellowish red clay with brown and gray mottles in the lower part. The substratum, to a depth of 60 inches, is mottled yellowish red, yellowish brown, and light gray sandy loam.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Moderate
Flooding: None

The moderately deep Arundel soil is generally on higher parts of knolls and middle parts of side slopes. Typically, the surface layer is dark brown loamy sand about 3 inches thick. The subsurface layer, to a depth of 9 inches, is yellowish brown loamy sand. The subsoil, to a depth of 26 inches, is yellowish red clay that has mottles in shades of red and brown. The substratum, to a depth of 29 inches, is mottled yellowish red, gray, strong brown, and pale brown clay. The next layer is weathered siltstone or claystone bedrock.

Important properties of the Arundel soil—

Permeability: Very slow
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 20 to 40 inches
Root zone: 20 to 40 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Lucy and Springhill soils. Lucy soils are on high knolls and have thick sandy surface and subsurface layers. Springhill soils are in landscape positions similar to those of the Luverne soil. They are loamy throughout the profile. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

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

These soils are well suited for pasture and hay. Erosion is a hazard when the soil surface is bare during the establishment of pasture. Tillage should be on the contour or across the slope to reduce soil losses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the soil in good condition. Applications of lime and fertilizer improve soil fertility and increase the production of forage.

This map unit is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90 for the Luverne soil and 85 for the Arundel soil. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, huckleberry, wax myrtle, muscadine grape, and flowering dogwood.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment and plant competition. Using

standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition from undesirable plants can reduce the growth of trees and prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subseqrent growth.

The soils of this map unit are poorly suited to most urban uses. They have moderate to severe limitations for building sites, local roads and streets, and most kinds of sanitary facilities. The main limitations are the moderate to high shrink-swell potential, the moderately slow and very slow permeability, and low strength when used as sites for roads and streets. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of these soils to support a load. Septic tank absorption fields will not function properly because of the depth to rock and the moderately slow and very slow permeability. Enlarging the size of the absorption field or using an alternative method of sewage disposal helps to overcome these limitations.

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

These Luverne and Arundel soils are in capability subclass IVe. The woodland ordination symbol is 9C for the Luverne soil and 8C for the Arundel soil.

LsE—Luverne-Springhill complex, 10 to 35 percent slopes

This map unit consists of the very deep, well drained Luverne and Springhill soils. It is on side slopes of the highly dissected uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Luverne soil makes up about 50 percent of the map unit, and the Springhill soil makes up about 35 percent. Slopes are generally short and complex. Individual areas are irregular in shape. They range from 25 to 500 acres in size.

The Luverne soil is generally on the middle and lower parts of slopes. Typically, the surface layer is dark brown sandy loam about 3 inches thick. The subsoil, to a depth of 35 inches, is yellowish red clay. The substratum, to a depth of 65 inches, is stratified sandy loam and clay loam. Individual strata are yellowish red, light gray, and strong brown.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Moderate
Flooding: None

The Springhill soil is generally on upper parts of slopes and on narrow ridgetops. Typically, the surface layer is brown sandy loam about 5 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish red sandy loam. The subsoil, to a depth of 65 inches, is red sandy clay loam in the upper part and red sandy loam in the lower part.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Kinston, Lucy, and Troup soils. Cowarts soils are in landscape positions similar to those of the Springhill soil. They have a yellowish brown, loamy subsoil. The poorly drained Kinston soils are on narrow flood plains. Lucy and Troup soils are on the upper parts of side slopes. They have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

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

This map unit is poorly suited to pasture and hay. The main limitations are the slope, the low fertility, and the severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates,

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

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of greenbrier, poison oak, little bluestem, honeysuckle, wax myrtle, muscadine grape, American beautyberry, red maple, yellow jessamine, huckleberry, and flowering dogwood.

This map unit has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, and exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Cable yarding systems are safer and damage the soil less. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

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

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

The Luverne and Springhill soils are in capability subclass VIIe. The woodland ordination symbol is 9R.

MAA—Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes, frequently flooded

This map unit consists of the very deep, somewhat poorly drained Mantachie soil, the poorly drained Kinston soil, and the moderately well drained Iuka soil on flood plains. The soils are subject to flooding for brief periods several times each year. The composition of this map unit is variable, but the mapping was sufficiently controlled to evaluate the soils for the expected uses. Some areas mainly consist of Mantachie soils, some areas mainly consist of Iuka or Kinston soils, and other areas contain all three soils in variable proportions. Individual areas are usually long and narrow. They range from 5 to more than 1,000 acres in size.

The Mantachie soils make up about 35 percent of the map unit. They are in smooth, slightly convex positions at intermediate elevations on the flood plain. Typically, the surface layer is brown loam about 4 inches thick. The subsoil, to a depth of 65 inches, is mottled light gray, brownish yellow, and yellowish brown loam in the upper part and light gray sandy clay loam and clay loam in the lower part.

Important properties of the Mantachie soil—

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

The Kinston soils make up about 30 percent of the map unit. They are in flat to concave positions, generally at the lowest elevations on the flood plain. Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The substratum, to a depth of 65 inches, is grayish brown loam in the upper part, dark gray sandy clay loam in the next part, and gray loam in the lower part.

Important properties of the Kinston soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 0 to 1.0 foot, from December through April
Shrink-swell potential: Low
Flooding: Frequent

The Iuka soils make up about 25 percent of the map unit. They are on the higher, more convex parts of the flood plain. Typically, the surface layer is dark yellowish brown loam about 4 inches thick. The substratum, to a depth of 65 inches, is brownish yellow fine sandy loam

that has light gray mottles in the upper part, light gray loamy sand in the next part, and gray sandy loam in the lower part. Mottles in shades of yellow, brown, and gray are common throughout the profile.

Important properties of the Iuka soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.0 to 3 feet, from December through April
Shrink-swell potential: Low
Flooding: Frequent

Included in mapping are a few small areas of Bonneau, Cahaba, and Eunola soils. The well drained Bonneau and Cahaba soils and the moderately well drained Eunola soils are on low knolls or remnants of terraces at slightly higher elevations. They are not subject to frequent flooding. Also included are small areas of very poorly drained soils in depressions that are subject to ponding. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

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

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

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of this map unit include American sycamore, yellow-poplar, water oak, green ash, and sweetgum. On the basis of a 50-year site curve, the mean site index for loblolly pine is 100 for the Mantachie, Iuka, and Kinston soils. The understory vegetation consists mainly of sweetgum, blackgum, panicums, sweetbay, green ash, and red maple.

This map unit has severe limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on beds and increasing the tree planting rate. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is not suited to most urban uses. The flooding and wetness are severe limitations for most uses. Although it is generally not feasible to control flooding, buildings can be placed on pilings or on well-compacted fill to elevate them above the expected flood level.

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

Mantachie, Kinston, and Iuka soils are in capability subclass Vw. The woodland ordination symbol for each soil is 11W.

NaE—Nankin flaggy loamy sand, 15 to 25 percent slopes

This very deep, well drained soil is on narrow ridges and side slopes in the uplands. Most areas are dissected by deeply incised intermittent drainageways. Slopes are generally short and complex. Individual areas are irregular in shape. They range from 25 to more than 200 acres in size.

Typically, the surface layer is dark brown flaggy loamy sand about 4 inches thick. The subsoil, to a depth of 50 inches, is yellowish red sandy clay in the upper part and mottled yellowish red, yellowish brown, and gray clay in the lower part. The substratum, to a depth of 65 inches, is stratified yellowish red and gray sandy loam and sandy clay loam. Thin strata of ironstone occur in the substratum of most pedons.

Important properties of the Nankin soil—

Permeability: Moderately slow
Available water capacity: Moderate
Natural fertility: Low
Organic matter content: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches

Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Kinston, Springhill, and Troup soils. Cowarts and Springhill soils are in landscape positions similar to those of the Nankin soil. They are loamy throughout the profile. The poorly drained Kinston soils are on narrow flood plains. Troup soils are on the upper parts of slopes. They have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

Most areas of this soil are used as woodland. A few small areas are used for pasture.

This soil is not suited to cultivated crops, mainly because the slopes are too steep and the hazard of erosion is too severe. The irregular slope, the high content of rock fragments in the surface layer, and the low fertility are additional limitations.

This soil is poorly suited to pasture and hay. The main limitations are the slope, the content of rock fragments in the surface layer, the low fertility, and the severe hazard of erosion. The steeper areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation consists mainly of poison oak, muscadine grape, huckleberry, flowering dogwood, little bluestem, and panicums.

This soil has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, and exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Harvesting activities should be planned during seasons of the year when the soil is dry. The moderate seedling mortality rate can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

This soil is poorly suited to most urban uses. Slope is the main limitation. Other limitations include the moderately slow permeability and the rock fragments in the surface layer.

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

This Nankin soil is in capability subclass VIIe. The woodland ordination symbol is 8R.

NeC2—Nankin-Greenville complex, 3 to 8 percent slopes, eroded

This map unit consists of the very deep, well drained Nankin and Greenville soils on narrow ridgetops and on side slopes in the uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Nankin soils make up about 50 percent of the unit, and the Greenville soils make up about 35 percent. In most areas, the surface layer of these soils is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes are generally long and smooth, but some are short and complex. Individual areas are irregular in shape. They range from 10 to 250 acres in size.

Nankin soils are generally on the slightly higher, more convex parts of ridgetops and on slope breaks. Typically, the surface layer is reddish brown sandy clay loam about 7 inches thick. The subsoil, to a depth of 51 inches, is red sandy clay in the upper part and red sandy clay loam in the lower part. The substratum, to a depth of 65 inches, is mottled red, reddish yellow, and light gray sandy clay loam.

Important properties of the Nankin soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Greenville soils are generally on the smoother parts of ridgetops. Typically, the surface layer is dark reddish

brown sandy clay loam about 6 inches thick. The subsoil, to a depth of 65 inches, is dark red sandy clay.

Important properties of the Greenville soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Lucy, and Springhill soils. Cowarts and Springhill soils are on slightly higher knolls and are loamy throughout the profile. Lucy soils are in slightly higher landscape positions and have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is poorly suited to cultivated crops. The slope, the low fertility, and the severe hazard of erosion are the main limitations. Sheet and rill erosion are evident in most areas, and shallow gullies are common. The surface layer of these soils is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Drop-inlet structures, installed in grassed waterways, help to prevent gullying. Returning all crop residue to the soil helps to maintain tilth, reduces crusting, and increases the water-holding capacity. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is suited to pasture and hay (fig. 9). Bahiagrass and coastal bermudagrass are the commonly grown grasses. The main management concerns are the low fertility and the severe hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Applications of lime and fertilizer improve fertility and increase the production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine for these soils is 85. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, huckleberry, sumac, muscadine grape, and flowering dogwood.

This map unit has few limitations affecting woodland management; however, competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Proper site preparation practices, such as chopping, burning, and applying herbicide, help to control the initial plant competition and facilitate mechanical planting. Management activities should include conservation practices to control soil erosion. Roads and landings can be protected from erosion by constructing diversions and by seeding cuts and fills.

This map unit is suited to most urban uses. It has slight limitations for building sites and local roads and streets and has moderate to severe limitations for most kinds of sanitary facilities. The main limitations are the moderate and moderately slow permeability. Septic tank absorption fields may not function properly because of the moderate and moderately slow permeability. Increasing the size of the absorption area or using an alternate system of waste disposal helps to overcome this limitation. Absorption lines should be installed on the contour.

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

The Nankin and Greenville soils are in capability subclass IVe. The woodland ordination symbol is 8A.

OkC2—Oktibbeha clay, 2 to 5 percent slopes, eroded

This very deep, moderately well drained soil is on ridgetops in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

Typically, the surface layer is reddish brown clay about 6 inches thick. The subsoil, to a depth of 60 inches, is red clay in the upper part; mottled strong brown, yellowish

Figure 9.—An area of Nankin-Greenville complex, 3 to 8 percent slopes, eroded. This map unit is well suited to pasture and hay. The bahiagrass protects the soil from erosion and provides forage for livestock.

brown, red, and gray clay in the next part; and mottled light gray, brown, and yellowish brown clay in the lower part. Soft masses of calcium carbonate occur in the lower part.

Important properties of the Oktibbeha soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Very high
Flooding: None

Included in mapping are a few small areas of Conecuh and Luverne soils. Conecuh and Luverne soils are on slightly higher parts of slopes. They do not have alkaline materials within a depth of 60 inches. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is suited to most cultivated crops. The main limitations are the poor tilth and the hazard of erosion. Erosion is a severe hazard when this soil is cultivated. Sheet and rill erosion are evident in most areas and shallow gullies are common. This soil can be worked only

within a narrow range of moisture content and becomes cloddy if farmed when it is too wet or too dry. Conservation tillage, terraces, contour farming, and cover crops help to reduce the runoff rate and control erosion. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the water-holding capacity.

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

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, and hawthorns.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned during seasons of the year when the soil is dry. Planting rates can be increased to compensate for the high rate of seedling mortality. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation without intensive site preparation and maintenance. Site preparation controls the initial plant competition, and herbicides can be used to control the subsequent growth.

This soil is poorly suited to most urban uses. It has severe limitations for building sites, local roads and streets, and most kinds of sanitary facilities. The main limitations are the very high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Properly designing foundations and footings and diverting runoff water away from the buildings helps to prevent the structural damage that results from shrinking and swelling. Roads and streets can be built if they are designed to compensate for the instability of the subsoil. Septic tank absorption fields will not function properly because of the very slow permeability. An alternate method of waste disposal is needed to dispose of sewage properly.

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

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

OrB—Orangeburg loamy sand, 2 to 5 percent slopes

This very deep, well drained soil is on ridgetops and on upper parts of side slopes in the uplands. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 5 to more than 100 acres in size.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam in the upper part and red sandy clay loam in the lower part. In a few areas, the surface layer is sandy loam.

Important properties of the Orangeburg soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Dothan, Fuquay, Greenville, and Lucy soils. Dothan soils are in slightly lower landscape positions than the Orangeburg soil. They have a yellowish brown subsoil. Fuquay and Lucy soils are in slightly higher landscape positions and have thick sandy surface and subsurface layers. Greenville soils are in landscape positions similar to those of the Orangeburg soil. They have a dark red, clayey subsoil. Included soils make up about 10 percent of the map unit, but individual areas generally are less than 5 acres in size.

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

This soil is well suited to cultivated crops. The main

Figure 10.—Soybeans in an area of Orangeburg loamy sand, 2 to 5 percent slopes. This soil is classified as prime farmland, and it is well suited to cultivated crops. The soybeans have been planted on the contour to minimize erosion.

limitations are the low fertility and the moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion (fig. 10). Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

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

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation consists mainly of little bluestem, panicums, sumac, yellow jessamine, huckleberry, greenbrier, and flowering dogwood.

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

This soil is well suited to most urban uses, and it has no significant limitations for these uses.

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

This Orangeburg soil is in capability subclass IIe. The woodland ordination symbol is 8A.

Pt—Pits

This map unit consists of open excavations from which the original soil and underlying material has been removed for use at another location. Pits are scattered throughout the county. Individual areas are generally rectangular in shape and range from 2 to 25 acres in size.

In upland areas, this map unit has provided a source of material for constructing highways and foundations and has provided fill material. In the uplands, Pits are mainly in areas of Alaga, Greenville, Lucy, Orangeburg, Springhill, and Troup soils. The soils have been removed to a depth of 5 to 25 feet. On stream terraces, this map unit has provided a source of sand and gravel. Pits on stream terraces are mainly in areas of Bonneau, Cahaba, and Eunola soils. The soils have been removed to a depth of 5 to 15 feet.

Included in this map unit are areas of abandoned pits. These areas consist of pits and spoil banks that are 10 to 25 feet high. The surface of these areas generally is a mixture of coarse sand and gravel. Reaction is extremely acid or very strongly acid.

Most areas of this map unit support no vegetation. A few low-quality trees and sparse stands of grass are in some of the abandoned pits. This map unit is unsuited to most uses. Extensive reclamation efforts are required to make areas suitable for use as cropland, pasture, or woodland or for urban uses.

This map unit is in capability subclass VIIIs. It is not assigned a woodland ordination symbol.

SpC2—Springhill sandy loam, 5 to 8 percent slopes, eroded

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes are generally short and complex but may be long and smooth in some areas. Individual areas are irregular in shape. They range from 5 to more than 100 acres in size.

Typically, the surface layer is brown sandy loam about 5 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish red sandy loam. The subsoil, to a depth of 65 inches, is red sandy clay loam in the upper part and red sandy loam in the lower part.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Lucy, Luverne, and Orangeburg soils. Cowarts and Orangeburg soils are in landscape positions similar to those of the Springhill soil. Cowarts soils have a brownish subsoil. The subsoil of Orangeburg soils does not have a significant decrease in clay content within a depth of 60 inches. Lucy soils are on slightly higher parts of ridges and have thick sandy surface and subsurface layers. Luverne soils are on lower parts of slopes and are clayey in the upper part of the subsoil. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This soil is suited to cultivated crops. The main limitations are the short, complex slopes, the low fertility, and a severe hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Sheet and rill erosion are evident in most areas and large gullies are common (fig. 11). Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Drop-inlet structures, installed in grassed waterways, help to prevent

Figure 11.—A deep gully in an area of Springhill sandy loam, 5 to 8 percent slopes, eroded. Gullies form rapidly in unvegetated areas where the flow of surface water is concentrated.

gullying. Returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This soil is well suited to pasture and hay. The main limitations are the low fertility and the severe hazard of erosion. Grasses such as coastal bermudagrass and bahiagrass are well suited. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve soil fertility and promote the good growth of forage plants.

This soil is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation consists mainly of little bluestem, panicums, sumac, greenbrier, huckleberry, and flowering dogwood.

This soil has few limitations affecting woodland management; however, competition from understory

plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicide, help to control the initial plant competition and facilitate mechanical planting.

This soil is well suited to most urban uses. It has slight limitations for most uses; however, the hazard of erosion and seepage are concerns. Only the part of the site that is used for construction should be disturbed. Effluent from absorption fields can surface in downslope areas and create a hazard to health.

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

This Springhill soil is in capability subclass IVe. The woodland ordination symbol is 9A.

SuC—Springhill-Urban land complex, 2 to 8 percent slopes

This map unit consists of the very deep, well drained Springhill soil and areas of Urban land. The areas are so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Springhill soil makes up about 50 percent of the map unit, and the Urban land makes up about 40 percent. Individual areas are rectangular in shape. They range from 5 to more than 100 acres in size.

Typically, the surface layer of the Springhill soil is dark grayish brown sandy loam about 5 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish red sandy loam. The subsoil, to a depth of 65 inches, is red sandy clay loam in the upper part and red sandy loam in the lower part.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Lucy and Luverne soils. Also included are areas of soils that have been manipulated to such an extent that the soil series cannot be identified. Lucy soils are in slightly higher landscape positions than the Springhill soil. They have thick sandy surface and subsurface layers. Luverne soils are in slightly lower landscape positions. They have a clayey subsoil. Included soils make up about 10 percent of the map unit, but individual areas generally are less than 5 acres in size.

Areas of the Springhill soil cannot be easily managed for crops, pasture, or timber or as wildlife habitat because of the limited size of the areas, the intermittent areas of Urban land, and areas of highly disturbed soils.

Areas of the Springhill soil are well suited to most urban uses. The soil has no significant limitations for these uses.

This map unit is not assigned to a capability subclass or a woodland ordination symbol.

TaE—Troup loamy sand, 8 to 20 percent slopes

This very deep, somewhat excessively drained soil is on narrow ridges and side slopes in the uplands. Slopes are generally short and complex. Individual areas are irregular in shape. They range from 10 to 250 acres in size.

Typically, the surface layer is brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 46 inches, is yellowish brown, light yellowish brown, and very pale brown loamy sand. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Alaga, Kinston, Lucy, Luverne, and Springhill soils. Alaga soils are in landscape positions similar to those of the Troup

soil. They are sandy to a depth of 80 inches or more. The poorly drained Kinston soils are in narrow drainageways. Lucy and Springhill soils are on the upper parts of slopes. Lucy soils have sandy surface and subsurface layers ranging from 20 to 40 inches thick. Springhill soils do not have thick sandy surface and subsurface layers. Luverne soils are on the lower parts of slopes. They do not have thick sandy surface and subsurface layers, and they have a clayey subsoil. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

Most areas of this soil are used as woodland. A few areas are used for pasture or hay.

This map unit is not suited to most cultivated crops. The complex topography and the moderately sloping to moderately steep slopes are severe limitations for the use of equipment. Erosion is a severe hazard. The sandy texture and droughtiness are additional limitations. If the soils are cultivated, all tillage should be on the contour or across the slope.

This soil is poorly suited to pasture and hay. The complex slopes, droughtiness, and the severe hazard of erosion are the main limitations. The low available water capacity of the soil limits the production of plants suitable for pasture. Only plants that are drought-tolerant should be planted. The seedbed should be prepared on the contour or across the slope if practical.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation consists mainly of water oak, flowering dogwood, sweetgum, panicums, prickly pear, little bluestem, greenbrier, and poison oak.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned during seasons of the year when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire.

This soil is poorly suited to most urban uses. It has moderate to severe limitations for building sites, local roads and streets, and most kinds of sanitary facilities. The main limitations are the slope and seepage. Additional management concerns include the thick sandy surface layer, the low fertility, the low available water capacity, and the hazard of erosion. If buildings are constructed, only the part of the site that is used for construction should be disturbed. Cutbanks are unstable and are subject to slumping. Effluent from absorption fields can surface in downslope areas and create a hazard to health. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has fair potential as habitat for openland wildlife, poor potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife. The low available water capacity and the low fertility are limitations for improving habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey. Habitat for openland wildlife can be improved by leaving undisturbed areas of vegetation around cropland and pasture to provide food and nesting areas.

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

TgC—Troup-Alaga complex, 2 to 8 percent slopes

This map unit consists of the very deep, somewhat excessively drained Troup and Alaga soils. It is on narrow ridgetops and on side slopes in the uplands. The soils occur as areas so intricately intermingled that they could not be separated at the scale selected for mapping. The Troup soil makes up about 50 percent of the map unit, and the Alaga soil makes up about 35 percent. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to more than 100 acres in size.

The Troup soil is generally on the higher parts of ridgetops and on the upper parts of side slopes. Typically, the surface layer is brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 54 inches, is yellowish brown and pale brown loamy sand. The subsoil, to a depth of 80 inches, is yellowish red sandy loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches

Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

The Alaga soil is generally on the lower parts of ridgetops and on lower parts of side slopes. Typically, the surface layer is brown loamy sand about 6 inches thick. The substratum, to a depth of 90 inches, is brownish yellow loamy sand in the upper part and strong brown loamy sand and sand in the lower part.

Important properties of the Alaga soil—

Permeability: Rapid
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Lucy and Orangeburg soils. Lucy soils are in landscape positions similar to those of the Troup soil. They have a sandy texture to a depth of 20 to 40 inches. Orangeburg soils are on rounded knolls at slightly higher elevations, and they do not have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is poorly suited to most cultivated crops. The main limitations are the low available water capacity, the low fertility, and the hazard of erosion. Conservation tillage, contour farming, and cover crops reduce the runoff rate and help to control erosion. Returning all crop residue to the soil helps to maintain tilth and increases the water-holding capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

These soils are suited to pasture and hay. Coastal bermudagrass and bahiagrass are well suited (fig. 12). The main limitations are the low fertility, the low available water capacity, and the hazard of erosion. The leaching of plant nutrients is a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition. Tillage should be on the contour or across the slope.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine and shortleaf pine. On the basis of a 50-year site curve, the mean site index for loblolly pine on these soils is 80. The understory vegetation consists mainly of turkey oak, sandjack oak, bracken fern, common persimmon, poison oak, prickly pear, little bluestem, and panicums.

This map unit has moderate limitations for the management of timber. The main limitations are the restricted use of equipment, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soils are very dry. Harvesting activities should be planned during seasons of the year when the soils are moist. The moderate seedling mortality rate can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire.

These soils are suited to most urban uses. They have slight limitations for building sites and local roads and streets and slight to severe limitations for most kinds of sanitary facilities. The main limitation is seepage. Effluent from absorption fields can surface in downslope areas and create a hazard to health. The sandy texture, the low fertility, and the low available water capacity are additional concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

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

The Alaga and Troup soils are in capability subclass IVs. The woodland ordination symbol is 8S.

TvE—Troup-Luverne complex, 8 to 20 percent slopes

This map unit consists of the very deep, somewhat excessively drained Troup soil and the very deep, well drained Luverne soil. It is on narrow ridges and on side slopes in the uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Troup soil makes up about 45 percent of the map unit, and the Luverne soil makes up about 35 percent. Slopes are generally short and complex. Individual areas are irregular

Figure 12.—An area of Troup-Alaga complex, 2 to 8 percent slopes. Drought-tolerant grasses, such as coastal bermudagrass, are well suited to these sandy soils.

in shape. They range from 40 to more than 100 acres in size.

The Troup soil is generally on the upper parts of slopes. Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer, to a depth of 54 inches, is yellowish brown and pale brown loamy sand. The subsoil, to a depth of 65 inches, is red sandy loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Low
Flooding: None

The Luverne soil is generally on the lower parts of slopes. Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsurface layer, to a depth of 10 inches, is light yellowish brown sandy loam. The subsoil, to a depth of 50 inches, is red clay in the upper part and yellowish red clay loam in the lower part. The substratum, to a depth of 65 inches, is stratified red, gray, and strong brown sandy clay loam and sandy loam.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low

Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Alaga, Kinston, and Springhill soils. Also included are soils that have slopes of less than 8 percent or more than 20 percent. Alaga soils are in landscape positions similar to those of the Troup soil. They are sandy to a depth of more than 80 inches. The poorly drained Kinston soils are in narrow drainageways. Springhill soils are on the upper parts of slopes and on narrow ridges. They are loamy throughout the profile. Included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres in size.

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

This map unit is not suited to most cultivated crops. The complex topography and the moderately sloping to moderately steep slopes are limitations for the use of equipment. Erosion is a severe hazard. The sandy texture and droughtiness are additional limitations in areas of the Troup soil. If the soils are cultivated, all tillage should be on the contour or across the slope.

This map unit is poorly suited to pasture and hay. The complex slopes, droughtiness, and the severe hazard of erosion are the main limitations. The use of equipment is restricted by the sloping, complex topography and the sandy texture of the Troup soil. The seedbed should be prepared on the contour or across the slope if practical. Drought-tolerant grasses, such as coastal bermudagrass and bahiagrass, are well suited. Proper stocking rates, pasture rotation, and restricted grazing during very wet or very dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine and slash pine. Other species that commonly grow in areas of these soils include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80 for the Troup soil and 90 for the Luverne soil. The understory vegetation consists mainly of water oak, flowering dogwood, sweetgum, bracken fern, prickly pear, panicums, little bluestem, poison oak, and greenbrier.

This map unit has moderate limitations for the management of timber. The main limitations are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion. Exposed soil surfaces are subject to rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The moderate seedling mortality rate in areas of the Troup soil is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition from undesirable plants reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed fire.

This map unit is poorly suited to most urban uses. It has severe limitations for building sites, local roads and streets, and most kinds of sanitary facilities. The main limitations are the slope and the moderately slow permeability in the Luverne soil. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut-slopes are stabilized. The moderately slow permeability of the Luverne soil increases the probability that septic tank absorption fields will fail. Effluent from absorption areas may surface in downslope areas and create a hazard to health. Alternative methods of sewage disposal should be used, or the absorption lines should be constructed in areas of the Troup soil.

This map unit has fair potential as habitat for openland wildlife in areas of the Troup soil and good potential in areas of the Luverne soil. It has poor potential as habitat for woodland wildlife in areas of the Troup soil and good potential in areas of the Luverne soil. The map unit has very poor potential as habitat for wetland wildlife. Habitat can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers. Areas of the Luverne soil are best suited for pond construction.

The Troup and Luverne soils are in capability subclass VIIe. The woodland ordination symbol is 8S for the Troup soil and 9C for the Luverne soil.

UdB—Udorthents, gently sloping, smooth

These very deep soils are on uplands. They formed in mixed, loamy and clayey material in areas that were stripmined for brown iron ore and then reclaimed. Most areas have been smoothed to the general land contours that existed before the mining, but no efforts were made to replace the original layers of soil and underlying material. Little of the original soil material, which consisted primarily

Figure 13.—An area of Udorthents, rolling, rough. Areas of this map unit are poorly suited to most uses unless they are reclaimed.

of Greenville, Luverne, Nankin, and Springhill soils, is recognizable in the soil profile because of mixing during reclamation.

Most areas of these soils are rectangular in shape and range from 5 to more than 50 acres in size. Slopes range from 2 to 8 percent. They are generally long and smooth but may be short and complex. These soils are highly variable within a short distance, and they may be clayey, loamy, or stratified with various textures. The content of ironstone fragments is also highly variable, and the fragments range in size from gravel to boulders.

Included in mapping are a few small areas of unaltered soils, mostly Greenville, Luverne, Nankin, and Springhill soils. They are generally on the edges of mapped areas. Included soils make up less than 10 percent of the map unit.

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

This map unit is generally poorly suited to most agricultural and urban uses. The limitations for plant growth include poor tilth, low fertility, low content of organic matter, and droughtiness. The limitations for most urban uses include slow permeability, a high content of rock fragments, and the variable soil textures. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

These Udorthents are in capability subclass IVe. The woodland ordination symbol is 7D.

UdE—Udorthents, rolling, rough

These very deep soils are on uplands. They formed in mixed, loamy and clayey material in areas that have been stripmined for brown iron ore and were not reclaimed. Most areas consist of a series of long, narrow, parallel ridges or piles of loamy and clayey material that have a high content of ironstone fragments. Little of the original soil material, which consisted primarily of Greenville, Luverne, Nankin, and Springhill soils, is recognizable in the soil profile because of mixing during mining activities.

Most areas of these soils are rectangular in shape and range from 10 to more than 100 acres in size. Slopes range from 8 to 35 percent. Deep gullies are common throughout most areas. These soils are highly variable within a short distance, and they may be clayey, loamy, or stratified with various textures. The content of ironstone fragments is also highly variable, and the fragments range in size from gravel to boulders.

Included in mapping are a few small areas of unaltered soils, mostly Greenville, Luverne, Nankin, and Springhill soils. They are generally on the edges of delineations. Included soils make up about 10 percent of the map unit.

Most areas of this map unit are idle and have reverted to poor quality woodland (fig. 13). Loblolly pine, shortleaf pine, longleaf pine, sweetgum, and yellow-poplar are the common trees.

This map unit is generally poorly suited to most agricultural and urban uses and is poorly suited to woodland. The steep, irregular landscape and extreme variability of the soils are limitations for most uses. Additional limitations include poor tilth, low fertility, low content of organic matter, droughtiness, and a high content of rock fragments. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

These Udorthents are in capability subclass VIIe. The woodland ordination symbol is 6D.

Un—Urban land

This map unit consists mainly of high-density residential areas and commercial and industrial developments. Generally, these areas have been graded and smoothed. In most areas, the original soils were altered beyond recognition or are covered by buildings or pavement. The original soils were altered by cutting and filling, shaping and grading, compacting, or covering with concrete and asphalt. Individual areas are generally less than 25 acres in size. They are in the Brundidge and Troy areas.

Included in mapping are a few small areas of unaltered soils, mostly Greenville, Lucy, Luverne, Nankin, and Springhill soils. These soils generally make up less than 10 percent of the map unit.

Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

This map unit is in capability subclass VIIIs. It is not assigned a woodland ordination symbol.

Prime Farmland

In this section, prime farmland is defined, and the soils in Pike County that are considered prime farmland are listed.

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

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

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

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are frequently flooded during the growing season. The slope ranges mainly from 0 to 8 percent.

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

The soils identified as prime farmland in Pike County are:

CaA Cahaba sandy loam, 0 to 2 percent slopes
CmB Compass loamy sand, 1 to 3 percent slopes
DoB Dothan sandy loam, 1 to 3 percent slopes
EuA Eunola loamy sand, 0 to 2 percent slopes, occasionally flooded
GrB2 Greenville sandy clay loam, 1 to 3 percent slopes, eroded
OkC2 Oktibbeha clay, 2 to 5 percent slopes, eroded
OrB Orangeburg loamy sand, 2 to 5 percent slopes
SpC2 Springhill sandy loam, 5 to 8 percent slopes, eroded

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

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

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

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

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Michael C. Harris and Kenneth M. Rogers, conservation agronomists, Natural Resources Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed for each soil, the system of land capability classification used by the Natural Resources Conservation Service is explained, and the crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1982, approximately 78,000 acres of cropland and 76,000 acres of pasture were in Pike County *(18)*. Approximately 19,000 acres of peanuts, 9,500 acres of corn, 9,300 acres of soybeans, 3,000 acres of grain sorghum, 2,400 acres of cotton, and 4,500 acres of wheat were planted in Pike County in 1984. Also, 8,500 acres of hay and 560,000 pounds of pecans were harvested *(2)*. The total acreage used for cultivated crops and pasture has been decreasing slightly for several years. The trend is toward the conversion of marginal cropland to woodland throughout the county.

The potential in Pike County for the increased production of food and fiber is good. About 80,000 acres of land that that is currently used for pasture and woodland is potentially good cropland. The yields can be increased in cultivated areas if the most current technology is applied. This soil survey can help land users make sound land management decisions and facilitate the application of crop production technology.

The field crops that are suited to the soils and climate in Pike County include many crops that are not commonly grown because of economic considerations. Peanuts, corn, cotton, and soybeans are the main row crops. Grain sorghum, vegetable crops, and similar crops can be grown if economic conditions are favorable. Wheat, rye, and oats are the only close-growing crops planted for grain production, although barley and triticale can be grown. The specialty crops grown in the county include sweet corn, peas, okra, melons, sod, and alfalfa. Many of the soils in the survey area, including Cahaba, Dothan, Greenville, Lucy, and Orangeburg soils, are well suited to specialty crops. If economic conditions are favorable, a large acreage of these crops can be grown. Pecans and peaches are the only orchard crops that are grown

commercially in the county. Additional information regarding specialty crops can be obtained from the local office of the Cooperative Extension Service or the Natural Resources Conservation Service.

Soil erosion is a major management concern on about one-half of the cropland in Pike County. In areas where the slope is more than two percent, erosion is a potential hazard. Cowarts, Dothan, Greenville, Orangeburg, and Springhill soils are some of the sloping soils that are presently cultivated and that are subject to erosion.

Soil erosion can reduce productivity and can result in the pollution of streams. Productivity is reduced as the surface layer of the soil erodes and more of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Conecuh, Greenville, Nankin, and Oktibbeha soils, and on soils that have a plinthic layer in the subsoil that restricts rooting depth, such as Dothan soils. Controlling erosion on farmland minimizes the pollution of streams and improves the quality of water for municipal uses, for recreational uses, and for fish and wildlife.

Erosion-control practices provide a protective plant cover, increase the rate of water infiltration, and help to control runoff. A cropping system that keeps plant cover and crop residue on the surface for extended periods can hold soil losses to amounts that will not reduce the productive capacity of the soils. Including grasses and legumes in the cropping system helps to control erosion in sloping areas and improves tilth for the crops that follow in the rotation. The legumes also increase the nitrogen levels in the soils.

Applying a system of conservation tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. Using a no-till method of planting reduces the hazard of erosion in sloping areas, and this practice is suitable on most of the soils in the county.

Terraces and diversions help to control runoff and erosion. They are most practical on very deep, well drained soils that have uniform slopes, such as Cowarts, Dothan, Greenville, and Springhill soils. Sandy soils, such as Bonifay, Fuquay, Lucy, and Troup soils, are not suited to terracing because gullies form easily when water is concentrated on the surface. Grassed waterways or underground tile outlets are essential in areas where terraces and diversions are installed. Diversions can be used to intercept surface runoff from hilly uplands and to divert the water around the fields to vegetated disposal areas.

Contour farming is a very effective erosion-control method in cultivated areas when it is used in conjunction with a water-disposal system. It is best suited to soils that have smooth, uniform slopes, such as Conecuh, Dothan, Greenville, Orangeburg, and Springhill soils.

Soil blowing can be a management concern in early spring on some upland soils, especially if the soils are dry and are not protected by a plant cover. The hazard of erosion is generally highest after the seedbed has been prepared, after planting, and when the plants are small. Tillage methods that leave crop residue on the surface reduce the hazard of soil blowing. Conventional planting practices should include an implement that scratches the surface, leaving a rough, irregular pattern. Also, strips of close-growing crops are effective as windbreaks. If possible, seedbed preparation should be delayed until after March, which is generally windy. Additional information regarding the design of erosion-control practices is available at the local office of the Natural Resources Conservation Service.

Pike County has an adequate amount of rainfall for the crops commonly grown. Prolonged periods of drought are rare, but the distribution of rainfall during spring and summer generally results in droughty periods during the growing season in most years. Irrigation may be needed during these periods to reduce plant stress. Most of the soils that are commonly used for cultivated crops are suitable for irrigation; however, the amount of water applied should be regulated to prevent excessive runoff. Some soils, such as Conecuh, Greenville, and Nankin soils, have a slow rate of water infiltration that limits their suitability for irrigation.

Most of the soils used for crops in Pike County have a surface layer of sandy loam which is light in color and has a low content of organic matter. Regular additions of crop residue, manure, and other organic material can improve the soil structure and reduce crust formation, thus improving the rate of water infiltration.

Natural fertility is low in most of the soils in Pike County. All of the soils require applications of agricultural limestone to neutralize soil acidity. The crops grown in the county respond well to applications of lime and fertilizer. The levels of available phosphorus and potash are generally low in most of the soils; however, some fields may have a buildup of phosphorus or potassium because of past applications of commercial fertilizer. Therefore, all applications of lime and fertilizer should be based on the results of a soil test. Leaching is a concern in areas of sandy soils, such as Bonifay, Bonneau, Fuquay, Lucy, and Troup soils. Higher levels of nitrogen, applied in split applications, should be used on these soils. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil wetness is a management concern in areas of Kinston and Mantachie soils. A drainage system is needed to minimize the harmful effects of excess wetness. Flooding during the growing season is also a concern in areas of these soils. Planting dates may be delayed and crops are damaged in some years because of flooding.

Bahiagrass and coastal bermudagrass are the main perennial grasses grown for pasture and hay in Pike County. Rye, ryegrass, oats, and wheat are grown as annual cool-season grass forage. Millets, sorghums, and hybrid forage sorghums provide most of the annual warm-season grass forage. These annuals are generally grown in areas of cropland for temporary grazing or for hay. Arrowleaf clover, crimson clover, ball clover, and other cool-season forage legumes are suited to most of the soils in the county, especially if agricultural limestone is applied in proper amounts. Alfalfa, a warm-season legume, is well suited to well drained soils, such as Dothan, Greenville, Orangeburg, and Springhill soils.

Several management practices are needed on all of the soils that are used for pasture and hay production. These practices include proper stocking rates, control of weeds, proper fertilization, rotation grazing, and scattering of animal droppings. Overgrazing, low rates of fertilization, and acid soils are the main concerns for pasture management. They can result in weak plants and poor stands that are quickly infested with weeds. Maintaining a good, dense cover that has the desired pasture species will prevent weeds from becoming established.

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 tables 6 and 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the tables are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class.

They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

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

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 and IIIe-6.

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 6.

Landscaping and Gardening

Kenneth M. Rogers and Michael C. Harris, conservation agronomists, Natural Resources Conservation Service, helped to prepare this section.

The land in residential areas is used primarily as homesites and for driveways and streets. Remaining areas of each lot are commonly used for lawns, which enhance the appearance of the home; as gardens for vegetables or flowers and shrubs; as orchards for fruits and nuts; for recreational uses; as habitat for animals and birds; for trees, which provide shade and promote energy conservation; for vegetation and structures designed to abate noise, enhance privacy, and provide protection from the wind; and for septic tank absorption fields. Because the outdoor areas are used for several purposes, careful planning and a good understanding of the soils are important.

This section contains general soil-related information for landscaping and gardening. Other information, especially that which is not directly related to the soils, may be obtained from the local office of the Cooperative Extension Service, the Natural Resources Conservation Service, and private businesses that provide landscaping and related services. The amount of soil information needed for some areas is beyond the scope of this survey and is more detailed than the map scale used. For this reason, onsite investigation is recommended.

Most of the soils in the residential areas of Pike County have been disturbed to some degree during construction of houses, streets, driveways, and utility service. This construction involved cutting and filling, grading, and excavating. As a result, soil properties are more variable and less predictable than they are in undisturbed areas. Onsite examination is necessary in planning land uses for soils in disturbed areas.

Some of the poorest soils for plant growth are Arundel, Conecuh, Greenville, Luverne, and Nankin soils that had the surface layer removed during grading. The exposed, dense, firm subsoil restricts root penetration, absorbs little rainfall, and results in excessive runoff. These conditions are common where these soils and similar soils are mapped as a complex with Urban land. Incorporating organic matter into the soil improves tilth, increases the rate of water infiltration, and provides a more desirable rooting medium. Areas that are subject to intensive foot traffic should be covered with gravel or a mulch, such as pine bark or wood chips.

Some soils, such as Kinston and Mantachie soils, are wet. Wetness limits the selection of plants to those that are tolerant of a high moisture content in the soil. Several methods can be used to minimize the effects of soil wetness. Installing underground tile drains can lower the water table in permeable soils. Bedding the surface layer of these soils helps to provide a satisfactory root zone for some plants.

Kinston, Iuka, and Mantachie soils are subject to flooding, and consideration should be given to the effects of floodwater. Surface drainage is a management concern because urban uses often result in increased surface runoff rates, which increase the frequency and severity of flooding. Advice and assistance in solving drainage problems can be obtained from the Natural Resources Conservation Service, municipal and county engineering departments, and private engineering companies.

Sandy soils, such as Bonifay, Bonneau, Fuquay, Lucy, and Troup soils, are droughty, have low fertility, and have a low content of organic matter. Droughtiness limits the selection of plants that will grow unless irrigation is provided. Additions of organic matter increase the water-holding capacity and help to retain nutrients in the rooting zone. Supplemental watering and split applications of plant nutrients are recommended. Using a mulch, such as pine bark, wood chips, or pine straw, or incorporating peat moss or well-decomposed manure into the soil provides a more desirable medium for plant growth.

Natural fertility is low in most of the soils in Pike County. Most of the soils are strongly acid or very strongly acid. Additions of ground limestone are needed to neutralize the acidity of most of the soils. The original surface layer contains the most plant nutrients and has the most favorable pH for most plants. In many areas, fertility of the

surface layer has been improved by applications of lime and fertilizer. If the surface layer is removed during construction, the remaining soil is very acid and is low in available plant nutrients. Also, some nutrients are unavailable for plant growth in acid soil conditions. Disturbed soils generally need large amounts of lime and fertilizer, which should be applied according to the results of soil tests and the type of plants grown. Information on sampling for soil testing can be obtained from the Cooperative Extension Service, the Natural Resources Conservation Service, and local nurseries.

In the following paragraphs, some of the plants that are used in landscaping and gardening and some management relationships between the plants and the soils are described. Information in this section should be supplemented by consultations with specialists in the Cooperative Extension Service, the Natural Resources Conservation Service, and private landscaping and gardening businesses.

The grasses used for landscaping in Pike County are mainly vegetatively propagated species, such as zoysiagrass, hybrid bermudagrass, St. Augustinegrass, centipedegrass, and seeded species, such as common bermudagrass and centipedegrass. The grasses commonly used for short-term cover include ryegrass, rye, wheat, sudangrass, and millet.

The vegetatively propagated plants are usually planted as sprigs, plugs, or sod. Additions of topsoil may be needed before planting in some areas. Also, lime and fertilizer should be applied and incorporated into the soil. The plants should be placed in close contact with the soil, and the plantings should be watered to ensure the establishment of the root system. St. Augustinegrass, centipedegrass, and certain strains of zoysiagrass are moderately shade tolerant. St. Augustinegrass and zoysiagrass normally require more maintenance than centipedegrass. The strains of hybrid bermudagrass are fast growing, but they are not as tolerant of shade as St. Augustinegrass, centipedegrass, or zoysiagrass.

Common perennial grasses that are established by seeding include common bermudagrass and centipedegrass. Lime and fertilizer should be applied and incorporated into the soil before seeding. Proper planting depth is important when grasses are established from seed.

Short-term vegetative cover is used to protect the soil at construction sites or to provide cover between the planting seasons of the desired grass species. The most commonly used grasses for short-term cover are ryegrass for cool seasons and sudangrass or millet for warm seasons. These species are annuals and die after the growing season. Periodic applications of lime and fertilizer are needed on all types of grasses. The kinds and amounts of lime and fertilizer to apply should be based on the results of soil tests.

Vines can be used to provide vegetative cover in moderately shaded areas and on steep slopes that cannot be mowed. English ivy and periwinkle can be used for ground cover. These plants also can be used on walls and fences. All of these plants are propagated vegetatively, usually from potted plants or sprigs.

Mulches can be used for ground cover in areas where traffic is too heavy for grass cover, in areas where shrubs and flowers are desired with additional ground cover, and in densely shaded areas. Mulches provide effective ground cover. They also provide immediate cover for erosion control in areas where no live vegetation is desired. Effective mulches include pine straw, small-grain straw, hay, composted grass clippings, wood chips, pine bark, gravel, and several manufactured materials. The type of mulch to use depends to some extent on the hazard of erosion. Mulches also can be used to conserve soil moisture and control weeds around trees, shrubs, and flowers.

Shrubs are used primarily to enhance the appearance of homesites. They also can be used to control traffic. They can be effective in dissipating the energy from raindrops and from runoff from roofs of houses. Most native and adapted species add variety to residential settings. Reaction to acidity and fertility levels vary greatly among shrub types.

Vegetable and flower gardens are important to many individuals and businesses. However, the soils in areas where homes and businesses are established may not be suited to vegetables and flowers. Soils that have been disturbed by construction may not be productive unless topsoil is applied. Soils that have slopes of more than 8 percent have poor potential for vegetable gardening because of the hazard of erosion if the soils are tilled. Generally, soils on steep slopes have a thin surface layer. Flower gardening is possible on steep slopes, however, if mulches are used to help control erosion.

Gardens in which composted tree leaves and grass clippings have been incorporated into the soil generally are fertile and friable, and have good moisture content. Additional information on vegetable crops is included under the heading "Crops and Pasture."

Most garden plants grow best in soils that have a pH level between 5.5 and 6.5. The fertility level should be high. Many gardeners apply too much fertilizer or have used fertilizers with the wrong combination of plant nutrients. Soil testing is the only effective way to determine how much and what type of fertilizer to apply. Soil testing information can be obtained from the local office of the Cooperative Extension Service, the Natural Resources Conservation Service, or from retail fertilizer businesses.

Trees are important in homesite landscaping. Information on relationships between soils and trees is available in the section "Woodland Management and Productivity." Special assistance in urban forestry can be obtained from the Alabama Forestry Commission.

Woodland Management and Productivity

Jerry L. Johnson, forester, Natural Resources Conservation Service, helped to prepare this section.

Forestry is an important industry in Pike County, and forest products make up a significant portion of the economy. The value of forest products at the first primary processing point was $8,745,000 in 1985 *(1)*. Forestry ranks fourth, behind the production of peanuts, cattle, and broilers, in the production value of agricultural commodities in Pike County *(19)*.

Commercial forest land makes up 263,300 acres, or about 61 percent of the total land area Pike County. The forested acreage increased about 5 percent from 1972 to 1982, primarily because of the conversion of cropland and pasture to forest land. Private landowners own 81 percent of the forest land in the county. Of this privately owned acreage, about 50 percent is owned by farmers. The forest industry owns the remaining 19 percent of the forest land *(20)*.

The forest types in Pike County include 12,200 acres of longleaf-slash pine, 49,000 acres of loblolly-shortleaf pine, 36,700 acres of oak-pine, 122,500 acres of oak-hickory, and 36,700 acres of oak-gum-cypress, and 6,200 acres of unclassified forests. The woodland in Pike County contains 73,500 acres of sawtimber, 79,600 acres of poletimber, 91,800 acres of seedlings and saplings, and 18,400 acres that are nonstocked *(20)*.

About 220,400 acres in the county is best suited to pines, and 42,900 acres is best suited to hardwoods. On about 185,000 acres of the forested land, the site index is 80 or higher for loblolly pine *(20)*.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *W*, excess water in or on the soil; *C*, clay in the upper part of the soil; and *S*, sandy texture. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, W, C, and S.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality

is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. The estimates of the productivity of the soils in this survey are based on published data *(5, 6, 7, 8, 9, 17).*

The *volume*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand. Cubic feet per acre can be converted to cubic meters per acre by dividing by 14.3. It can be converted to board feet by multiplying by a factor of about 5. For example, a productivity of 114 means the soil can be expected to produce 570 cubic feet per acre per year at the point where mean anuual increment culminates.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Recreation

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

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during

the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

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

Because of its geographic location, climate, land use patterns, and other characteristics, Pike County supports a varity of game animals, nongame animals, and furbearers. Common game species include bobwhite quail, whitetailed deer, cottontail rabbit, mourning dove, gray squirrel, fox squirrel, various species of ducks and geese, and wild turkey. Common nongame species include armadillo, snakes, egrets, herons, crows, blackbirds, hawks, owls, cardinals, thrushes, bluejays, meadowlarks, mockingbirds, sparrows, woodpeckers, vireos, and warblers. Common furbearers include beaver, bobcat, coyote, fox, mink, muskrat, otter, and raccoon.

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

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, oats, sorghums, barley, millets, cowpeas, and sunflower.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are bahiagrass, bermudagrass, johnsongrass, lovegrass, bromegrass, clover, lespedeza, vetches, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are dewberry, blackberry, crotons,

pokeweed, goldenrod, beggarweed, crabgrass, and paspalums.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, persimmon, sassafras, sumac, yellow-poplar, hickory, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are dogwood, pyracantha, autumn-olive, hollies, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and baldcypress.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, beaver ponds, and other ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, warblers, vireos, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, rails, kingfishers, otter, turtles, muskrat, mink, and beaver.

Aquaculture

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

Aquaculture is the controlled production and harvest of animals or plants grown in or on water. In Pike County, catfish farming (channel catfish) and sport fish production (bass and bream) are the most common types of aquaculture. The channel catfish, *Ictulurus punctatus,* is produced either in cages within ponds or in open ponds. The county currently has about 200 acres of catfish ponds and about 2,300 acres of bass and bream ponds. Other species of fish are being considered for pond production, and the growth of fish farming should provide an excellent source of additional income for some landowners.

Some of the tables included with this survey can help in evaluating potential pond sites. In table 14, for example, the soil limitations affecting pond reservoir areas and embankments, dikes, and levees are given. Indications of flooding frequency and water table levels are in table 17. These tables and the detailed soil maps can help in evaluating a selected location for its pond-building and water-retaining potential. Once the pond site is selected, however, additional soil borings should be made.

An understanding of soil characteristics is important in determining the potential of a pond site. Conecuh, Cowarts, Dothan, Luverne, and Oktibbeha soils are generally suited to pond construction.

The construction of buildings and the accessibility of the area are important considerations in evaluating a pond site. Depending upon the size and planned use of the site, road systems must be planned to accommodate harvest trucks. Large trucks are used for commercial operations. Feed trucks or similar equipment also require suitable access to the fish farm. If the farm is planned for fingerling production, a hatchery building will probably be on the site. Other buildings may be needed to store equipment or feed. Table 11 gives soil limitations affecting roads and building sites.

The quality of water in a pond is influenced by the soil. Several variables of water quality affect the production of fish. Total alkalinity, for example, is directly influenced by the soil. Total alkalinity values ranging from 30 to 150 parts per million are preferred. Fish production can be acceptable in ponds that have a low alkalinity level—less than 20 parts per million—provided that the fish are well fed. Other complicating factors, however, affect fish production when alkalinity values are below 20 parts per million. The application of agricultural lime can often

prevent production problems associated with low alkalinity values.

The soil in pond basins should be analyzed before the basins are limed and filled with water. The amount of lime needed should be based on the results of the analysis, and the lime should be applied before the ponds are filled with water. Thereafter, annual applications of lime, even in ponds full of water, should range from 20 to 25 percent of the original application to maintain desirable levels of alkalinity. The importance of proper alkalinity levels cannot be overemphasized. Most of the soils that are suitable for pond construction in Pike County require applications of lime.

The source and amounts of water to be used should also be considered when evaluating a site for a pond or fish farm. For example, if runoff water is to be used, the watershed must also be evaluated. Technical assistance in solving site and production problems is available from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

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

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer; stone content; soil texture; and slope.

The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

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

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

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

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

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function

unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil

series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a slowly permeable layer, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is

affected by large stones and depth to bedrock. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(4)* and the system adopted by the American Association of State Highway and Transportation Officials *(3)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 20.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of

soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that

can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the

water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 18 and the results of chemical analysis in table 19. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Agronomy and Soils Mineralogy Laboratory, Auburn University, Auburn, Alabama.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(10, 21)*.

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Extractable bases—method of Hajek, Adams, and Cope *(10)*.

Extractable acidity—method of Hajek, Adams, and Cope *(10)*.

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—method of Hajek, Adams, and Cope *(10)*.

Reaction (pH)—1:1 water dilution (8C1a).

Engineering Index Test Data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. Some of the pedons are representative of the series described in the section "Soil Series and Their Morphology," and the others are located by footnotes in the table. The soil samples were tested by the Alabama Highway Department, Bureau of Materials and Testing, Montgomery, Alabama.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(16, 23)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

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

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The Cahaba series is an example of fine-loamy, siliceous, thermic Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(22)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(16)* and in "Keys to Soil Taxonomy" *(23)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

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

Alaga Series

The Alaga series consists of very deep, somewhat excessively drained soils that formed in sandy sediments. They are on ridgetops in the uplands. Slopes range from 2 to 8 percent. The soils of the Alaga series are thermic, coated, Typic Quartzipsamments.

Alaga soils are geographically associated with Springhill and Troup soils. Springhill soils are in slightly lower landscape positions and do not have a thick, sandy epipedon. Troup soils are in landscape positions similar to those of the Alaga soils. They have a loamy kandic horizon at a depth of 40 to 80 inches.

Typical pedon of Alaga loamy sand, in an area of Troup-

Alaga complex, 2 to 8 percent slopes; about 1.0 mile north of China Grove, 700 feet north and 2,600 feet west of the southeast corner of sec. 3, T. 12 N., R. 21 E.

Ap—0 to 6 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
C1—6 to 28 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; few fine and medium roots; strongly acid; clear wavy boundary.
C2—28 to 43 inches; strong brown (7.5YR 5/8) loamy sand; single grained; loose; common fine streaks of clean sand; strongly acid; gradual wavy boundary.
C3—43 to 90 inches; strong brown (7.5YR 5/8) sand; common fine and medium distinct brownish yellow (10YR 6/6) and very pale brown (10YR 8/3) mottles; single grained; loose; strongly acid.

The thickness of the sandy horizons is more than 80 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

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

The C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 8, and chroma of 3 to 8. In most pedons, the lower part of the C horizon has few to common mottles in shades of brown and yellow. Texture is loamy fine sand, loamy sand, or sand.

Arundel Series

The Arundel series consists of moderately deep, well drained soils that formed in clayey sediments and the underlying siltstone and claystone bedrock. They are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 25 percent. The soils of the Arundel series are clayey, montmorillonitic, thermic Typic Hapludults.

Arundel soils are geographically associated with Luverne and Troup soils. Luverne soils are in landscape positions similar to those of Arundel soils. They have mixed mineralogy and do not have bedrock within a depth of 60 inches. Troup soils are in higher landscape positions. They have a thick, sandy epipedon.

Typical pedon of Arundel loamy sand, in an area of Luverne-Arundel complex, 2 to 8 percent slopes; about 4 miles southeast of Henderson, 1,200 feet south and 2,900 feet west of the northeast corner of sec. 36, T. 8 N., R. 20 E.

A—0 to 3 inches; dark brown (10YR 3/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
E—3 to 9 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; common fine and medium roots; strongly acid; clear wavy boundary.
Bt1—9 to 14 inches; yellowish red (5YR 4/6) clay; common medium distinct red (2.5YR 4/6) and light yellowish brown (10YR 6/4) mottles; strong medium subangular blocky structure; firm; common fine and medium roots; common distinct clay films on faces of peds; about 5 percent fragments of siltstone; strongly acid; clear wavy boundary.
Bt2—14 to 18 inches; yellowish red (5YR 4/6) clay; common medium distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; strong medium subangular blocky structure; firm; few fine and medium roots; common distinct clay films on faces of peds; about 5 percent fragments of siltstone; strongly acid; clear wavy boundary.
Bt3—18 to 26 inches; yellowish red (5YR 4/6) clay; common medium distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; about 10 percent fragments of siltstone; strongly acid; clear wavy boundary.
C—26 to 29 inches; mottled yellowish red (5YR 4/6), gray (10YR 6/1), strong brown (7.5YR 5/6), and pale brown (10YR 6/3) clay; massive; firm; about 10 percent fragments of siltstone; strongly acid; abrupt irregular boundary.
Cr—29 to 60 inches; weathered siltstone; massive; level bedded; extremely firm; common fine roots in fractures; brownish yellow (10YR 6/6) stains along fractures; very strongly acid.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of pararock fragments, consisting mainly of siltstone or claystone fragments ranging from 1/4 inch to 10 inches in diameter, ranges from 0 to 20 percent throughout the profile.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 4 to 6.

The upper part of the Bt horizon has hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 6. It has few to common mottles in shades of red, brown, or yellow. The lower part of the Bt horizon has colors similar to those of the upper part, or it has no dominant matrix color and is mottled in shades of red, brown, gray, and yellow. Texture is clay loam, silty clay, or clay.

The C horizon, if it occurs, has colors similar to those of

the lower part of the Bt horizon. Texture is clay loam, silty clay, or clay.

The Cr horizon is weathered siltstone or claystone. It is massive or has thick platy rock structure. It is level bedded. The horizon can be cut with hand tools with difficulty and is rippable by heavy equipment.

Bonifay Series

The Bonifay series consists of very deep, well drained soils that formed in sandy and loamy sediments. They are on broad ridgetops in the uplands. Slopes range from 1 to 5 percent. The soils of the Bonifay series are loamy, siliceous, thermic Grossarenic Plinthic Paleudults.

Bonifay soils are geographically associated with Compass, Dothan, and Fuquay soils. Compass soils are in lower landscape positions than the Bonifay soils. They are coarse-loamy. Dothan soils are in slightly higher landscape positions and do not have a thick, sandy epipedon. Fuquay soils are in landscape positions similar to those of the Bonifay soils. They have a sandy epipedon ranging from 20 to 40 inches thick.

Typical pedon of Bonifay loamy sand, 1 to 5 percent slopes, about 0.25 mile northeast of Goshen, 300 feet west and 2,000 feet south of the northeast corner of sec. 26, T. 9 N., R. 19 E.

Ap—0 to 12 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear smooth boundary.

E1—12 to 50 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; few fine roots; common streaks of clean sand; strongly acid; clear wavy boundary.

E2—50 to 57 inches; pale brown (10YR 6/3) loamy sand; common medium faint yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) mottles; single grained; loose; common streaks of clean sand; strongly acid; gradual wavy boundary.

Btv1—57 to 68 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct strong brown (7.5YR 5/6) and yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of some peds; sand grains coated and bridged with clay; about 10 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv2—68 to 80 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/8), red (2.5YR 4/6), and light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; few faint clay films on faces of some peds; sand grains coated and bridged with clay; friable; about 5 percent nodular plinthite; strongly acid.

The thickness of the solum is 60 inches or more. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 4 to 8. Some pedons have mottles in shades of yellow and brown. Most pedons have spots or streaks of clean sand. Texture is loamy sand or sand.

The Btv horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. It has few to many mottles in shades of yellow, brown, red, and gray. The content of plinthite ranges from 5 to 25 percent in the horizon. Texture is sandy loam or sandy clay loam.

Bonneau Series

The Bonneau series consists of very deep, well drained soils that formed in sandy and loamy sediments. They are on low stream terraces. Slopes range from 0 to 3 percent. The soils of the Bonneau series are loamy, siliceous, thermic Arenic Paleudults.

Bonneau soils are geographically associated with Cahaba and Eunola soils. Cahaba soils are in landscape positions similar to those of the Bonneau soils. They do not have a thick, sandy epipedon. The moderately well drained Eunola soils are in slightly lower, less convex landscape positions. They do not have a thick, sandy epipedon.

Typical pedon of Bonneau loamy sand, in an area of Bonneau-Eunola, occasionally flooded complex, 0 to 3 percent slopes; about 1 mile north of Troy, 800 feet south and 200 feet east of the northwest corner of sec. 18, T. 10 N., R. 21 E.

Ap—0 to 5 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E1—5 to 17 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; common fine and medium roots; moderately acid; clear wavy boundary.

E2—17 to 26 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; common thin streaks of clean sand; moderately acid; gradual wavy boundary.

Bt1—26 to 34 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/6) mottles; weak coarse subangular blocky structure; friable; few faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; clear wavy boundary.

Bt2—34 to 50 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct light yellowish

brown (10YR 6/4), light gray (10YR 7/2), and yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of some peds; sand grains coated and bridged with clay; strongly acid; clear wavy boundary.

Bt3—50 to 65 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct light gray (10YR 7/2), yellowish brown (10YR 5/6), and yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 4 to 6. Texture is loamy sand or sand.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy loam, fine sandy loam, or sandy clay loam. The lower part has the same ranges for hue, value, and chroma. It commonly has mottles in shades of gray, red, and brown. Texture is sandy loam, sandy clay loam, or sandy clay.

Cahaba Series

The Cahaba series consists of very deep, well drained soils that formed in loamy and sandy alluvium. They are on low stream terraces. Slopes range from 0 to 2 percent. The soils of the Cahaba series are fine-loamy, siliceous, thermic Typic Hapludults.

Cahaba soils are geographically associated with Bonneau, Eunola, Iuka, Kinston, and Mantachie soils. Bonneau soils are in landscape positions similar to those of the Cahaba soils. They have a thick, sandy epipedon. Eunola soils are in slightly lower, less convex landscape positions. They have a yellowish brown subsoil and grayish mottles within a depth of 30 inches. The moderately well drained Iuka, the poorly drained Kinston, and the somewhat poorly drained Mantachie soils are on adjacent flood plains.

Typical pedon of Cahaba sandy loam, 0 to 2 percent slopes, about 1.0 mile east of Glenwood, 1,100 feet north and 1,700 feet west of the southeast corner of sec. 22, T. 8 N., R. 19 E.

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

Bt1—8 to 27 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; moderately acid; clear wavy boundary.

Bt2—27 to 43 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; moderately acid; clear wavy boundary.

BC—43 to 52 inches; yellowish red (5YR 4/8) sandy loam; weak coarse subangular blocky structure; friable; strongly acid; clear wavy boundary.

C—52 to 65 inches; strong brown (7.5YR 5/6) sandy loam; few medium distinct red (2.5YR 4/6) mottles; massive; very friable; few thin strata of loamy sand; strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

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

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is loam, clay loam, or sandy clay loam.

The BC horizon, if it occurs, has hue of 2.5YR, 5YR, or 7.5YR, value of 4 or 5, and chroma of 6 or 8. Some pedons have few or common mottles in shades of red, yellow, or brown. Texture is sandy loam or fine sandy loam.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Texture is sand, loamy sand, or sandy loam. Most pedons have thin strata of finer and coarser textured materials.

Compass Series

The Compass series consists of very deep, moderately well drained soils that formed in loamy sediments. They are on ridgetops in the uplands. Slopes range from 1 to 3 percent. The soils of the Compass series are coarse-loamy, siliceous, thermic Plinthic Paleudults.

Compass soils are geographically associated with Bonifay, Cowarts, Eunola, Fuquay, and Orangeburg soils. Bonifay, Fuquay, and Orangeburg soils are in slightly higher landscape positions than the Compass soils. Bonifay and Fuquay soils have a thick, sandy epipedon. Orangeburg soils are fine-loamy. Cowarts soils are on adjacent side slopes. They are fine-loamy. Eunola soils are in landscape positions similar to those of the Compass soils but are at a lower elevation. They are fine-loamy and do not have plinthite within the solum.

Typical pedon of Compass loamy sand, 1 to 3 percent

slopes, about 3 miles west of Troy, 1,500 feet north and 2,000 feet east of the southwest corner of sec. 28, T. 10 N., R. 20 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

E—9 to 19 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; slightly acid; clear smooth boundary.

Bt1—19 to 32 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of some peds; very strongly acid; gradual wavy boundary.

Bt2—32 to 39 inches; brownish yellow (10YR 6/8) sandy loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; very friable; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btv1—39 to 52 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 10 percent nodular plinthite; very strongly acid; gradual wavy boundary.

Btv2—52 to 65 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6), very pale brown (10YR 7/3), and light gray (10YR 7/2) mottles and common medium prominent dark red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 10 percent nodular plinthite; very strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. Reaction ranges from very strongly acid to strongly acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. Texture is loamy sand or loamy fine sand.

The upper part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. Some pedons have few or common mottles in shades of red and brown. Texture is sandy loam or fine sandy loam.

The lower part of the Bt horizon has hue of 10YR, value of 6 or 8, and chroma of 6 to 8. It has few or common mottles in shades of yellow, brown, red, and gray. Texture is fine sandy loam, sandy loam, or sandy clay loam.

The Btv horizon has hue of 10YR, value of 6 to 8, and chroma of 6 to 8. It has few or common mottles in shades of brown, yellow, red, and gray. Texture is sandy loam or sandy clay loam. The content of plinthite ranges from 5 to 15 percent. Some pedons have a 2Bt horizon that has texture of sandy clay or clay.

Conecuh Series

The Conecuh series consists of very deep, moderately well drained soils that formed in clayey sediments. They are on ridgetops and side slopes in the uplands. Slopes range from 3 to 8 percent. The soils of the Conecuh series are clayey, montmorillonitic, thermic Aquic Hapludults.

Conecuh soils are geographically associated with Luverne and Oktibbeha soils. Luverne soils are in slightly higher landscape positions. They have mixed mineralogy. Oktibbeha soils are in landscape positions similar to those of the Conecuh soils but are at a lower elevation. They are underlain by alkaline materials.

Typical pedon of Conecuh sandy clay loam, 3 to 8 percent slopes, eroded, about 1 mile southeast of China Grove, 2,200 feet east and 400 feet north of the southwest corner of sec. 15, T. 12 N., R. 21 E.

Ap—0 to 2 inches; reddish brown (5YR 4/4) sandy clay loam; weak coarse granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bt1—2 to 10 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; few faint clay films on faces of peds; many pressure faces; strongly acid; clear smooth boundary.

Bt2—10 to 22 inches; mottled red (2.5YR 4/8), yellowish red (5YR 5/6), and gray (10YR 6/1) clay; strong medium subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; many pressure faces; strongly acid; clear wavy boundary.

Bt3—22 to 34 inches; mottled gray (10YR 6/1), red (2.5YR 4/8), and yellowish red (5YR 5/6) clay; strong medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of most peds; many pressure faces; strongly acid; gradual wavy boundary.

Bt4—34 to 42 inches; mottled gray (10YR 6/1), red (2.5YR 4/8), yellowish red (5YR 5/6), and strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; many pressure faces; very strongly acid; gradual wavy boundary.

BC—42 to 55 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/6), yellowish red (5YR 5/6), and red (2.5YR 4/6) clay; weak coarse subangular blocky structure; firm; many pressure faces; very strongly acid; clear wavy boundary.

C—55 to 60 inches; light brownish gray (10YR 6/2) clay; common medium prominent yellowish brown (10YR 5/8) and red (2.5YR 4/6) mottles; massive; firm; many pressure faces; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. Texture is clay or clay loam.

The lower part of the Bt horizon commonly has no dominant matrix color and is mottled in shades of red, brown, yellow, and gray. In some pedons, it has hue of 2.5YR or 5YR, value of 4 or 5, chroma of 4 to 8, and mottles in shades of yellow, brown, or gray. Texture is clay or silty clay.

The BC horizon commonly has no dominant matrix color and is mottled in varying shades of gray, red, yellow, and brown or has hue of 5YR to 5Y, value of 5 to 7, chroma of 1 to 6, and mottles in shades of red, yellow, brown, or gray. Texture is clay, silty clay, or clay loam.

The C horizon has colors similar to those of the BC horizon. It is massive or has platy rock structure. Texture is clay or clayey shale. Some pedons have strata of material that ranges in texture from sandy loam to clay.

Cowarts Series

The Cowarts series consists of very deep, well drained soils that formed in loamy sediments. They are on ridgetops and side slopes in the uplands. Slopes range from 3 to 20 percent. The soils of the Cowarts series are fine-loamy, siliceous, thermic Typic Kanhapludults.

Cowarts soils are geographically associated with Compass, Dothan, Luverne, Nankin, and Troup soils. Compass and Dothan soils are in higher landscape positions. Compass soils are coarse-loamy and are plinthic. Dothan soils are plinthic. Luverne and Nankin soils are in landscape positions similar to those of the Cowarts soils. They are clayey in the upper part of the subsoil. Troup soils are in slightly higher landscape positions, and they have a thick, sandy epipedon.

Typical pedon of Cowarts sandy loam, 3 to 8 percent slopes, about 0.5 mile south of Meeksville, 200 feet north and 3,500 feet east of the southwest corner of sec. 24, T. 11 N., R. 20 E.

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

BE—4 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; common fine and medium roots; moderately acid; clear wavy boundary.

Bt1—9 to 18 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films of faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 26 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct pale brown (10YR 6/3), strong brown (7.5YR 5/6), and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—26 to 34 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 4/6), pale brown (10YR 6/3), and light gray (10YR 7/2) sandy clay loam; weak coarse subangular blocky structure; firm; strongly acid; gradual wavy boundary.

C—34 to 60 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 4/6), pale brown (10YR 6/3), and light gray (10YR 7/2) sandy loam; massive; firm; few fine flakes of mica; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. Some pedons contain few to common ironstone nodules or angular fragments of ironstone.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is sandy loam or loamy sand.

The BE horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam.

The Bt horizon commonly has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Some pedons have hue of 5YR. Other pedons have few or common mottles in shades of yellow, red, and brown. Texture is commonly sandy loam, sandy clay loam, or clay loam, although it ranges to sandy clay in the lower part of the horizon in some pedons.

The BC horizon, if it occurs, has hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 1 to 8 or has no dominant matrix color and is mottled in shades of brown, red, and gray. Texture is sandy loam, sandy clay loam, or sandy clay.

The C horizon has colors similar to those of the BC horizon. Texture ranges from loamy sand to sandy clay

loam. It commonly is layered and pocketed with fine and coarse materials.

Dothan Series

The Dothan series consists of very deep, well drained soils that formed in loamy sediments. They are on broad ridgetops in the uplands. Slopes range from 1 to 3 percent. The soils of the Dothan series are fine-loamy, siliceous, thermic Plinthic Kandiudults.

Dothan soils are geographically associated with Bonifay, Cowarts, Fuquay, and Orangeburg soils. Cowarts and Orangeburg soils are in landscape positions similar to those of the Dothan soils. They have less than 5 percent plinthite within a depth of 60 inches. Orangeburg soils have a red or yellowish red subsoil. Bonifay and Fuquay soils are in slightly lower landscape positions than the Dothan soils. Bonifay soils have a sandy epipedon more than 40 inches thick. Fuquay soils have a sandy epipedon ranging from 20 to 40 inches thick.

Typical pedon of Dothan sandy loam, 1 to 3 percent slopes, about five miles east of Spring Hill, 1,500 feet north and 440 feet east of the southeast corner of sec. 6, T. 8 N., R. 22 E.

Ap—0 to 6 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; few fine ironstone nodules; strongly acid; clear smooth boundary.

Bt1—6 to 23 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—23 to 35 inches; strong brown (7.5YR 5/8) sandy clay loam; common medium distinct yellowish red (5YR 5/6), brownish yellow (10YR 6/6), and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Btv1—35 to 44 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent yellowish red (5YR 5/6) and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; about 10 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv2—44 to 60 inches; mottled brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), yellowish red (5YR 5/6), and light gray (10YR 7/2) sandy clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; about 15 percent nodular plinthite; strongly acid.

The thickness of the solum ranges from 60 to 80 inches or more. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It has few to common ironstone nodules.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. Some pedons have mottles in shades of red and brown in the lower part. Texture is sandy loam or sandy clay loam.

The Btv horizon has hue of 10YR, value of 5 or 6, chroma of 4 to 8, and mottles in shades of red, brown, and gray or has no dominant matrix color and is mottled in shades of yellow, brown, red, and gray. Texture is sandy clay loam. The content of plinthite ranges from 5 to 35 percent.

Eunola Series

The Eunola series consists of very deep, moderately well drained soils that formed in loamy and sandy sediments. They are on low stream terraces. Slopes range from 0 to 3 percent. The soils of the Eunola series are fine-loamy, siliceous, thermic Aquic Hapludults.

Eunola soils are geographically associated with Bonneau, Cahaba, Compass, Iuka, Kinston, and Mantachie soils. Bonneau and Cahaba soils are in slightly higher, more convex positions on stream terraces. Bonneau soils have a thick, sandy epipedon. The well drained Cahaba soils have a red or yellowish red subsoil. Compass soils are in higher landscape positions and are coarse-loamy. The moderately well drained Iuka, the poorly drained Kinston, and the somewhat poorly drained Mantachie soils are on adjacent flood plains.

Typical pedon of Eunola loamy sand, in an area of Bonneau-Eunola, occasionally flooded complex, 0 to 3 percent slopes; about 3 miles southwest of China Grove, 900 feet south and 1,500 feet east of the northwest corner of sec. 33, T. 12 N., R. 21 E.

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

BE—5 to 12 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; few fine and medium roots; strongly acid; clear wavy boundary.

Bt1—12 to 19 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct yellowish red (5YR 5/8) and light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—19 to 36 inches; yellowish brown (10YR 5/8) sandy clay loam; common fine and medium prominent

yellowish red (5YR 4/8) and common fine distinct light gray (10YR 7/2) and strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—36 to 50 inches; mottled light brownish gray (10YR 6/2), yellowish red (5YR 5/6), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/8) sandy clay loam; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; very strongly acid; clear smooth boundary.

2C—50 to 65 inches; mottled yellowish brown (10YR 5/8), light gray (10YR 7/1), and red (2.5YR 4/8) loamy sand; massive; very friable; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

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

The BE horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy clay loam, fine sandy loam, or sandy loam. Some pedons have few or common mottles in shades of yellow, brown, red, and gray. The lower part of the horizon has colors similar to those of the upper part, or it has no dominant matrix color and is mottled in shades of yellow, brown, red, and gray. Texture is sandy loam or sandy clay loam.

The 2C or the C horizon commonly has no dominant matrix color and is mottled in shades of yellow, brown, red, and gray. Texture is sand, loamy sand, or sandy loam. It commonly has pockets or layers of fine and coarse textured materials.

Fuquay Series

The Fuquay series consists of very deep, well drained soils that formed in sandy and loamy sediments. They are on narrow to broad ridgetops and on side slopes. Slopes range from 1 to 8 percent. The soils of the Fuquay series are loamy, siliceous, thermic Arenic Plinthic Kandiudults.

Fuquay soils are geographically associated with Bonifay, Compass, and Dothan soils. Bonifay soils are in landscape positions similar to those of the Fuquay soils. They have a sandy epipedon more than 40 inches thick. Compass soils are in slightly lower landscape positions and do not have a thick, sandy epipedon. Dothan soils are in slightly higher landscape positions than the Fuquay soils and do not have a thick, sandy epipedon.

Typical pedon of Fuquay loamy sand, 1 to 5 percent slopes, about 1 mile southwest of Tarentum, 2,200 feet south and 1,400 feet east of the northwest corner of sec. 31, T. 8 N., R. 22 E.

Ap—0 to 10 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear smooth boundary.

E1—10 to 20 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; few fine streaks of clean sand; moderately acid; clear wavy boundary.

E2—20 to 29 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; common fine streaks of clean sand; moderately acid; clear wavy boundary.

Bt—29 to 36 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Btv1—36 to 48 inches; mottled brownish yellow (10YR 6/6), strong brown (7.5YR 5/8), and very pale brown (10YR 7/3) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films of faces of peds; about 10 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv2—48 to 55 inches; mottled strong brown (7.5YR 5/8), brownish yellow (10YR 6/6), light gray (10YR 6/1), and red (2.5YR 4/8) sandy loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; about 15 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv3—55 to 65 inches; mottled yellowish brown (10YR 5/8), strong brown (7.5YR 5/6), light brownish gray (10YR 6/2), and red (2.5YR 4/8) sandy clay loam; firm; few faint clay films on faces of peds; about 10 percent nodular plinthite; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been added.

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

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Most pedons have streaks of clean sand. Texture is loamy fine sand, loamy sand, or sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Some pedons have mottles in shades of red, yellow, and brown. Texture is sandy loam or sandy clay loam.

The Btv horizon has hue of 7.5YR or 10YR, value of 5 or 6, chroma of 6 to 8, and mottles in shades of red, yellow, brown, and gray; or it has no dominant matrix color and is mottled in shades of yellow, red, gray, and brown.

Texture is sandy loam or sandy clay loam. The content of plinthite is 5 to 35 percent.

Greenville Series

The Greenville series consists of very deep, well drained soils that formed in clayey sediments. They are on broad ridgetops in the uplands. Slopes range from 1 to 8 percent. The soils of the Greenville series are clayey, kaolinitic, thermic Rhodic Kandiudults.

Greenville soils are grographically associated with Nankin, Orangeburg, and Springhill soils. Nankin soils are in slightly lower landscape positions than the Greenville soils. They do not have dark red colors throughout the subsoil, and they have a solum less than 60 inches thick. Orangeburg soils are in slightly higher landscape positions and are fine-loamy. Springhill soils are in lower landscape positions and are fine-loamy.

Typical pedon of Greenville sandy clay loam, 1 to 3 percent slopes, eroded, about 4 miles southeast of Josie, 1,200 feet west and 1,700 feet south of the northeast corner of sec. 36, T. 10 N., R. 23 E.

Ap—0 to 7 inches; dark red (2.5YR 3/6) sandy clay loam; moderate medium granular structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—7 to 23 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—23 to 36 inches; dark red (2.5YR 3/6) sandy clay; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—36 to 60 inches; dark red (2.5YR 3/6) sandy clay; moderate medium subangular blocky structure; firm; common distinct clay films of faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 2.5YR or 5YR, value of 3 or 4, and chroma of 4 to 6.

The Bt horizon has hue of 10R or 2.5YR, value of 2 or 3, and chroma of 4 to 6. Texture is sandy clay or clay.

Iuka Series

The Iuka series consists of very deep, moderately well drained soils that formed in stratified loamy and sandy alluvium. They are on flood plains along streams and rivers, and they are subject to frequent flooding for brief periods in winter and spring in most years. Slopes range from 0 to 1 percent. The soils of the Iuka series are coarse-loamy, siliceous, acid, thermic Aquic Udifluvents.

Iuka soils are geographically associated with Cahaba, Eunola, Kinston, and Mantachie soils. Cahaba and Eunola soils are on adjacent low stream terraces and are fine-loamy. The poorly drained Kinston and the somewhat poorly drained Mantachie soils are in slightly lower, more concave positions on flood plains. They are fine-loamy.

Typical pedon of Iuka loam, in an area of Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes, frequently flooded; about 2 miles west of Troy, 600 feet south and 500 feet west of the northeast corner of sec. 33, T. 10 N., R. 20 E.

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

C1—4 to 16 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium faint yellowish brown (10YR 5/6) and common medium distinct very pale brown (10YR 7/3) mottles; massive; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

C2—16 to 32 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium distinct light gray (10YR 7/2) mottles; massive; very friable; few fine roots; few thin strata of pale brown (10YR 6/3) loamy sand; strongly acid; gradual wavy boundary.

Cg1—32 to 40 inches; light gray (10YR 7/2) loamy sand; many fine and medium distinct yellowish brown (10YR 5/8) and common medium faint very pale brown (10YR 7/4) mottles; massive; very friable; strongly acid; clear wavy boundary.

Cg2—40 to 52 inches; light gray (10YR 7/1) sandy loam; many fine and medium distinct yellowish brown (10YR 5/8) and brownish yellow (10YR 6/6) mottles; massive; very friable; strongly acid; clear wavy boundary.

Cg3—52 to 65 inches; gray (10YR 6/1) sandy loam; common medium distinct yellowish brown (10YR 5/8) and light yellowish brown (10YR 6/4) mottles; massive; very friable; few thin strata of very pale brown (10YR 7/3) loamy sand; strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

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

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

The Cg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles in shades of yellow, brown, and red. Texture is loamy sand, sandy loam, fine sandy loam, loam, or silt loam. It commonly has thin strata or pockets of coarse and fine textured material.

Kinston Series

The Kinston series consists of very deep, poorly drained soils that formed in stratified loamy and sandy alluvium. They are on flood plains along streams and rivers, and they are subject to frequent flooding for brief periods in winter and spring in most years. Slopes range from 0 to 1 percent. The soils of the Kinston series are fine-loamy, siliceous, acid, thermic Typic Fluvaquents.

Kinston soils are geographically associated with Cahaba, Eunola, Iuka, and Mantachie soils. The well drained Cahaba and moderately well drained Eunola soils are on adjacent low stream terraces. The moderately well drained Iuka and somewhat poorly drained Mantachie soils are in slightly higher, more convex positions on flood plains. Iuka soils are coarse-loamy.

Typical pedon of Kinston fine sandy loam, in an area of Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes, frequently flooded; about 2 miles southeast of Troy, 400 feet north and 200 feet west of the southeast corner of sec. 10, T. 9 N., R. 21 E.

A—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles along root channels; weak fine granular structure; very friable; few fine and medium roots; strongly acid; clear wavy boundary.

Cg1—5 to 26 inches; grayish brown (10YR 5/2) loam; few medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; few fine and medium roots; strongly acid; clear wavy boundary.

Cg2—26 to 34 inches; dark gray (10YR 4/1) sandy clay loam; few medium distinct brownish yellow (10YR 6/6) mottles; massive; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Cg3—34 to 65 inches; gray (10YR 5/1) loam; massive; friable; few medium roots; strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has few or common mottles in shades of brown, red, or yellow. The upper part of the horizon is sandy loam, fine sandy loam, loam, or sandy clay loam. The lower part is loamy sand, sandy loam, loam, sandy clay loam, or clay loam.

Lucy Series

The Lucy series consists of very deep, well drained soils that formed in sandy and loamy sediments. They are on ridgetops and on side slopes in the uplands. Slopes range from 1 to 8 percent. The soils of the Lucy series are loamy, siliceous, thermic Arenic Kandiudults.

Lucy soils are geographically associated with Luverne, Nankin, Orangeburg, Springhill, and Troup soils. Luverne and Nankin soils are on the lower parts of side slopes. They have a clayey argillic horizon and do not have a thick, sandy epipedon. Orangeburg and Springhill soils are in slightly lower positions on ridgetops. They do not have a thick, sandy epipedon. Troup soils are in landscape positions similar to those of the Lucy soils. They have a sandy epipedon more than 40 inches thick.

Typical pedon of Lucy loamy sand, 5 to 8 percent slopes, about 4 miles southeast of Spring Hill, 2,000 feet west and 2,800 feet south of the northeast corner of sec. 34, T. 8 N., R. 21 E.

Ap—0 to 5 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; moderately acid; clear smooth boundary.

E—5 to 24 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; common fine streaks of clean sand; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—24 to 31 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; few fine roots; few faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt2—31 to 49 inches; red (2.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt3—49 to 65 inches; yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to moderately acid in the A and E horizons except where lime has been added. It is very strongly acid or strongly acid in the Bt horizon.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. Texture is loamy fine sand, loamy sand, or sand.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or

5, and chroma of 6 to 8. Some pedons have mottles in shades of yellow and brown in the lower part of the horizon. Texture is sandy loam or sandy clay loam.

Luverne Series

The Luverne series consists of very deep, well drained soils that formed in stratified clayey and loamy sediments. They are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 35 percent. The soils of the Luverne series are clayey, mixed, thermic Typic Hapludults.

Luverne soils are geographically associated with Arundel, Conecuh, Cowarts, Oktibbeha, Springhill, and Troup soils. Arundel, Conecuh, and Oktibbeha soils are in lower landscape positions than the Luverne soils. Arundel soils are moderately deep over bedrock. Conecuh soils have montmorillonitic mineralogy. Oktibbeha soils are underlain by alkaline materials. Cowarts and Springhill soils are in landscape positions similar to those of the Luverne soils. They are fine-loamy. Troup soils are in higher landscape positions and have a thick, sandy epipedon.

Typical pedon of Luverne clay loam, 2 to 8 percent slopes, eroded, about 5 miles northeast of Needmore, 1,300 feet south and 1,800 feet west of the northeast corner of sec. 6, T. 11 N., R. 22 E.

Ap1—0 to 2 inches; reddish brown (5YR 5/4) clay loam; moderate medium granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Ap2—2 to 8 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—8 to 16 inches; yellowish red (5YR 4/6) clay; strong medium subangular blocky structure; firm; few fine and medium roots; common distinct clay films on faces of peds; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt2—16 to 24 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt3—24 to 31 inches; yellowish red (5YR 4/6) clay; few medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; common fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—31 to 40 inches; yellowish red (5YR 5/8) clay loam; common fine and medium distinct brownish yellow (10YR 6/8) and light gray (10YR 7/2) mottles; weak coarse subangular blocky structure; firm; many fine flakes of mica; very strongly acid; gradual wavy boundary.

C1—40 to 53 inches; yellowish red (5YR 4/6) clay loam; common medium distinct yellowish brown (10YR 5/8) and light brownish gray (10YR 6/2) mottles; massive; firm; few thin strata of strong brown (7.5YR 5/8) sandy loam; many fine flakes of mica; very strongly acid; clear smooth boundary.

C2—53 to 65 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/8), yellowish red (5YR 5/6), and yellowish brown (10YR 5/8) clay loam, sandy loam, and loam; thinly bedded; massive; friable; many fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 20 to 50 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon commonly has hue or 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4; however, it can have hue of 5YR, value of 4 or 5, and chroma of 4 to 8. Texture is loamy sand, sandy loam, or clay loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. Some pedons have few or common mottles in shades of red, brown, and yellow. Texture is clay loam, sandy clay, or clay.

The BC horizon has colors similar to those of the Bt horizon. Texture is clay loam or sandy clay loam.

The C horizon is commonly stratified. The color is variable, ranging from reddish to grayish. Texture of individual strata ranges from loamy sand to sandy clay loam.

Mantachie Series

The Mantachie series consists of very deep, somewhat poorly drained soils that formed in loamy alluvium. They are on flood plains, and they are subject to frequent flooding for brief periods in winter and spring in most years. Slopes range from 0 to 1 percent. The soils of the Mantachie series are fine-loamy, siliceous, acid, thermic Aeric Fluvaquents.

Mantachie soils are geographically associated with Cahaba, Eunola, Iuka, and Kinston soils. The well drained Cahaba and moderately well drained Eunola soils are on adjacent low terraces. The moderately well drained Iuka soils are in slightly higher, more convex positions on the flood plain. They are coarse-loamy. The poorly drained Kinston soils are in lower, more concave positions on the flood plain.

Typical pedon of Mantachie loam, in an area of Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes,

frequently flooded; about 3 miles northeast of Needmore, 1,700 feet west and 2,300 feet south of the northeast corner of sec. 19, T. 11 N., R. 22 E.

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

Bw—4 to 22 inches; mottled light gray (10YR 7/1), brownish yellow (10YR 6/6), light yellowish brown (10YR 6/4), and yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bg1—22 to 46 inches; light gray (10YR 7/1) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/8) and few medium prominent red 2.5YR 4/8) mottles; weak coarse subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Bg2—46 to 54 inches; light gray (10YR 7/1) clay loam; common medium distinct brownish yellow (10YR 6/6), yellowish brown (10YR 5/8), and strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bg3—54 to 65 inches; gray (10YR 5/1) sandy clay loam; common medium distinct strong brown (7.5YR 5/8), yellowish brown (10YR 5/8), and brownish yellow (10YR 6/6) mottles; weak coarse subangular blocky structure; friable; strongly acid.

The thickness of the solum ranges from 30 to 65 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bw horizon has hue of 10YR, value of 4 or 5, chroma of 3 to 6, and common to many mottles in shades of gray, yellow, and brown; or it has no dominant matrix color and is mottled in shades of gray, yellow, red, and brown. Texture is loam, sandy clay loam, or clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles in shades of brown, yellow, and red. Texture is clay loam, loam, or sandy clay loam.

Nankin Series

The Nankin series consists of very deep, well drained soils that formed in clayey and loamy sediments. They are on side slopes and narrow ridges in the uplands. Slopes range from 3 to 25 percent. The soils of the Nankin series are clayey, kaolinitic, thermic Typic Kanhapludults.

Nankin soils are geographically associated with Cowarts, Greenville, Lucy, Springhill, and Troup soils. Cowarts and Springhill soils are in landscape positions similar to those of the Nankin soils. They are fine-loamy. Greenville soils are in slightly higher landscape positions. They have a dark red, clayey kandic horizon extending to a depth of 60 inches or more. Lucy and Troup soils are in higher landscape positions. They have a thick, sandy epipedon.

Typical pedon of Nankin sandy clay loam, in an area of Nankin-Greenville complex, 3 to 8 percent slopes, eroded; about 6 miles southeast of Troy, 2,400 feet south and 1,100 feet east of the northwest corner of sec. 30, T. 9 N., R. 22 E.

Ap—0 to 7 inches; reddish brown (5YR 4/4) sandy clay loam; moderate medium granular structure; friable; common fine and medium roots; moderately acid; clear smooth boundary.

Bt1—7 to 19 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; about 5 percent ironstone pebbles; moderately acid; gradual wavy boundary.

Bt2—19 to 36 inches; red (2.5YR 4/6) sandy clay; common medium distinct yellowish red (5YR 5/6) mottles; strong medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; about 5 percent ironstone pebbles; strongly acid; gradual wavy boundary.

Bt3—36 to 51 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of some peds; about 5 percent ironstone pebbles; very strongly acid; gradual wavy boundary.

C—51 to 65 inches; mottled red (2.5YR 4/8), reddish yellow (7.5YR 6/8), and light gray (10YR 7/2) sandy clay loam; thinly bedded; massive; firm; few thin strata of light yellowish brown (10YR 6/4) sandy loam and loamy sand; about 5 percent ironstone pebbles; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. Fragments of ironstone on the surface range from 0 to 25 percent.

The A or Ap horizon commonly has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Some pedons in eroded areas have hue of 2.5YR to 7.5YR, value of 4 or 5, and

chroma of 4 to 6. Texture is sandy clay loam or flaggy loamy sand.

The BE horizon, if it occurs, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy loam or sandy clay loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. Texture is clay loam, clay, or sandy clay. Some pedons have a thin sandy clay loam layer in the upper part.

The BC horizon, if it occurs, has hue of 2.5YR to 7.5YR, value of 4 or 5, chroma of 6 to 8, and common or many mottles in shades of gray, red, yellow, and brown. Texture is sandy loam or sandy clay loam that has thin strata of coarse textured material.

The C horizon commonly has no dominant matrix color and is mottled in shades of red, yellow, brown, and gray. Texture is sandy loam or sandy clay loam that has thin strata of fine and coarse textured material.

Oktibbeha Series

The Oktibbeha series consists of very deep, moderately well drained soils that formed in acid clayey sediments and the underlying calcareus clay or chalk. They are on broad ridges in the uplands. Slopes range from 2 to 5 percent. The soils of the Oktibbeha series are very-fine, montmorillonitic, thermic Chromic Dystruderts.

Oktibbeha soils are geographically associated with Conecuh and Luverne soils. Conecuh and Luverne soils are in landscape positions similar to those of the Oktibbeha soils, but at a slightly higher elevation. They do not have chalk or calcareous clay within a depth of 80 inches.

Typical pedon of Oktibbeha clay, 2 to 5 percent slopes, eroded, about 1,500 feet north and 300 feet west of the southeast corner of sec. 5, T. 11 N., R. 19 E.

Ap—0 to 6 inches; reddish brown (5YR 4/4) clay; weak medium subangular blocky structure; firm; common fine and medium roots; strongly acid; clear smooth boundary.

Bt—6 to 17 inches; red (2.5YR 5/6) clay; common medium faint red (2.5YR 4/8) mottles and common medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/8) mottles; weak coarse prisms that part to strong medium subangular and angular blocky structure; firm; few fine and medium roots; few faint clay films of faces of peds; strongly acid; clear wavy boundary.

Bss1—17 to 24 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 5/6), yellowish brown (10YR 5/6), and light gray (10YR 7/2) clay; weak coarse prisms that part to strong medium angular blocky structure; very firm; few fine roots; common large intersecting slickensides that have distinct polished and grooved surfaces; strongly acid; clear wavy boundary.

Bss2—24 to 33 inches; mottled light gray (10YR 7/2), yellowish brown (10YR 5/6), and red (2.5YR 5/6) clay; weak coarse prisms that part to strong medium angular blocky structure; very firm; common large intersecting slickensides that have distinct polished and grooved surfaces; strongly acid; clear wavy boundary.

Bkss1—33 to 54 inches; mottled light gray (10YR 7/2), pale brown (10YR 6/3), and yellowish brown (10YR 5/6) clay; very coarse wedge-shaped aggregates that part to strong medium angular blocky structure; very firm; common large intersecting slickensides that have distinct polished and grooved surfaces; common soft masses of calcium carbonate; strongly effervescent; slightly alkaline; clear wavy boundary.

Bkss2—54 to 60 inches; mottled light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and brown (7.5YR 4/4) clay; very coarse wedge-shaped aggregates that part to strong coarse and medium angular blocky structure; very firm; common large intersecting slickensides that have distinct polished and grooved surfaces; common soft masses of calcium carbonate; strongly effervescent; moderately alkaline.

The depth to horizons with secondary carbonates ranges from 30 to 50 inches. The depth to chalk bedrock characterized as a paralithic contact is more than 60 inches.

The A or Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. Reaction is very strongly acid or strongly acid, except in areas where lime has been applied.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. Texture is clay. Reaction ranges from extremely acid to strongly acid.

The Bss horizon commonly has no dominant matrix color and is mottled in shades of red, brown, and gray. Some pedons have hue of 10YR or 2.5Y, value of 5 or 6, chroma of 4 to 6, and common to many mottles in shades of brown, gray, and red. Texture is clay. Reaction ranges from very strongly acid to slightly acid.

The Bkss horizon has colors similar to those of the Bss horizon. Texture is clay or silty clay. Reaction is commonly slightly alkaline or moderately alkaline, athough it can be neutral.

The 2C horizon, if it occurs, is highly weathered chalk or calcareous clay. It is massive or has platy rock structure. Some pedons have a 2Cr horizon of weathered chalk bedrock. It can be dug with difficulty with hand tools and is rippable by heavy machinery.

Orangeburg Series

The Orangeburg series consists of very deep, well drained soils that formed in loamy sediments. They are on broad ridgetops and side slopes in the uplands. Slopes range from 2 to 5 percent. The soils of the Orangeburg series are fine-loamy, siliceous, thermic Typic Kandiudults.

Orangeburg soils are geographically associated with Compass, Dothan, Greenville, Lucy, and Springhill soils. Compass soils are in slightly lower landscape positions. They are coarse-loamy and have a yellowish brown subsoil. Dothan soils are in landscape positions similar to those of the Orangeburg soils. They have a yellowish brown subsoil and are plinthic. Greenville soils are in slightly lower landscape positions. They have a clayey kandic horizon. Lucy soils are in slightly higher landscape positions. They have a thick, sandy epipedon. Springhill soils are on side slopes at lower elevations. The kandic horizon of the Springhill soils has a reduction in clay content of 20 percent or more within a depth of 60 inches.

Typical pedon of Orangeburg loamy sand, 2 to 5 percent slopes, about 3 miles east of Henderson, 1,300 feet east and 2,300 feet north of the southwest corner of sec. 14, T. 8 N., R. 20 E.

Ap—0 to 8 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; slightly acid; clear smooth boundary.

Bt1—8 to 13 inches; yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; very friable; few faint clay films on faces of peds; common fine and medium roots; moderately acid; clear wavy boundary.

Bt2—13 to 29 inches; yellowish red (5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; common fine roots; strongly acid; gradual wavy boundary.

Bt3—29 to 49 inches; red (2.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay film on faces of peds; few fine roots; strongly acid; gradual wavy boundary.

Bt4—49 to 65 inches; red (2.5YR 5/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint clay film on faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to moderately acid in the Ap horizon and upper part of the Bt horizon, except in areas where lime has been applied. It is very strongly acid or strongly acid in the lower part of the Bt horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 or 4.

The E, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Texture is loamy sand, sandy loam, or fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. Some pedons have mottles in shades of yellow and brown in the lower part of the horizon. Texture is sandy clay loam or sandy loam.

Springhill Series

The Springhill series consists of very deep, well drained soils that formed in loamy and sandy sediments. They are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 35 percent. The soils of the Springhill series are fine-loamy, siliceous, thermic Typic Kanhapludults.

Springhill soils are geographically associated with Alaga, Greenville, Lucy, Luverne, Nankin, and Orangeburg soils. Alaga, Greenville, Lucy, and Orangeburg soils are in higher landscape positions. Alaga soils are sandy to a depth of 80 inches or more. Greenville soils have a clayey subsoil. Lucy soils have a thick, sandy epipedon. The kandic horizon of Orangeburg soils does not have a reduction in clay content of 20 percent or more within a depth of 60 inches. Luverne and Nankin soils are in landscape positions similar to those of the Springhill soils. They are clayey in the upper part of the subsoil.

Typical pedon of Springhill sandy loam, in an area of Luverne-Springhill complex, 10 to 35 percent slopes; about 2.25 miles southeast of Banks, 600 feet south and 1,200 feet east of the northwest corner of sec. 36, T. 10 N., R. 22 E.

Ap—0 to 5 inches; brown (7.5YR 5/4) sandy loam; weak fine granular structure; very friable; common fine and few medium roots; strongly acid; clear smooth boundary.

BA—5 to 11 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable; few fine and medium roots; strongly acid; clear wavy boundary.

Bt1—11 to 30 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of some peds; strongly acid; gradual wavy boundary.

Bt2—30 to 45 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few medium roots; few faint clay films on faces of some peds; most sand grains are coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt3—45 to 65 inches; red (2.5YR 5/6) sandy loam; weak coarse subangular blocky structure; very friable; sand grains coated and bridged with clay; few streaks of clean sand; about 2 percent rounded quartz pebbles; strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed. In some pedons, the content of ironstone channers and rounded quartz gravel ranges up to 15 percent. These fragments can be up to 4 inches in diameter.

The A or Ap horizon commonly has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. In eroded areas, the Ap horizon may have hue of 2.5YR to 5YR, value of 3 to 5, and chroma of 3 to 6.

The BA horizon, if it occurs, has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8. Texture is sandy clay loam. Some pedons have a subhorizon that has texture of sandy loam and is 6 inches or less thick. The lower part of the Bt horizon has colors similar to those of the upper part, except that some pedons may contain few to common mottles in shades of yellow, red, and brown. Texture is sandy clay loam or sandy loam.

The C horizon, if it occurs, has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is loamy sand, loamy fine sand, or sand.

Troup Series

The Troup series consists of very deep, well drained soils that formed in sandy and loamy sediments. They are on ridgetops and side slopes in the uplands. Slopes range from 1 to 25 percent. The soils of the Troup series are loamy, siliceous, thermic Grossarenic Kandiudults.

Troup soils are geographically associated with Alaga, Arundel, Cowarts, Lucy, Luverne, and Nankin soils. Alaga and Lucy soils are in landscape positions similar to those of the Troup soils. Alaga soils are sandy to a depth of 80 inches or more. Lucy soils have a sandy epipedon ranging from 20 to 40 inches thick. Cowarts soils are in lower landscape positions and do not have a thick, sandy epipedon. Arundel, Luverne, and Nankin soils are also in lower landscape positions. They have a clayey subsoil and do not have a thick, sandy epipedon.

Typical pedon of Troup loamy sand, 8 to 20 percent slopes, about 0.6 mile northeast of China Grove, 2,000 feet east and 1,100 feet south of the northwest corner of sec. 10, T. 13 N., R. 21 E.

Ap—0 to 4 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E1—4 to 13 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; common fine and medium roots; strongly acid; clear wavy boundary.

E2—13 to 28 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few fine roots; common fine streaks of clean sand; strongly acid; clear wavy boundary.

E3—28 to 46 inches; very pale brown (10YR 7/4) sand; single grained; loose; common fine streaks of clean sand; strongly acid; gradual wavy boundary.

Bt—46 to 65 inches; yellowish red (5YR 5/8) sandy clay loam; weak coarse subangular blocky structure; friable; few faint clay films on faces of peds; sand grains coated and bridged with clay; strongly acid.

The thickness of the solum is more than 80 inches. Reaction ranges from very strongly acid to moderately acid in the surface and subsurface layers, except in areas where lime has been applied. The subsoil is very strongly acid or strongly acid.

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

The E horizon has hue of 5YR to 10YR, value of 5 to 8, and chroma of 4 to 6. Texture is sand, loamy sand, or loamy fine sand.

The BE horizon, if it occurs, has hue of 5YR to 10YR, value of 5 to 7, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. Texture is sandy loam, fine sandy loam, or sandy clay loam.

Formation of the Soils

In this section, the factors of soil formation are related to the soils in Pike County and the processes of horizon differentiation are explained.

Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface that supports plants. Soil forms through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the type of parent material; the climate under which soil material has existed since accumulation; the relief, or lay of the land; the plant and animal life in and on the soil; and the length of time that the forces of soil formation have acted on the soil material. The relative importance of each of these factors differs from place to place; in some areas, one factor is more important, and in other areas another may dominate. A modification or variation in any of the factors results in a different kind of soil.

Climate and living organisms are the active factors of soil formation. They act on parent material and change it to a natural body with definite characteristics. The effects of climate and living organisms are conditioned by relief, which influences surface drainage, the amount of water that percolates through the soil, the rate of erosion, and the kind of vegetation that grows on the soil. The nature of the parent material also affects the kind of soil profile that is formed. Time is needed for the parent material to change into a soil. The development of a distinct soil horizon normally requires a long period of time.

Parent Material

The soils of Pike County formed mainly in two kinds of parent material; marine sediment that has undergone considerable weathering in place, and water-deposited material on stream terraces and flood plains. Bonifay, Cowarts, Dothan, Greenville, Nankin, and Orangeburg soils formed in weathered marine sediment. Bonneau, Eunola, Cahaba, Iuka, and Kinston soils formed in the water-deposited material on stream terraces and flood plains.

Climate

The climate of Pike County is warm and humid. Summers are long and hot. Winters are short and mild, and the ground rarely freezes to a depth of more than a few inches. The climate is fairly even throughout the county and accounts for few differences among the soils. Rainfall averages 52 inches a year.

This mild, humid climate favors rapid decomposition of organic matter and increases the rate of chemical reactions in the soil. The plentiful rainfall leaches large amounts of soluble bases and carries the less soluble fine particles downward, resulting in acid and sandy soils that are low in natural fertility. The large amount of moisture and the warm temperature favor the growth of bacteria and fungi and speed the decomposition of organic matter, resulting in soils that are low in organic matter content.

Relief

Relief influences the formation of soil through its effect on drainage, runoff, and erosion. In Pike County, the topography ranges from nearly level to steep. The elevation ranges from 250 to 680 feet above sea level. Large, flat areas and depressions generally are poorly drained, and accumulated water, received mainly as runoff from adjacent areas, slows the formation of soils. As the slope increases, the hazard of erosion and the runoff rate increase and the rate of leaching decreases. In places, the rate of erosion nearly keeps pace with the rate of soil formation. Thus, the soils on steep slopes are generally thin and weakly developed.

The aspect of slope affects the microclimate. Soils on south- or southwest-facing slopes warm up somewhat earlier in spring and generally reach a higher temperature each day than soils on north-facing slopes. The warmer soil temperatures result in accelerated chemical weathering. The soils on north-facing slopes retain moisture longer because they are in shade for longer periods and the temperature is lower. In Pike County, differences caused by the direction of slope are slight and of minor importance in soil formation.

Plants and Animals

Living organisms greatly influence the processes of soil formation and the characteristics of the soils. Trees, grasses, earthworms, rodents, fungi, bacteria, and other forms of plant and animal life are affected by the other soil-forming factors. Animal activity is largely confined to the surface layer of the soil. The soil is continually mixed by their activity, which improves water infiltration. Plant roots create channels through which air and water move more rapidly, thereby improving soil structure and increasing the rate of chemical reactions in the soil.

Microorganisms help to decompose organic matter, which releases plant nutrients and chemicals into the soil. These nutrients are either used by the plants or are leached from the soil. Human activities that influence the plant and animal populations in the soil affect the future rate of soil formation.

The native vegetation in the uplands of Pike County consisted of coniferous and deciduous trees as the dominant overstory. The understory species were gallberry, southern bayberry, holly, panicum, bluestem, American beautyberry, indiangrass, longleaf uniola, and dogwood. These species represent only a very limited number of species that once grew in this county. They can be used as a guide to the plants that presently grow in the county.

The species distribution of fauna also reflect these plant communities. Animals have an impact on the soil properties of a particular area. For example, worms, moles, armadillo, and gophers can improve aeration in a compacted soil. Microbes that thrive in a particular plant community will react to various soil conditions and consequently influence the soil profile by providing decayed organic matter and nitrogen to the soil matrix.

Time

If all other factors of soil formation are equal, the degree of soil formation is in direct proportion to time. If soil-forming factors have been active for a long time, horizon development is stronger than if these same factors have been active for a relatively short time.

Geologically, the soils in Pike County are relatively young. The youngest soils are the alluvial soils in active flood plains of streams and rivers. These soils receive deposits of sediment and are undergoing a cumulative soil-forming process. In most cases, these young soils have very weakly defined horizons, mainly because the soil-forming processes have only been active for a short time.

Soils on terraces of the Conecuh River and the Pea River are older than soils on flood plains but are still relatively young. Although they formed in material deposited by the river, the river channels are now deeper and overflow no longer reaches the soils. Many of these soils have relatively strong horizon development.

The oldest soils in the county are in the uplands. They formed in marine sediments that have undergone considerable weathering.

Processes of Horizon Differentiation

The main processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate and bases, reduction and transfer of iron, and formation and translocation of silicate clay minerals. These processes can occur in combination or individually, depending on the integration of the factors of soil formation.

Most soils have four main horizons. The A horizon is the surface layer. It is the horizon of maximum accumulation of organic matter. The E horizon, usually called the subsurface layer, is the horizon of maximum loss of soluble or suspended material. Fuquay soils have both an A horizon and an E horizon. Other soils, such as Mantachie soils, have an A horizon but do not have an E horizon. Organic matter has accumulated in the surface layer of all soils in Pike County to form an A horizon. The content of organic matter varies in different soils because of differences in relief, wetness, and natural fertility.

The B horizon, usually called the subsoil, is immediately below the A or E horizon. It is the horizon of maximum accumulation of dissolved or suspended material, such as iron or clay. The B horizon has not yet developed in very young soils, such as Iuka soils.

The C horizon is the substratum. It has been affected very little by the soil-forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called gleying, is evident in the wet soils in the county. Gleying, results in gray colors in the subsoil and gray mottles in other horizons. The gray colors indicate the reduction and loss of iron and manganese. The horizons of some soils, such as in the Dothan soils, have reddish mottles and nodules of plinthite, which indicate a segregation of iron.

Leaching of carbonates and bases has occurred in most of the soils in the county. This process contributes to the development of distinct horizons and to the naturally low fertility and acid reaction of some soils.

In uniform materials, natural drainage generally is closely associated with slope or relief. It generally affects the color of the soil. Soils that formed under good drainage conditions, such as Orangeburg soils, have a subsoil that is uniformly bright in color. Soils that formed under poor drainage conditions, such as Mantachie and Kinston soils, have grayish colors. Soils that formed where drainage is intermediate have a subsoil that is mottled in

shades of gray and brown. Eunola and Iuka soils are examples. The grayish color persists even after artificial drainage is provided.

In steep areas, the surface soil erodes. In low areas or in depressions, soil materials often accumulate and add to the thickness of the surface layer. In some areas, the formation of soil materials and the rates of removal are in equilibrium with soil development. The degree of relief is also related to the eluviation of clay from the E horizon to the Bt horizon.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more

soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a

variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending

through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a

fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Very gently sloping	1 to 3 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1961-90 at Troy, Alabama)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	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	57.5	36.5	47.0	76	9	84	4.71	2.68	6.51	6	0.1
February	61.6	38.8	50.2	80	17	114	4.94	2.95	6.72	6	0.4
March	70.2	46.0	58.1	85	24	278	6.15	3.46	8.54	7	0.0
April	77.6	52.7	65.1	89	34	455	4.02	1.84	5.89	5	0.0
May	83.7	60.2	71.9	94	44	677	3.74	1.42	5.68	5	0.0
June	89.0	66.8	77.9	99	54	834	4.38	2.24	6.24	6	0.0
July	90.3	69.6	80.0	99	62	923	5.75	3.58	7.71	9	0.0
August	90.0	69.4	79.7	98	61	911	3.93	1.86	5.72	6	0.0
September	86.6	65.4	76.0	97	48	768	3.38	1.60	4.92	4	0.0
October	78.0	54.4	66.2	90	35	500	2.60	0.53	4.37	3	0.0
November	68.8	45.7	57.2	84	24	248	3.91	2.47	5.22	5	0.0
December	60.6	39.2	49.9	79	14	124	4.73	2.46	6.71	6	0.1
Yearly:											
Average	76.1	53.7	64.9	---	---	---	---	---	---	---	---
Extreme	103	-1	---	101	7	---	---	---	---	---	---
Total	---	---	---	---	---	5,915	52.25	41.10	60.00	68	0.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1961-90 at Troy, Alabama)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 9	Mar. 19	Apr. 3
2 years in 10 later than--	Mar. 1	Mar. 12	Mar. 29
5 years in 10 later than--	Feb. 15	Feb. 27	Mar. 19
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 21	Nov. 11	Oct. 29
2 years in 10 earlier than--	Nov. 30	Nov. 17	Nov. 4
5 years in 10 earlier than--	Dec. 16	Nov. 30	Nov. 16

TABLE 3.--GROWING SEASON

(Recorded in the period 1961-90 at Troy, 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	261	242	219
8 years in 10	276	254	226
5 years in 10	304	275	240
2 years in 10	332	297	254
1 year in 10	346	308	262

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR SPECIFIED USES

Map unit	Extent of area	Cultivated crops	Pasture and hay	Woodland	Urban uses
	Pct				
1. Troup-Alaga-Luverne--	6	Poorly suited: slope, low fertility, droughtiness.	Suited: low fertility, droughtiness.	Suited: restricted use of equipment, seedling mortality, hazard of erosion.	Poorly suited: slope, moderate and moderately slow permeability, low strength, shrink-swell potential.
2. Luverne-Conecuh-Oktibbeha----------	4	Suited: slope, low fertility, hazard of erosion.	Well suited---	Well suited-----	Poorly suited: moderately slow and very slow permeability, shrink-swell potential, low strength.
3. Mantachie-Kinston-Eunola----------	14	Poorly suited: wetness, flooding.	Poorly suited: wetness, flooding.	Suited: wetness, flooding, restricted use of equipment, seedling mortality.	Poorly suited: wetness, flooding.
4. Cowarts-Troup-Luverne	19	Poorly suited: slope, low fertility, droughtiness.	Suited: slope, low fertility, droughtiness.	Suited: restricted use of equipment, hazard of erosion, seedling mortality.	Poorly suited: slope, moderate and moderately slow permeability, low strength, shrink-swell potential.
5. Compass-Bonifay-Cowarts----------	4.5	Suited: low fertility, droughtiness, slope.	Well suited---	Well suited-----	Suited: moderate, moderately slow, and slow permeability, droughtiness.
6. Fuquay-Bonifay-Cowarts----------	4.0	Suited: low fertility, droughtiness.	Well suited---	Well suited-----	Suited: moderate and slow permeability, droughtiness.
7. Cowarts-Luverne-Lucy	19.5	Suited: slope, low fertility, droughtiness.	Well suited---	Well suited-----	Suited: moderate, moderately slow, and slow permeability, droughtiness.

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR SPECIFIED USES--Continued

Map unit	Extent of area	Cultivated crops	Pasture and hay	Woodland	Urban uses
	Pct				
8. Orangeburg-Lucy-Dothan	6.5	Well suited	Well suited	Well suited	Well suited.
9. Springhill-Nankin-Greenville	15	Suited: slope, low fertility, hazard of erosion.	Well suited	Well suited	Suited: slope, moderate and moderately slow permeability.
10. Arundel-Luverne-Troup	7.5	Poorly suited: slope, low fertility, hazard of erosion, droughtiness.	Suited: slope, low fertility, droughtiness.	Suited: restricted use of equipment, hazard of erosion, seedling mortality.	Poorly suited: slope, moderate, moderately slow, and very slow permeability, shrink-swell potential, low strength.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
ArE	Arundel-Luverne-Troup complex, 8 to 25 percent slopes	20,540	4.8
BnB	Bonifay loamy sand, 1 to 5 percent slopes	8,750	2.0
BoB	Bonneau-Eunola, occasionally flooded complex, 0 to 3 percent slopes	5,270	1.2
CaA	Cahaba sandy loam, 0 to 2 percent slopes	360	0.1
CmB	Compass loamy sand, 1 to 3 percent slopes	7,160	1.7
CnC2	Conecuh sandy clay loam, 3 to 8 percent slopes, eroded	5,750	1.3
CoC	Cowarts sandy loam, 3 to 8 percent slopes	35,450	8.2
CtE	Cowarts-Troup complex, 8 to 20 percent slopes	75,690	17.6
DoB	Dothan sandy loam, 1 to 3 percent slopes	2,500	0.6
EuA	Eunola loamy sand, 0 to 2 percent slopes, occasionally flooded	6,170	1.4
FaB	Fuquay loamy sand, 1 to 5 percent slopes	6,210	1.4
FtC	Fuquay-Bonifay complex, 5 to 8 percent slopes	6,050	1.4
FuC	Fuquay-Urban land complex, 2 to 8 percent slopes	370	0.1
GrB2	Greenville sandy clay loam, 1 to 3 percent slopes, eroded	5,120	1.2
LcB	Lucy loamy sand, 1 to 5 percent slopes	6,990	1.6
LcC	Lucy loamy sand, 5 to 8 percent slopes	9,170	2.1
LdC	Lucy-Urban land complex, 2 to 8 percent slopes	550	0.1
LeE	Luverne sandy loam, 8 to 20 percent slopes	23,640	5.5
LnC2	Luverne clay loam, 2 to 8 percent slopes, eroded	11,580	2.7
LrC	Luverne-Arundel complex, 2 to 8 percent slopes	8,010	1.9
LsE	Luverne-Springhill complex, 10 to 35 percent slopes	23,710	5.5
MAA	Mantachie, Kinston, and Iuka soils, 0 to 1 percent slopes, frequently flooded	65,430	15.2
NaE	Nankin flaggy loamy sand, 15 to 25 percent slopes	730	0.2
NeC2	Nankin-Greenville complex, 3 to 8 percent slopes, eroded	16,280	3.8
OkC2	Oktibbeha clay, 2 to 5 percent slopes, eroded	2,300	0.5
OrB	Orangeburg loamy sand, 2 to 5 percent slopes	13,560	3.2
Pt	Pits	580	0.1
SpC2	Springhill sandy loam, 5 to 8 percent slopes, eroded	13,380	3.1
SuC	Springhill-Urban land complex, 2 to 8 percent slopes	1,990	0.5
TaE	Troup loamy sand, 8 to 20 percent slopes	20,000	4.7
TgC	Troup-Alaga complex, 2 to 8 percent slopes	13,760	3.2
TvE	Troup-Luverne complex, 8 to 20 percent slopes	5,330	1.2
UdB	Udorthents, gently sloping, smooth	780	0.2
UdE	Udorthents, rolling, rough	5,800	1.4
Un	Urban land	1,000	0.2
	Water	320	0.1
	Total	430,280	100.0

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Grain sorghum	Wheat	Peanuts	Pecans
		Lbs	Bu	Bu	Bu	Bu	Lbs	Cwt
ArE---- Arundel-Luverne-Troup	VIIe	---	---	---	---	---	---	7.0
BnB---- Bonifay	IIIs	500	60	25	65	40	2,400	7.0
BoB----		650	90	30	100	40	2,850	10.0
Bonneau----	IIs							
Eunola----	IIe							
CaA---- Cahaba	I	800	100	35	110	55	3,500	12.0
CmB---- Compass	IIe	500	75	30	85	40	3,000	7.0
CnC2---- Conecuh	IVe	450	50	20	80	---	---	9.0
CoC---- Cowarts	IIIe	600	70	25	80	40	1,800	8.0
CtE----		---	---	---	---	---	---	7.0
Cowarts----	VIe							
Troup----	VIs							
DoB---- Dothan	IIe	800	110	40	110	50	3,800	12.0
EuA---- Eunola	IIw	600	100	35	110	35	3,000	12.0
FaB---- Fuquay	IIs	650	85	35	90	50	3,200	7.0
FtC----		550	70	25	80	40	2,600	7.0
Fuquay----	IIIs							
Bonifay----	IVs							
FuC*---- Fuquay-Urban land	---	---	---	---	---	---	---	---
GrB2---- Greenville	IIe	750	90	30	95	45	3,000	10.0
LcB---- Lucy	IIs	650	80	30	85	45	2,800	7.0
LcC---- Lucy	IIIs	600	70	25	75	35	2,500	7.0
LdC*---- Lucy-Urban land	---	---	---	---	---	---	---	---
LeE---- Luverne	VIIe	---	---	---	---	---	---	7.0

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Grain sorghum	Wheat	Peanuts	Pecans
		Lbs	Bu	Bu	Bu	Bu	Lbs	Cwt
LnC2--Luverne	IVe	450	65	35	75	30	2,600	9.0
LrC--Luverne-Arundel	IVe	500	70	35	80	40	2,600	9.0
LsE--Luverne-Springhill	VIIe	---	---	---	---	---	---	7.0
MAA--Mantachie, Kinston, and Iuka	Vw	---	---	---	---	---	---	7.0
NaE--Nankin	VIIe	---	---	---	---	---	---	7.0
NeC2--Nankin-Greenville	IVe	650	80	30	90	40	2,600	10.0
OkC2--Oktibbeha	IIIe	---	60	25	75	35	---	7.0
OrB--Orangeburg	IIe	1,000	110	40	110	50	4,000	12.0
Pt*--Pits	VIIIs	---	---	---	---	---	---	---
SpC2--Springhill	IVe	400	60	25	75	30	2,200	12.0
SuC*--Springhill-Urban land	---	---	---	---	---	---	---	---
TaE--Troup	VIs	---	---	---	---	---	---	5.0
TgC--Troup-Alaga	IVs	450	55	25	65	35	2,400	7.0
TvE--Troup-Luverne	VIIe	---	---	---	---	---	---	5.0
UdB*--Udorthents	IVe	---	---	---	---	---	---	---
UdE*--Udorthents	VIIe	---	---	---	---	---	---	---
Un*--Urban land	VIIIs	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--YIELDS PER ACRE OF PASTURE AND HAY

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Improved bermudagrass hay	Improved bermudagrass hay	Bahiagrass	Cool-season annuals	Warm-season annuals	Alfalfa hay
	Tons	AUM*	AUM*	AUM*	AUM*	Tons
ArE**---- Arundel-Luverne-Troup	---	---	---	---	---	---
BnB---- Bonifay	4.0	8.0	7.0	4.0	4.5	2.0
BoB---- Bonneau-Eunola	5.0	9.5	8.5	4.5	5.0	2.5
CaA---- Cahaba	5.0	10.0	8.0	5.0	6.0	5.5
CmB---- Compass	4.5	9.0	7.5	4.0	4.5	3.0
CnC2---- Conecuh	3.0	6.5	5.0	4.0	5.0	2.0
CoC---- Cowarts	4.0	8.0	7.5	5.0	4.5	4.0
CtE---- Cowarts-Troup	3.0	6.5	5.0	4.5	4.0	3.0
DoB---- Dothan	5.0	10.0	9.0	5.0	6.0	5.5
EuA---- Eunola	5.0	10.0	9.0	4.0	6.0	2.5
FaB---- Fuquay	4.0	8.0	7.0	4.0	5.0	2.0
FtC---- Fuquay-Bonifay	4.0	8.0	7.0	4.0	4.0	2.0
FuC**---- Fuquay-Urban land	---	---	---	---	---	---
GrB2---- Greenville	5.0	8.0	7.0	4.5	5.0	3.0
LcB---- Lucy	5.0	8.0	8.5	4.5	5.0	2.5
LcC---- Lucy	3.5	7.5	7.0	4.0	5.0	2.0
LdC**---- Lucy-Urban land	---	---	---	---	---	---
LeE---- Luverne	---	---	---	---	---	---

* See footnotes at end of table.

TABLE 7.--YIELDS PER ACRE OF PASTURE AND HAY--Continued

Soil name and map symbol	Improved bermudagrass hay	Improved bermudagrass hay	Bahiagrass	Cool-season annuals	Warm-season annuals	Alfalfa hay
	Tons	AUM*	AUM*	AUM*	AUM*	Tons
LnC2---- Luverne	3.5	7.0	6.5	4.0	4.5	3.0
LrC---- Luverne-Arundel	3.5	7.0	6.5	4.0	4.5	3.0
LsE---- Luverne-Springhill	---	---	---	---	---	---
MAA---- Mantachie, Kinston, and Iuka	---	---	7.5	5.0	6.0	---
NaE---- Nankin	---	---	---	---	---	---
NeC2---- Nankin-Greenville	3.5	7.0	7.5	5.0	5.5	4.0
OkC2---- Oktibbeha	---	---	4.5	6.0	5.5	2.5
OrB---- Orangeburg	5.5	10.5	8.0	5.0	6.0	5.5
Pt**---- Pits	---	---	---	---	---	---
SpC2---- Springhill	4.0	8.0	6.0	4.5	5.0	4.0
SuC**---- Springhill-Urban land	---	---	---	---	---	---
TaE---- Troup	3.0	6.5	5.5	3.5	4.5	---
TgC---- Troup-Alaga	3.0	6.5	7.0	4.0	4.5	---
TvE---- Troup-Luverne	---	---	---	---	---	---
UdB---- Udorthents	3.0	5.0	3.5	3.5	4.0	---
UdE**---- Udorthents	---	---	---	---	---	---
Un**---- Urban land	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
ArE**:										
Arundel	8R	Moderate	Moderate	Moderate	Moderate	Moderate	Loblolly pine	85	120	Loblolly pine, slash pine
							Shortleaf pine	75		
Luverne	9R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, longleaf pine, slash pine.
							Slash pine	90		
							Longleaf pine	75		
							Shortleaf pine	80		
Troup	8R	Moderate	Moderate	Moderate	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, longleaf pine.
							Longleaf pine	70		
BnB	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	85	120	Loblolly pine, slash pine, longleaf pine.
Bonifay							Slash pine	85		
							Longleaf pine	75		
BoB**:										
Bonneau	9S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, longleaf pine.
							Longleaf pine	75		
Eunola	9W	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, slash pine, sweetgum, water oak.
							Slash pine	90		
							Sweetgum	95		
							Yellow-poplar	95		
							Water oak	90		
CaA	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, slash pine, sweetgum, water oak.
Cahaba							Slash pine	90		
							Shortleaf pine	80		
							Yellow-poplar	100		
							Sweetgum	90		
							Water oak	---		
CmB	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, slash pine, longleaf pine.
Compass							Slash pine	90		
							Longleaf pine	75		
CnC2	9C	Slight	Slight	Slight	Slight	Severe	Loblolly pine	90	131	Loblolly pine, slash pine; water oak, sweetgum.
Conecuh							Slash pine	90		
							Shortleaf pine	80		
							Water oak	90		
							Sweetgum	90		

* See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
CoC---------- Cowarts	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, longleaf pine, slash pine.
							Slash pine----------	90		
							Longleaf pine-------	75		
							Shortleaf pine------	80		
CtE**:										
Cowarts----------	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, longleaf pine, slash pine.
							Slash pine----------	90		
							Longleaf pine-------	75		
							Shortleaf pine------	80		
Troup----------	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, longleaf pine.
							Longleaf pine-------	70		
							Slash pine----------	80		
DoB---------- Dothan	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, slash pine, longleaf pine.
							Slash pine----------	90		
							Longleaf pine-------	80		
							Hickory-------------	---		
							Water oak-----------	---		
EuA---------- Eunola	9W	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, slash pine, sweetgum, water oak.
							Slash pine----------	90		
							Sweetgum------------	90		
							Water oak-----------	90		
FaB---------- Fuquay	9S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, slash pine, longleaf pine.
							Longleaf pine-------	70		
							Slash pine----------	90		
							Shortleaf pine------	80		
FtC**:										
Fuquay----------	9S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, slash pine, longleaf pine.
							Longleaf pine-------	70		
							Slash pine----------	90		
							Shortleaf pine------	80		
Bonifay----------	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	85	120	Loblolly pine, slash pine, longleaf pine.
							Slash pine----------	85		
							Longleaf pine-------	75		
FuC**:										
Fuquay.										
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	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
GrB2 Greenville	8A	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine Longleaf pine Slash pine Shortleaf pine	85 70 85 80	120	Loblolly pine, longleaf pine, slash pine.
LcB, LcC Lucy	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine Longleaf pine Slash pine	85 70 85	120	Loblolly pine, longleaf pine.
LdC**: Lucy. Urban land.										
LeE, LnC2 Luverne	9C	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine Slash pine Longleaf pine Shortleaf pine	90 90 75 80	131	Loblolly pine, slash pine, longleaf pine.
LrC**: Luverne	9C	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine Slash pine Longleaf pine Shortleaf pine	90 90 75 80	131	Loblolly pine, slash pine, longleaf pine.
Arundel	8C	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine Shortleaf pine	85 75	120	Loblolly pine, slash pine.
LsE**: Luverne	9R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine Slash pine Longleaf pine Shortleaf pine	90 90 75 80	131	Loblolly pine, slash pine, longleaf pine.
Springhill	9R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine Longleaf pine Shortleaf pine	90 75 80	131	Loblolly pine, longleaf pine, slash pine.
MAA**: Mantachie	11W	Slight	Severe	Severe	Slight	Severe	Loblolly pine Cherrybark oak Green ash Sweetgum Water oak American sycamore	100 100 90 100 100 110	154	Loblolly pine, cherrybark oak, green ash, sweetgum, water oak, American sycamore.

* See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
MAA**:										
Kinston	11W	Slight	Severe	Severe	Severe	Severe	Loblolly pine	100	154	Loblolly pine, green ash, sweetgum.
							Sweetgum	95		
							White oak	90		
Iuka	11W	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine	100	154	Loblolly pine, sweetgum, water oak, American sycamore.
							Sweetgum	100		
							Water oak	100		
							American sycamore	110		
NaE	8R	Moderate	Moderate	Moderate	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, longleaf pine, slash pine.
Nankin							Slash pine	80		
							Longleaf pine	70		
NeC2**:										
Nankin	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	85	120	Loblolly pine, longleaf pine, slash pine.
							Slash pine	85		
							Longleaf pine	70		
							Shortleaf pine	80		
Greenville	8A	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine	85	120	Loblolly pine, longleaf pine, slash pine.
							Longleaf pine	70		
							Slash pine	85		
							Shortleaf pine	80		
OkC2	9C	Slight	Moderate	Severe	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, slash pine.
Oktibbeha							Shortleaf pine	80		
							Southern red oak	80		
OrB	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	85	120	Loblolly pine, slash pine, longleaf pine.
Orangeburg							Slash pine	90		
							Longleaf pine	75		
SpC2	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, longleaf pine, slash pine.
Springhill							Longleaf pine	75		
							Shortleaf pine	80		
							Sweetgum	90		
							Water oak	90		
							Southern red oak	80		
SuC**:										
Springhill.										
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	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
TaE---------- Troup	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, longleaf pine.
							Longleaf pine-------	70		
TgC**:										
Troup----------	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, longleaf pine.
							Longleaf pine-------	70		
Alaga----------	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, longleaf pine.
							Longleaf pine-------	70		
TvE**:										
Troup----------	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, longleaf pine.
							Longleaf pine-------	70		
Luverne----------	9C	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, slash pine, longleaf pine.
							Slash pine----------	90		
							Longleaf pine-------	75		
							Shortleaf pine------	80		
UdB**---------- Udorthents	7D	Moderate	Moderate	Severe	Slight	Slight	Loblolly pine-------	75	105	Loblolly pine.
UdE**---------- Udorthents	6D	Moderate	Moderate	Severe	Slight	Slight	Loblolly pine-------	70	100	Loblolly pine.

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands of loblolly pine.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ArE*:					
Arundel	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Moderate: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Troup	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope.
BnB Bonifay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BoB*:					
Bonneau	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: droughty.
Eunola	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
CaA Cahaba	Slight	Slight	Slight	Slight	Slight.
CmB Compass	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
CnC2 Conecuh	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight	Moderate: droughty.
CoC Cowarts	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Moderate: droughty.
CtE*:					
Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
DoB Dothan	Slight	Slight	Moderate: slope.	Slight	Slight.
EuA Eunola	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
FaB Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FtC*:					
Fuquay	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
Bonifay	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
FuC*:					
Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable.
GrB2 Greenville	Slight	Slight	Moderate: slope.	Slight	Slight.
LcB Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
LcC Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
LdC*:					
Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable.
LeE Luverne	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
LnC2 Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
LrC*:					
Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
Arundel	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight	Moderate: large stones, depth to rock.
LsE*:					
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Springhill	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MAA*:					
Mantachie	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MAA*:					
Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Iuka	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
NaE	Severe:	Severe:	Severe:	Moderate:	Severe:
Nankin	slope.	slope.	large stones, slope.	large stones, slope.	slope.
NeC2*:					
Nankin	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
Greenville	Slight	Slight	Moderate: slope.	Slight	Slight.
OkC2	Severe:	Severe:	Severe:	Severe:	Severe:
Oktibbeha	percs slowly, too clayey.	too clayey, percs slowly.	too clayey, percs slowly.	too clayey.	too clayey.
OrB	Slight	Slight	Moderate:	Slight	Slight.
Orangeburg			slope.		
Pt*	Variable	Variable	Variable	Variable	Variable.
Pits					
SpC2	Slight	Slight	Severe:	Slight	Slight.
Springhill			slope.		
SuC*:					
Springhill	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable.
TaE	Moderate:	Moderate:	Severe:	Moderate:	Moderate:
Troup	slope, too sandy.	slope, too sandy.	slope.	too sandy.	droughty, slope.
TgC*:					
Troup	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Alaga	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
TvE*:					
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Luverne	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
UdB*, UdE* Udorthents	Variable	Variable	Variable	Variable	Variable.
Un* Urban land	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
ArE*:										
Arundel	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
BnB Bonifay	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
BoB*:										
Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
CaA Cahaba	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CmB Compass	Poor	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Very poor.
CnC2 Conecuh	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CoC Cowarts	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CtE*:										
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
DoB Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EuA Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
FaB Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
FtC*:										
Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Bonifay	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
FuC*:										
Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Urban land.										
GrB2 Greenville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LcB, LcC Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LdC*:										
Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Urban land.										
LeE, LnC2 Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LrC*:										
Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Arundel	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LsE*:										
Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Springhill	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MAA*:										
Mantachie	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Iuka	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
NaE Nankin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NeC2*:										
Nankin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Greenville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OkC2 Oktibbeha	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Poor.
OrB Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							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
Pt*-- Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
SpC2-- Springhill	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuC*: Springhill--	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
TaE-- Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TgC*: Troup--	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Alaga--	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TvE*: Troup--	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Luverne--	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UdB*-- Udorthents	Fair	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair	Poor.
UdE*-- Udorthents	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
Un*. Urban land										

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ArE*:						
Arundel	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Troup	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BnB	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Bonifay						
BoB*:						
Bonneau	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Eunola	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
CaA	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
Cahaba						
CmB	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Compass						
CnC2	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
Conecuh						
CoC	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Cowarts						
CtE*:						
Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
DoB	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Slight.
Dothan						
EuA	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
Eunola						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FaB Fuquay	Slight	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
FtC*: Fuquay	Slight	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
Bonifay	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
FuC*: Fuquay	Slight	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
GrB2 Greenville	Moderate: too clayey.	Slight	Slight	Slight	Slight	Slight.
LcB Lucy	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
LcC Lucy	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
LdC*: Lucy	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
LeE Luverne	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
LnC2 Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
LrC*: Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Arundel	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: large stones, depth to rock.
LsE*: Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Springhill	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MAA*: Mantachie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MAA*:						
Kinston	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Iuka	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
NaE	Severe:	Severe:	Severe:	Severe:	Severe:	Severe:
Nankin	slope.	slope.	slope.	slope.	slope.	slope.
NeC2*:						
Nankin	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Slight	Slight.
Greenville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Slight	Slight.
OkC2	Severe:	Severe:	Severe:	Severe:	Severe:	Severe:
Oktibbeha	cutbanks cave.	shrink-swell.	shrink-swell.	shrink-swell.	shrink-swell, low strength.	too clayey.
OrB	Slight	Slight	Slight	Slight	Slight	Slight.
Orangeburg						
Pt*	Variable	Variable	Variable	Variable	Variable	Variable.
Pits						
SpC2	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Springhill						
SuC*:						
Springhill	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
TaE	Severe:	Moderate:	Moderate:	Severe:	Moderate:	Moderate:
Troup	cutbanks cave.	slope.	slope.	slope.	slope.	droughty, slope.
TgC*:						
Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Alaga	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
TvE*:						
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Luverne	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
UdB*, UdE*	Variable	Variable	Variable	Variable	Variable	Variable.
Udorthents						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Un*-- Urban land	Variable	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ArE*:					
Arundel	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Troup	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: slope.
BnB Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
BoB*:					
Bonneau	Severe: wetness.	Severe: seepage.	Severe: wetness.	Severe: seepage.	Fair: too sandy.
Eunola	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness, thin layer.
CaA Cahaba	Slight	Severe: seepage.	Severe: seepage.	Slight	Good.
CmB Compass	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Moderate: wetness.	Severe: seepage.	Good.
CnC2 Conecuh	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
CoC Cowarts	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
CtE*:					
Cowarts	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Troup	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: slope.
DoB Dothan	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight	Good.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EuA Eunola	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness, thin layer.
FaB Fuquay	Severe: percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
FtC*: Fuquay	Severe: percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
FuC*: Fuquay	Severe: percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
Urban land	Variable	Variable	Variable	Variable	Variable.
GrB2 Greenville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
LcB, LcC Lucy	Slight	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
LdC*: Lucy	Slight	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
Urban land	Variable	Variable	Variable	Variable	Variable.
LeE Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
LnC2 Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
LrC*: Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
Arundel	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
LsE*: Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LsE*:					
Springhill	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
MAA*:					
Mantachie	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Iuka	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
NaE Nankin	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
NeC2*:					
Nankin	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Greenville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
OkC2 Oktibbeha	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, too acid.	Slight	Poor: too clayey, hard to pack.
OrB Orangeburg	Slight	Moderate: slope.	Slight	Slight	Good.
Pt* Pits	Variable	Variable	Variable	Variable	Variable.
SpC2 Springhill	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
SuC*:					
Springhill	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
Urban land	Variable	Variable	Variable	Variable	Variable.
TaE Troup	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: slope.
TgC*:					
Troup	Slight	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TgC*: Alaga	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
TvE*: Troup	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: slope.
Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack, slope.
UdB*, UdE* Udorthents	Variable	Variable	Variable	Variable	Variable.
Un* Urban land	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
ArE*:				
Arundel	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Troup	Fair: slope.	Probable	Improbable: too sandy.	Poor: slope.
BnB Bonifay	Good	Probable	Improbable: too sandy.	Fair: too sandy.
BoB*:				
Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Eunola	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey, small stones, thin layer.
CaA Cahaba	Good	Probable	Improbable: too sandy.	Fair: too clayey.
CmB Compass	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
CnC2 Conecuh	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CoC Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
CtE*:				
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Troup	Good	Probable	Improbable: too sandy.	Fair: too sandy, slope.
DoB Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
EuA Eunola	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey, small stones, thin layer.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FaB Fuquay	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones.
FtC*: Fuquay	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones.
Bonifay	Good	Probable	Improbable: too sandy.	Fair: too sandy.
FuC*: Fuquay	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones.
Urban land	Variable	Variable	Variable	Variable.
GrB2 Greenville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LcB, LcC Lucy	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy.
LdC*: Lucy	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy.
Urban land	Variable	Variable	Variable	Variable.
LeE, LnC2 Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LrC*: Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Arundel	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
LsE*: Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Springhill	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
MAA*: Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Iuka	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NaE---------- Nankin	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
NeC2*:				
Nankin----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Greenville----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
OkC2---------- Oktibbeha	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, too acid.
OrB---------- Orangeburg	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Pt*---------- Pits	Variable----------	Variable----------	Variable----------	Variable.
SpC2---------- Springhill	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
SuC*:				
Springhill----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land----------	Variable----------	Variable----------	Variable----------	Variable.
TaE---------- Troup	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, slope.
TgC*:				
Troup----------	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy.
Alaga----------	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
TvE*:				
Troup----------	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, slope.
Luverne----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
UdB*, UdE*---------- Udorthents	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Un*---------- Urban land	Variable----------	Variable----------	Variable----------	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
ArE*:						
Arundel	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, fast intake, percs slowly.	Slope, depth to rock.	Slope, depth to rock.
Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Fast intake, slope.	Slope	Slope.
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
BnB	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
Bonifay						
BoB*:						
Bonneau	Severe: seepage.	Severe: thin layer.	Deep to water	Droughty, fast intake.	Favorable	Droughty.
Eunola	Severe: seepage.	Severe: piping, wetness.	Flooding	Wetness, fast intake.	Wetness	Favorable.
CaA	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Favorable	Favorable	Favorable.
Cahaba						
CmB	Severe: seepage.	Severe: piping.	Favorable	Droughty	Favorable	Droughty, rooting depth.
Compass						
CnC2	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Percs slowly	Droughty.
Conecuh						
CoC	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty.	Percs slowly	Droughty, rooting depth.
Cowarts						
CtE*:						
Cowarts	Severe: slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Slope, percs slowly.	Slope, droughty, rooting depth.
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
DoB	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable	Favorable	Favorable.
Dothan						
EuA	Severe: seepage.	Severe: piping, wetness.	Flooding	Wetness, fast intake.	Wetness	Favorable.
Eunola						

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
FaB Fuquay	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
FtC*: Fuquay	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
Bonifay	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
FuC*: Fuquay	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
GrB2 Greenville	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable	Favorable.
LcB, LcC Lucy	Severe: seepage.	Severe: piping.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
LdC*: Lucy	Severe: seepage.	Severe: piping.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
LeE Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
LnC2 Luverne	Moderate: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.
LrC*: Luverne	Moderate: slope.	Severe: piping, hard to pack.	Deep to water	Fast intake, slope.	Favorable	Favorable.
Arundel	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, fast intake, percs slowly.	Depth to rock	Depth to rock.
LsE*: Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
Springhill	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MAA*:						
Mantachie	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Kinston	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Iuka	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
NaE Nankin	Severe: slope.	Moderate: piping.	Deep to water	Slope	Slope	Slope.
NeC2*:						
Nankin	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope	Favorable	Favorable.
Greenville	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
OkC2 Oktibbeha	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, slow intake, percs slowly.	Percs slowly	Percs slowly.
OrB Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Fast intake, slope.	Favorable	Favorable.
Pt* Pits	Variable	Variable	Variable	Variable	Variable	Variable.
SpC2 Springhill	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
SuC*:						
Springhill	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
TaE Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
TgC*:						
Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
Alaga	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty, rooting depth.
TvE*:						
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
TvE*:						
Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
UdB*, UdE* Udorthents	Variable	Variable	Variable	Variable	Variable	Variable.
Un* Urban land	Variable	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
ArE*:											
Arundel	0-9	Loamy sand	SM	A-2, A-4	0-6	85-100	80-95	60-90	19-45	<20	NP
	9-29	Clay loam, silty clay, clay.	CL, CH	A-7	0-15	85-100	80-100	80-100	65-90	44-70	22-41
	29-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
Luverne	0-7	Loamy sand	SM	A-2, A-4	0-5	85-100	80-95	60-90	19-45	<20	NP
	7-20	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	20-40	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	40-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
Troup	0-46	Loamy sand	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	<20	NP
	46-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
BnB	0-57	Loamy sand	SM	A-2-4	0	98-100	98-100	65-95	13-20	<20	NP
Bonifay	57-80	Sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2-4, A-4, A-2-6, A-6	0	95-100	90-100	63-95	23-50	<30	NP-12
BoB*:											
Bonneau	0-26	Loamy sand	SM	A-2	0	100	100	50-95	15-35	<20	NP
	26-50	Sandy loam, sandy clay loam, fine sandy loam.	SC, SC-SM	A-2, A-6, A-4	0	100	100	60-100	30-50	21-40	4-21
	50-65	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SC-SM, CL-ML	A-4, A-6, A-2	0	100	100	60-95	25-60	20-40	4-18
Eunola	0-12	Loamy sand	SM, SP-SM	A-2, A-4, A-2-4	0	100	98-100	50-80	10-38	<20	NP
	12-36	Sandy clay loam, clay loam, fine sandy loam.	SM, SC, SC-SM, CL	A-4, A-2, A-6	0	100	90-100	75-95	30-60	<36	NP-15
	36-50	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	0	100	98-100	60-70	30-40	<30	NP-10
	50-65	Sand, loamy sand, fine sand.	SM, SP-SM	A-2, A-3	0	100	98-100	50-75	5-30	<20	NP
CaA	0-8	Sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	<30	NP
Cahaba	8-43	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-75	22-35	8-15
	43-65	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	<20	NP
CmB	0-19	Loamy sand	SM	A-2-4	0	95-100	95-100	75-95	13-25	<20	NP
Compass	19-39	Sandy loam, fine sandy loam.	SM	A-2-4	0	95-100	95-100	75-95	20-30	<20	NP-3
	39-65	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6, A-4, A-6	0	100	100	90-100	20-50	<30	NP-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
CnC2---------- Conecuh	0-2	Sandy clay loam	SM, ML, CL-ML, SC-SM	A-4	0	95-100	95-100	70-100	40-70	<20	NP-5
	2-10	Clay loam, clay, silty clay loam.	ML, MH, CL, CH	A-7, A-6	0	95-100	95-100	85-100	70-95	35-60	10-30
	10-60	Clay, silty clay	ML, MH, CH	A-7	0	95-100	95-100	90-100	80-98	45-70	15-45
CoC---------- Cowarts	0-9	Sandy loam-------	SM, SC-SM	A-2, A-4	0	95-100	90-100	75-90	20-40	<20	NP-5
	9-34	Sandy clay loam, sandy clay, clay loam.	SM, SC	A-6, A-7, A-2-6	0	95-100	90-100	60-95	25-50	20-54	5-25
	34-60	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	25-58	25-53	5-20
CtE*:											
Cowarts---------	0-6	Loamy sand-------	SM	A-2	0	90-100	85-100	50-80	13-30	<20	NP
	6-40	Sandy clay loam, sandy clay, clay loam.	SM, SC	A-6, A-7, A-2-6	0	95-100	90-100	60-95	25-50	20-54	5-25
	40-65	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	25-58	25-53	5-20
Troup----------	0-58	Loamy sand-------	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	<20	NP
	58-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
DoB---------- Dothan	0-6	Sandy loam-------	SM, SP-SM	A-2, A-4	0	95-100	92-100	75-90	20-40	<25	NP-5
	6-35	Sandy clay loam, sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	0	95-100	92-100	60-90	23-49	<40	NP-16
	35-60	Sandy clay loam--	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-53	25-45	4-23
EuA---------- Eunola	0-12	Loamy sand-------	SM, SP-SM	A-2, A-4, A-2-4	0	100	98-100	50-80	10-38	<20	NP
	12-36	Sandy clay loam, clay loam, fine sandy loam.	SM, SC, SC-SM, CL	A-4, A-2, A-6	0	100	90-100	75-95	30-60	<36	NP-15
	36-50	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	0	100	98-100	60-70	30-40	<30	NP-10
	50-65	Sand, loamy sand, fine sand.	SM, SP-SM	A-2, A-3	0	100	98-100	50-75	5-30	<20	NP
FaB---------- Fuquay	0-29	Loamy sand-------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	10-20	NP
	29-48	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	85-100	70-90	23-45	20-45	NP-13
	48-65	Sandy clay loam	SC, SC-SM, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	58-90	28-49	25-45	4-13
FtC*:											
Fuquay----------	0-36	Loamy sand-------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	10-20	NP
	36-48	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	85-100	70-90	23-45	20-45	NP-13
	48-70	Sandy clay loam	SC, SC-SM, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	58-90	28-49	25-45	4-13

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
FtC*:											
Bonifay	0-53	Loamy sand	SM	A-2-4	0	98-100	98-100	65-95	13-20	<20	NP
	53-70	Sandy loam, sandy clay loam, fine sandy loam.	SC-SM, SC, SM	A-2-4, A-4, A-2-6, A-6	0	95-100	90-100	63-95	23-50	<30	NP-12
FuC*:											
Fuquay	0-29	Loamy sand	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	10-20	NP
	29-48	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	85-100	70-90	23-45	20-45	NP-13
	48-65	Sandy clay loam	SC, SC-SM, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	58-90	28-49	25-45	4-13
Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---
GrB2	0-7	Sandy clay loam	CL, SC, CL-ML, SC-SM	A-4, A-6	0	95-100	95-100	75-95	45-75	20-35	6-15
Greenville	7-60	Sandy clay, clay	CL, SC	A-6, A-7, A-4	0	98-100	95-100	80-99	40-80	28-50	7-25
LcB, LcC	0-24	Loamy sand	SM, SP-SM	A-2, A-4	0	98-100	95-100	50-90	10-40	<20	NP
Lucy	24-65	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	10-30	NP-15
LdC*:											
Lucy	0-24	Loamy sand	SM, SP-SM	A-2, A-4	0	98-100	95-100	50-90	10-40	<20	NP
	24-65	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	10-30	NP-15
Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---
LeE	0-6	Sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
Luverne	6-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	35-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
LnC2	0-8	Clay loam	SM, ML, CL, SC	A-6, A-4	0-5	90-100	85-100	80-100	40-70	22-38	3-16
Luverne	8-31	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	31-40	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	40-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
LrC*:											
Luverne	0-4	Loamy sand	SM	A-2, A-4	0-5	85-100	80-95	60-90	19-45	<20	NP
	4-36	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	36-60	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
LrC*:											
Arundel	0-9	Loamy sand	SM	A-2, A-4	0-6	85-100	80-95	60-90	19-45	<20	NP
	9-29	Clay loam, silty clay, clay.	CL, CH	A-7	0-15	85-100	80-100	80-100	65-90	44-70	22-41
	29-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
LsE*:											
Luverne	0-3	Sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	3-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	35-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
Springhill	0-5	Sandy loam	SM	A-2	0-5	98-100	95-100	75-85	20-35	<30	NP
	5-11	Sandy loam, fine sandy loam.	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	11-45	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	0	98-100	95-100	70-96	40-65	22-46	8-21
	45-65	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	0	98-100	95-100	70-96	15-45	<30	3-16
MAA*:											
Mantachie	0-4	Loam	CL-ML, SC-SM, SM, ML	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	4-65	Loam, clay loam, sandy clay loam.	CL, SC, SC-SM, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
Kinston	0-5	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	100	98-100	55-100	25-49	20-35	NP-10
	5-65	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	0	100	95-100	75-100	60-95	20-45	8-22
Iuka	0-4	Loam	ML, CL-ML	A-4	0	95-100	95-100	80-95	50-80	<30	NP-7
	4-32	Fine sandy loam, loam, sandy loam.	SM, SC-SM, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-75	<30	NP-7
	32-65	Sandy loam, loam, loamy sand.	SM, ML	A-2, A-4	0	95-100	90-100	70-100	25-60	<30	NP-7
NaE	0-4	Flaggy loamy sand	SM, SP-SM	A-2	10-35	85-100	85-100	50-85	10-35	<20	NP
Nankin	4-50	Sandy clay, clay, sandy clay loam.	SC, CL, ML, CL-ML	A-4, A-6, A-7	0	98-100	95-100	75-95	40-70	25-45	7-20
	50-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	98-100	95-100	70-85	25-55	20-40	4-16
NeC2*:											
Nankin	0-7	Sandy clay loam	SM, SC-SM, ML, CL-ML	A-4	0	90-100	90-100	70-95	36-55	<25	NP-7
	7-51	Sandy clay, clay, clay loam.	SC, CL, ML, CL-ML	A-4, A-6, A-7	0	98-100	95-100	75-95	40-70	25-45	7-20
	51-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	98-100	95-100	70-85	25-55	20-40	4-16

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
NeC2*:											
Greenville	0-6	Sandy clay loam	CL, SC, CL-ML, SC-SM	A-4, A-6	0	95-100	95-100	75-95	45-75	20-35	6-15
	6-65	Sandy clay, clay	CL, SC, ML	A-6, A-7, A-4	0	98-100	95-100	80-99	40-80	28-50	7-25
OkC2	0-6	Clay	CH, CL	A-7	0	100	100	90-100	90-100	42-64	30-40
Oktibbeha	6-17	Clay	CH	A-7	0	100	100	95-100	95-100	55-75	35-50
	17-33	Clay	CH	A-7	0	100	100	95-100	95-100	55-75	35-50
	33-60	Clay, silty clay	CL	A-7	0	100	100	90-100	90-100	42-65	30-45
OrB	0-8	Loamy sand	SM	A-2	0	98-100	95-100	60-87	14-28	<20	NP
Orangeburg	8-65	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4	0	98-100	95-100	71-96	38-58	22-40	3-19
Pt*	0-60	Variable	---	---	---	---	---	---	---	---	---
Pits											
SpC2	0-5	Sandy loam	SM	A-2	0-5	98-100	95-100	75-85	20-35	<20	NP
Springhill	5-11	Sandy loam, fine sandy loam.	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	11-45	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	0	98-100	95-100	70-96	40-65	22-46	8-21
	45-65	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	0	98-100	95-100	70-96	15-45	<30	3-16
SuC*:											
Springhill	0-5	Sandy loam	SM	A-2	0-5	98-100	95-100	75-85	20-35	<20	NP
	5-11	Sandy loam, fine sandy loam.	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	11-45	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	0	98-100	95-100	70-96	40-65	22-46	8-21
	45-65	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	0	98-100	95-100	70-96	15-45	<30	3-16
Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---
TaE	0-46	Loamy sand	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	<20	NP
Troup	46-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
TgC*:											
Troup	0-54	Loamy sand	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	<20	NP
	54-80	Sandy clay loam, sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
Alaga	0-6	Loamy sand	SM, SW-SM, SP-SM	A-2, A-1-B	0	100	100	40-80	10-35	<25	NP-4
	6-90	Loamy sand, loamy fine sand, sand.	SM, SW-SM, SP-SM	A-2	0	100	100	50-85	10-35	<25	NP-4
TvE*:											
Troup	0-54	Loamy sand	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	<20	NP
	54-65	Sandy clay loam, sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
TvE*:											
Luverne	0-10	Sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	10-50	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	50-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
UdB*, UdE* Udorthents	0-80	Variable	---	---	---	---	---	---	---	---	---
Un* Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
ArE*:										
Arundel	0-9	2-12	1.40-1.70	2.0-6.0	0.06-0.12	3.6-5.5	Low	0.28	3	.5-1
	9-29	35-78	1.55-1.65	<0.06	0.12-0.18	3.6-4.4	High	0.32		
	29-60	---	---	0.01-0.06	---	---				
Luverne	0-7	2-12	1.40-1.70	2.0-6.0	0.06-0.12	3.6-5.5	Low	0.15	5	.5-1
	7-20	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	20-40	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low	0.28		
	40-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		
Troup	0-46	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Low	0.10	5	<1
	46-65	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.20		
BnB	0-57	6-12	1.50-1.60	6.0-20	0.05-0.10	4.5-6.5	Low	0.10	5	.5-3
Bonifay	57-80	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	Low	0.24		
BoB*:										
Bonneau	0-26	5-15	1.30-1.70	6.0-20	0.05-0.11	4.5-6.0	Low	0.10	5	.5-2
	26-50	13-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20		
	50-65	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	Low	0.20		
Eunola	0-12	3-11	1.45-1.70	2.0-6.0	0.06-0.11	4.5-5.5	Low	0.15	5	.5-2
	12-36	18-35	1.35-1.65	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
	36-50	8-25	1.35-1.65	2.0-6.0	0.10-0.16	4.5-5.5	Low	0.24		
	50-65	2-11	1.45-1.75	6.0-20	0.02-0.06	4.5-5.5	Low	0.20		
CaA	0-8	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low	0.24	5	.5-2
Cahaba	8-43	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.28		
	43-65	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low	0.24		
CmB	0-19	6-12	1.45-1.65	6.0-20	0.05-0.10	4.5-5.5	Low	0.15	5	1-3
Compass	19-39	10-18	1.40-1.60	2.0-6.0	0.10-0.15	4.5-5.5	Low	0.20		
	39-65	15-35	1.55-1.75	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.28		
CnC2	0-2	7-25	1.40-1.60	0.6-2.0	0.10-0.15	3.6-5.5	Low	0.28	5	.5-2
Conecuh	2-10	35-50	1.35-1.60	0.06-0.2	0.12-0.18	3.6-5.5	Moderate	0.32		
	10-60	45-70	1.30-1.55	<0.06	0.08-0.19	3.6-5.5	High	0.32		
CoC	0-9	5-20	1.30-1.65	2.0-6.0	0.08-0.13	4.5-5.5	Low	0.24	4	1-3
Cowarts	9-34	25-40	1.30-1.50	0.2-2.0	0.10-0.16	4.5-5.5	Low	0.28		
	34-60	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low	0.24		
CtE*:										
Cowarts	0-6	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	Low	0.15	4	.5-2
	6-40	25-40	1.30-1.50	0.2-2.0	0.10-0.16	4.5-5.5	Low	0.28		
	40-65	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low	0.24		
Troup	0-58	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Low	0.10	5	<1
	58-65	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.20		
DoB	0-6	10-18	1.30-1.70	2.0-6.0	0.08-0.13	4.5-6.0	Low	0.24	5	.5-1
Dothan	6-35	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low	0.28		
	35-60	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	Low	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
EuA	0-12	3-11	1.45-1.70	2.0-6.0	0.06-0.11	4.5-5.5	Low	0.15	5	.5-2
Eunola	12-36	18-35	1.35-1.65	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
	36-50	8-25	1.35-1.65	2.0-6.0	0.10-0.16	4.5-5.5	Low	0.24		
	50-65	2-11	1.45-1.75	6.0-20	0.02-0.06	4.5-5.5	Low	0.20		
FaB	0-29	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	Low	0.10	5	.5-2
Fuquay	29-48	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.20		
	48-65	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low	0.20		
FtC*:										
Fuquay	0-36	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	Low	0.10	5	.5-2
	36-48	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.20		
	48-70	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low	0.20		
Bonifay	0-53	6-12	1.50-1.60	6.0-20	0.05-0.10	4.5-6.5	Low	0.10	5	.5-3
	53-70	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	Low	0.24		
FuC*:										
Fuquay	0-29	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	Low	0.10	5	.5-2
	29-48	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.20		
	48-65	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low	0.20		
Urban land	0-6	---	---	---	---	---		---	---	---
GrB2	0-7	15-30	1.30-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Low	0.24	5	1-3
Greenville	7-60	35-55	1.35-1.55	0.6-2.0	0.14-0.18	4.5-6.0	Low	0.17		
LcB, LcC	0-24	1-12	1.30-1.70	6.0-20	0.08-0.12	5.1-6.0	Low	0.10	5	.5-1
Lucy	24-65	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	Low	0.24		
LdC*:										
Lucy	0-24	1-12	1.30-1.70	6.0-20	0.08-0.12	5.1-6.0	Low	0.10	5	.5-1
	24-65	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	Low	0.24		
Urban land	0-6	---	---	---	---	---		---	---	---
LeE	0-6	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low	0.24	5	.5-1
Luverne	6-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	35-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		
LnC2	0-8	20-35	1.35-1.65	0.2-0.6	0.12-0.16	3.6-5.5	Low	0.28	5	<.5
Luverne	8-31	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	31-40	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low	0.28		
	40-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		
LrC*:										
Luverne	0-4	2-12	1.40-1.70	2.0-6.0	0.06-0.12	3.6-5.5	Low	0.15	5	.5-1
	4-36	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	36-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		
Arundel	0-9	2-12	1.40-1.70	2.0-6.0	0.06-0.12	3.6-5.5	Low	0.28	3	.5-1
	9-29	35-78	1.55-1.65	<0.06	0.12-0.18	3.6-4.4	High	0.32		
	29-60	---	---	0.01-0.06	---	---		---		
LsE*:										
Luverne	0-3	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low	0.24	5	.5-1
	3-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	35-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
LsE*:										
Springhill	0-5	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low	0.20	5	.5-2
	5-11	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
	11-45	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low	0.24		
	45-65	5-25	1.40-1.65	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
MAA*:										
Mantachie	0-4	8-20	1.50-1.60	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.28	5	1-3
	4-65	18-34	1.50-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.28		
Kinston	0-5	5-18	1.40-1.60	2.0-6.0	0.13-0.19	4.5-6.0	Low	0.24	5	2-5
	5-65	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.32		
Iuka	0-4	6-15	1.35-1.60	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.37	5	.5-2
	4-32	8-18	1.40-1.60	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	32-65	5-15	1.40-1.60	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.20		
NaE	0-4	5-12	1.45-1.65	2.0-6.0	0.03-0.08	4.5-5.5	Low	0.10	4	.5-1
Nankin	4-50	35-50	1.30-1.70	0.2-0.6	0.11-0.16	4.5-5.5	Low	0.24		
	50-65	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.24		
NeC2*:										
Nankin	0-7	20-30	1.45-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.32	4	.5-1
	7-51	35-50	1.30-1.70	0.2-0.6	0.11-0.16	4.5-5.5	Low	0.24		
	51-65	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.24		
Greenville	0-6	15-30	1.30-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Low	0.24	5	1-3
	6-70	35-55	1.35-1.55	0.6-2.0	0.14-0.18	4.5-6.0	Low	0.17		
OkC2	0-6	40-60	1.10-1.40	0.00-0.06	0.12-0.16	4.5-7.3	High	0.32	5	2-7
Oktibbeha	6-17	60-80	1.00-1.30	0.00-0.06	0.12-0.16	3.5-5.5	Very high	0.32		
	17-33	60-80	1.00-1.30	0.00-0.06	0.12-0.16	3.5-6.5	Very high	0.32		
	33-60	50-70	1.10-1.40	0.00-0.06	0.05-0.10	6.6-8.4	Very high	0.32		
OrB	0-8	4-10	1.35-1.55	2.0-6.0	0.06-0.09	4.5-6.0	Low	0.10	5	.5-1
Orangeburg	8-65	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low	0.24		
Pt*	0-60	---	---	---	---	---	---	----	---	---
Pits										
SpC2	0-5	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low	0.20	5	.5-2
Springhill	5-11	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
	11-45	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low	0.24		
	45-65	5-25	1.40-1.65	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
SuC*:										
Springhill	0-5	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low	0.20	5	.5-2
	5-11	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
	11-45	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low	0.24		
	45-65	5-25	1.40-1.65	2.0-6.0	0.07-0.12	4.5-5.5	Low	0.20		
Urban land	0-6	---	---	---	---	---	---	----	---	---
TaE	0-46	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Low	0.10	5	<1
Troup	46-65	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.20		
TgC*:										
Troup	0-54	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Low	0.10	5	<1
	54-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.20		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
TgC*:										
Alaga	0-6	2-12	1.60-1.75	6.0-20	0.05-0.09	3.6-6.0	Low	0.10	5	.5-3
	6-90	2-12	1.60-1.75	6.0-20	0.05-0.09	3.6-6.0	Low	0.10		
TvE*:										
Troup	0-54	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Low	0.10	5	<1
	54-65	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low	0.20		
Luverne	0-10	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low	0.24	5	.5-1
	10-50	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28		
	50-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.28		
UdB*, UdE* Udorthents	0-80	---	---	---	---	3.6-5.5	Low	----	5	<.5
Un* Urban land	0-6	---	---	---	---	---	---	----	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
ArE*:											
Arundel	C	None	---	---	>6.0	---	---	20-40	Soft	High	High.
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
BnB	A	None	---	---	4.0-5.0	Perched	Dec-Mar	>60	---	Low	High.
Bonifay											
BoB*:											
Bonneau	A	None	---	---	3.5-5.0	Perched	Dec-Mar	>60	---	Low	High.
Eunola	C	Occasional	Brief	Dec-Apr	1.5-2.5	Apparent	Dec-Mar	>60	---	Low	High.
CaA	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Cahaba											
CmB	B	None	---	---	2.5-3.5	Perched	Dec-Mar	>60	---	Moderate	High.
Compass											
CnC2	D	None	---	---	>6.0	---	---	>60	---	High	High.
Conecuh											
CoC	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Cowarts											
CtE*:											
Cowarts	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
DoB	B	None	---	---	3.0-5.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
Dothan											
EuA	C	Occasional	Brief	Dec-Apr	1.5-2.5	Apparent	Dec-Mar	>60	---	Low	High.
Eunola											
FaB	B	None	---	---	4.0-6.0	Perched	Dec-Mar	>60	---	Low	High.
Fuquay											
FtC*:											
Fuquay	B	None	---	---	4.0-6.0	Perched	Dec-Mar	>60	---	Low	High.
Bonifay	A	None	---	---	4.0-5.0	Perched	Dec-Mar	>60	---	Low	High.
FuC*:											
Fuquay	B	None	---	---	4.0-6.0	Perched	Dec-Mar	>60	---	Low	High.
Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---
GrB2	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
Greenville											
LcB, LcC	A	None	---	---	>6.0	---	---	>60	---	Low	High.
Lucy											

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		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
LdC*:											
Lucy	A	None	---	---	>6.0	---	---	>60	---	Low	High.
Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---
LeE, LnC2 Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
LrC*:											
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Arundel	C	None	---	---	>6.0	---	---	20-40	Soft	High	High.
LsE*:											
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
MAA*:											
Mantachie	C	Frequent	Brief	Dec-Apr	1.0-1.5	Apparent	Dec-Apr	>60	---	High	High.
Kinston	D	Frequent	Brief	Dec-Apr	0-1.0	Apparent	Dec-Apr	>60	---	High	High.
Iuka	C	Frequent	Brief	Dec-Apr	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
NaE Nankin	C	None	---	---	>6.0	---	---	>60	---	High	High.
NeC2*:											
Nankin	C	None	---	---	>6.0	---	---	>60	---	High	High.
Greenville	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
OkC2 Oktibbeha	D	None	---	---	>6.0	---	---	>60	---	High	High.
OrB Orangeburg	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Pt* Pits	---	None	---	---	>6.0	---	---	>60	---	---	---
SpC2 Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SuC*:											
Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---
TaE Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
TgC*:											
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Alaga	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
TvE*:											
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.

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		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
TvE*:											
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
UdB*, UdE* Udorthents	C	None	---	---	>6.0	---	---	>60	---	High	High.
Un* Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Bonneau [1]:					
(S85AL-109-4)	0-5	Ap	77.4	17.5	5.1
	5-17	E1	78.4	16.0	5.6
	17-26	E2	79.1	16.6	4.3
	26-34	Bt1	66.6	11.0	22.4
	34-50	Bt2	65.0	12.0	23.0
	50-60	Bt3	68.7	9.4	21.9
Cahaba [1]:					
(S84AL-109-5)	0-8	Ap	68.4	20.8	10.8
	8-27	Bt1	52.9	20.2	26.9
	27-43	Bt2	61.1	19.6	19.3
	43-52	BC	63.2	19.7	17.1
	52-65	C	66.3	18.5	15.2
Compass [1]:					
(S83AL-109-1)	0-9	Ap	82.4	11.6	6.0
	9-19	E	74.1	19.3	6.6
	19-32	Bt1	73.7	13.7	12.6
	32-39	Bt2	64.7	16.8	18.5
	39-52	Btv1	61.3	14.6	24.1
	52-65	Btv2	61.4	15.3	23.3
Cowarts [2]:					
(S84AL-109-3)	0-4	Ap1	69.2	13.2	17.6
	4-9	Ap2	67.2	13.8	19.0
	9-19	Bt1	53.5	11.1	35.4
	19-29	Bt2	58.3	13.4	28.3
	29-38	BC	59.2	12.5	28.3
	38-51	C1	57.6	14.1	28.3
	51-60	C2	59.6	13.6	26.8
Cowarts [3]:					
(S84AL-109-23)	0-5	A	78.6	14.1	7.3
	5-17	Bt1	58.1	12.3	29.6
	17-24	Bt2	55.7	8.4	35.9
	24-35	BC	61.0	7.1	31.9
	35-60	C	65.1	8.1	26.8
Dothan [4]:					
(S84AL-109-1)	0-8	Ap	74.1	13.7	12.2
	8-24	Bt1	52.4	12.7	34.9
	24-38	Bt2	58.6	14.7	26.7
	38-50	Btv1	62.8	10.6	26.6
	50-60	Btv2	58.2	9.1	32.7
Fuquay [1]:					
(S87AL-109-3)	0-10	Ap	84.9	11.5	3.6
	10-20	E1	81.2	14.2	4.6
	20-29	E2	79.1	12.8	8.1
	29-36	Bt	76.7	12.5	10.8
	36-48	Btv1	72.4	11.1	16.5
	48-55	Btv2	68.8	11.5	19.7
	55-65	Btv3	64.6	8.0	27.4

See footnotes at end of table.

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Nankin [1]:					
(S83AL-109-3)	0-7	Ap	58.3	12.5	29.2
	7-19	Bt1	50.9	12.2	36.9
	19-36	Bt2	52.3	9.5	38.2
	36-51	Bt3	62.1	6.4	31.5
	51-65	C	63.4	6.5	30.1

[1] This is the typical pedon for the series in Pike County. For the description and location of the pedon, see the section "Soil Series and Their Morphology."
[2] Pedon is about 700 feet south and 2,200 feet west of the northeast corner of sec. 14, T. 11 N., R. 21 E.
[3] Pedon is about 2,000 feet south and 1,900 feet west of the northeast corner of sec. 15, T. 11 N., R. 21 E.
[4] Pedon is about 200 feet north and 1,200 feet west of the southeast corner of sec. 35, T. 11 N., R. 20 E.

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Extractable bases			Extractable acidity	Base saturation	Reaction	Cation-exchange capacity
			Ca	Mg	K				
	In		Meq 100g			Meq 100g	Pct	pH	Meq 100g
Bonneau [1]:									
(S85AL-109-4)	0-5	Ap	0.30	0.09	0.04	2.32	15.7	5.3	2.75
	5-17	E1	0.47	0.16	0.03	0.88	43.0	5.9	1.54
	17-26	E2	0.35	0.10	0.02	1.20	28.0	5.8	1.67
	26-34	Bt1	0.30	0.42	0.05	4.88	13.7	5.2	5.66
	34-50	Bt2	0.17	0.50	0.05	4.96	12.7	5.2	5.68
	50-60	Bt3	0.12	0.50	0.04	5.12	11.5	5.2	5.79
Cahaba [1]:									
(S84AL-109-5)	0-8	Ap	1.43	0.45	0.34	2.32	48.8	5.2	4.53
	8-27	Bt1	2.25	1.36	0.14	3.20	53.9	5.3	6.94
	27-43	Bt2	0.85	0.45	0.04	3.20	29.6	4.8	4.54
	43-52	BC	0.38	0.40	0.03	3.12	20.6	4.5	3.93
	52-65	C	0.25	0.45	0.03	2.80	20.8	4.7	3.53
Compass [1]:									
(S83AL-109-1)	0-9	Ap	1.95	0.34	0.03	0.80	74.4	6.0	3.13
	9-19	E	0.93	0.34	0.08	0.72	65.2	6.3	2.07
	19-32	Bt1	0.73	0.25	0.04	2.72	27.3	4.7	3.74
	32-39	Bt2	1.23	0.30	0.03	3.52	30.7	4.6	5.08
	39-52	Btv1	1.70	0.38	0.03	3.36	38.6	4.8	5.48
	52-65	Btv2	0.80	0.33	0.04	3.28	26.3	4.6	4.45
Cowarts [2]:									
(S84AL-109-3)	0-4	Ap1	2.60	1.39	0.19	4.08	50.6	5.7	8.26
	4-9	Ap2	1.05	0.61	0.11	3.92	31.2	5.4	5.70
	9-19	Bt1	0.95	0.41	0.11	3.84	27.7	4.9	5.31
	19-29	Bt2	0.73	0.18	0.08	3.76	20.8	4.8	4.75
	29-38	BC	0.75	0.18	0.07	3.84	20.6	4.9	4.84
	38-51	C1	0.68	0.23	0.08	3.92	20.1	4.8	4.91
	51-60	C2	0.70	0.28	0.08	3.68	22.4	4.8	4.74
Cowarts [3]:									
(S84AL-109-23)	0-5	A	0.38	0.14	0.07	2.48	18.9	5.3	3.06
	5-17	Bt1	0.60	0.25	0.03	2.56	25.6	5.2	3.44
	17-24	Bt2	0.47	0.33	0.03	3.76	18.1	5.2	4.59
	24-35	BC	0.15	0.12	0.02	3.04	8.6	5.2	3.33
	35-60	C	0.15	0.88	0.02	3.20	7.4	5.1	3.46
Dothan [4]:									
(S84AL-109-1)	0-8	Ap	0.15	0.06	0.02	1.84	11.0	5.0	2.07
	8-24	Bt1	1.65	0.55	0.07	4.48	33.6	5.2	6.75
	24-38	Bt2	1.68	0.66	0.02	4.32	35.4	5.6	6.68
	38-50	Btv1	1.23	0.75	0.02	4.40	31.2	5.5	6.39
	50-60	Btv2	1.13	0.76	0.02	4.40	30.3	5.5	6.31
Fuquay [1]:									
(S87AL-109-3)	0-10	Ap	0.70	0.40	0.14	0.00	75.6	6.3	1.64
	10-20	E1	0.25	0.09	0.11	0.56	30.2	5.6	1.49
	20-29	E2	0.35	0.12	0.13	0.71	34.7	5.6	1.73
	29-36	Bt	0.40	0.16	0.16	1.02	32.1	5.2	2.24
	36-48	Btv1	0.69	0.29	0.20	0.78	44.7	5.3	2.64
	48-55	Btv2	0.77	0.28	0.15	0.70	39.1	5.3	3.07
	55-65	Btv3	---	0.32	0.15	0.94	---	5.2	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases			Extractable acidity	Base saturation	Reaction	Cation-exchange capacity
			Ca	Mg	K				
	In		Meq 100g			Meq 100g	Pct	pH	Meq 100g
Nankin [1]:									
(S83AL-109-3)	0-7	Ap	3.00	1.04	0.24	2.40	64.1	6.0	6.68
	7-19	Bt1	1.98	0.73	0.06	2.72	50.4	5.7	5.49
	19-36	Bt2	1.70	0.69	0.02	4.32	35.8	5.5	6.73
	36-51	Bt3	0.48	0.57	0.04	3.44	23.9	4.9	4.52
	51-65	C	0.68	0.12	0.02	3.60	18.3	4.9	4.41

[1] This is the typical pedon for the series in Pike County. For the description and location of the pedon, see the section "Soil Series and Their Morphology."
[2] Pedon is about 700 feet south and 2,200 feet west of the northeast corner of sec. 14, T. 11 N., R. 21 E.
[3] Pedon is about 2,000 feet south and 1,900 feet west of the northeast corner of sec. 15, T. 11 N., R. 21 E.
[4] Pedon is about 200 feet north and 1,200 feet west of the southeast corner of sec. 35, T. 11 N., R. 20 E.

TABLE 20.--ENGINEERING INDEX TEST DATA

(LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and NP, nonplastic. Dashes indicate data were not available)

Soil name, sample number, horizon, and depth in inches*	Classification		Grain-size distribution: Percentage passing sieve--							Grain-size distribution: Percentage smaller than--			LL	PI	Moisture density: MD	Moisture density: OM
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	0.02 mm	0.005 mm	0.002 mm				
													Pct		Lb/ cu ft	Pct
Bonneau*:																
(S85AL-109-4)																
Ap----- 0 to 5	A-2-4	SM-SC	100	100	100	100	100	99	29	---	---	---	NP	NP	105.6	13.2
E1----- 5 to 17	A-2-4	SM-SC	100	100	100	100	100	99	29	---	---	---	NP	NP	112.3	10.5
E2----- 17 to 26	A-2-4	SM-SC	100	100	100	100	100	99	28	---	---	---	NP	NP	111.8	10.6
Bt1---- 26 to 34	A-4	SM-SC	100	100	100	100	100	100	41	---	---	---	NP	NP	112.9	14.3
Bt2---- 34 to 50	A-4	SM-SC	100	100	100	100	100	100	39	---	---	---	26.0	7.0	112.5	11.5
Bt3---- 50 to 60	A-2-4	SM-SC	100	100	100	100	100	100	34	---	---	---	25.0	6.0	111.9	10.7
Luverne*:																
(S84AL-109-24)																
Ap1---- 0 to 2	A-2-4	SM-SC	100	100	100	90	82	92	43	---	---	---	NP	NP	103.9	15.4
Ap2---- 2 to 8	A-4	SM-SC	100	100	100	95	89	94	51	---	---	---	23	3	112.7	12.7
Bt1---- 8 to 16	A-7-5	MH	100	100	100	95	95	97	80	---	---	---	53	17	92.2	25.1
Bt2---- 16 to 24	A-7-5	MH	100	100	100	91	90	97	79	---	---	---	57	19	91.4	25.7
Bt3---- 24 to 31	A-7-5	MH	100	100	100	91	89	94	75	---	---	---	58	22	92.5	26.4
BC----- 31 to 40	A-7-5	MH	100	100	100	100	100	99	68	---	---	---	52	13	93.8	23.5
C1----- 40 to 53	A-7-5	MH	100	100	100	99	99	97	67	---	---	---	52	11	92.8	22.8
Mantachie*:																
(S84AL-109-26)																
A------ 0 to 4	A-4	ML	100	100	100	100	100	100	69	---	---	---	41	10	94.2	16.9
Bw----- 4 to 22	A-4	CL-ML	100	100	100	100	100	100	52	---	---	---	26	6	109.2	15.9
Bg1---- 22 to 46	A-6	CL	100	100	100	100	100	100	54	---	---	---	29	12	107.7	15.3
Bg2---- 46 to 54	A-4	CL-ML	100	100	100	100	100	100	58	---	---	---	31	8	108.2	13.4
Bg3---- 54 to 60	A-4	SM-SC	100	100	100	100	100	100	41	---	---	---	22	2	111.1	14.7
Nankin*:																
(S83AL-109-3)																
Ap----- 0 to 7	A-4	SC	100	100	100	99	98	90	46	---	---	---	28	10	110.0	15.7
Bt1---- 7 to 19	A-6	CL	100	100	100	100	100	92	53	---	---	---	35	14	104.6	17.7
Bt2---- 19 to 36	A-6	CL	100	100	100	100	100	93	52	---	---	---	38	15	105.8	17.9
Bt3---- 36 to 51	A-4	SM	100	100	100	100	100	95	42	---	---	---	31	7	109.5	15.7
C------ 51 to 65	A-4	SM	100	100	100	100	100	94	42	---	---	---	31	7	110.7	15.4

* This is the typical pedon for the soil series in Pike County. See the section "Soil Series and Their Morphology" for the location of the pedon.

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alaga	Thermic, coated Typic Quartzipsamments
Arundel	Clayey, montmorillonitic, thermic Typic Hapludults
Bonifay	Loamy, siliceous, thermic Grossarenic Plinthic Paleudults
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Compass	Coarse-loamy, siliceous, thermic Plinthic Paleudults
Conecuh	Clayey, montmorillonitic, thermic Aquic Hapludults
Cowarts	Fine-loamy, siliceous, thermic Typic Kanhapludults
Dothan	Fine-loamy, siliceous, thermic Plinthic Kandiudults
Eunola	Fine-loamy, siliceous, thermic Aquic Hapludults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Kandiudults
Greenville	Clayey, kaolinitic, thermic Rhodic Kandiudults
Iuka	Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Lucy	Loamy, siliceous, thermic Arenic Kandiudults
Luverne	Clayey, mixed, thermic Typic Hapludults
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Nankin	Clayey, kaolinitic, thermic Typic Kanhapludults
Oktibbeha	Very-fine, montmorillonitic, thermic Chromic Dystruderts
Orangeburg	Fine-loamy, siliceous, thermic Typic Kandiudults
Springhill	Fine-loamy, siliceous, thermic Typic Kanhapludults
Troup	Loamy, siliceous, thermic Grossarenic Kandiudults
Udorthents	Typic Udorthents

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