

SOIL SURVEY OF

# Crisp and Turner Counties,

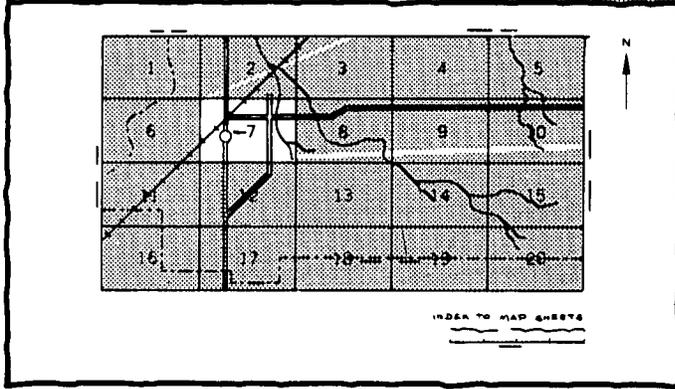
# Georgia

United States Department of Agriculture  
Soil Conservation Service  
in cooperation with  
University of Georgia, College of Agriculture  
Agricultural Experiment Stations



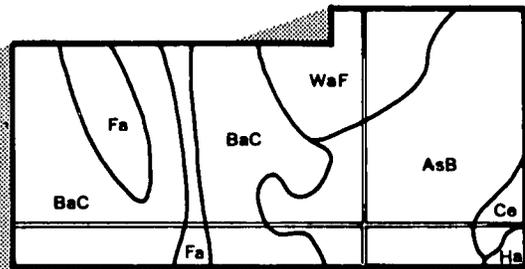
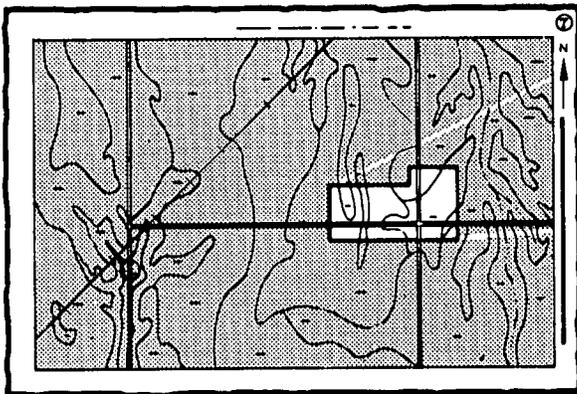
# HOW TO USE

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

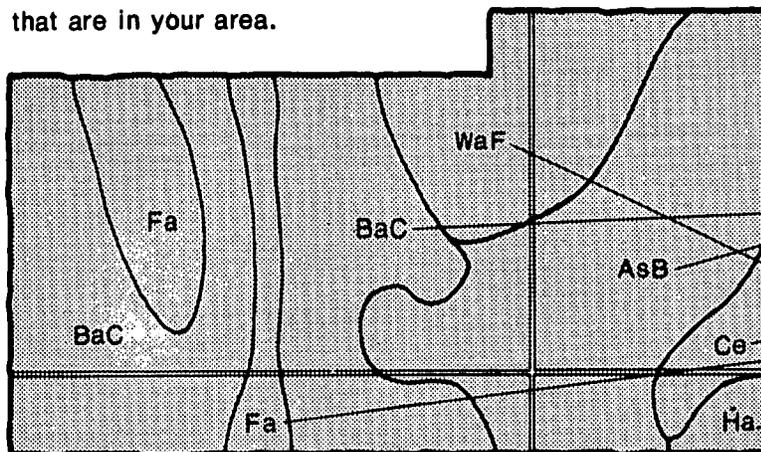


2. Note the number of the map sheet and turn to that sheet.

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



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

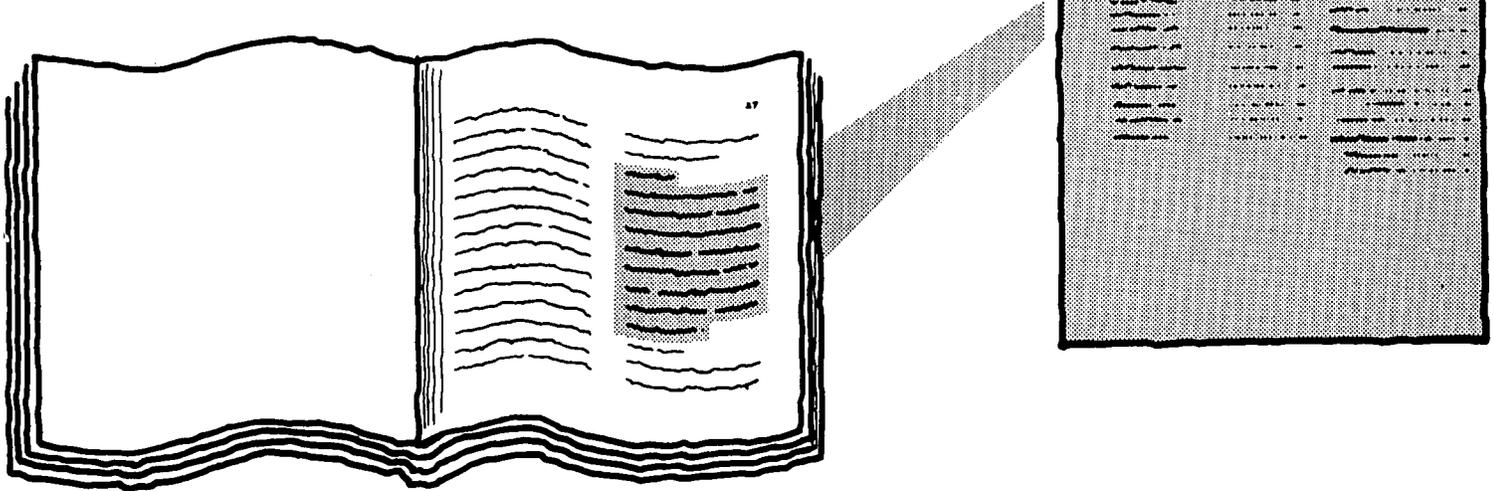


## Symbols

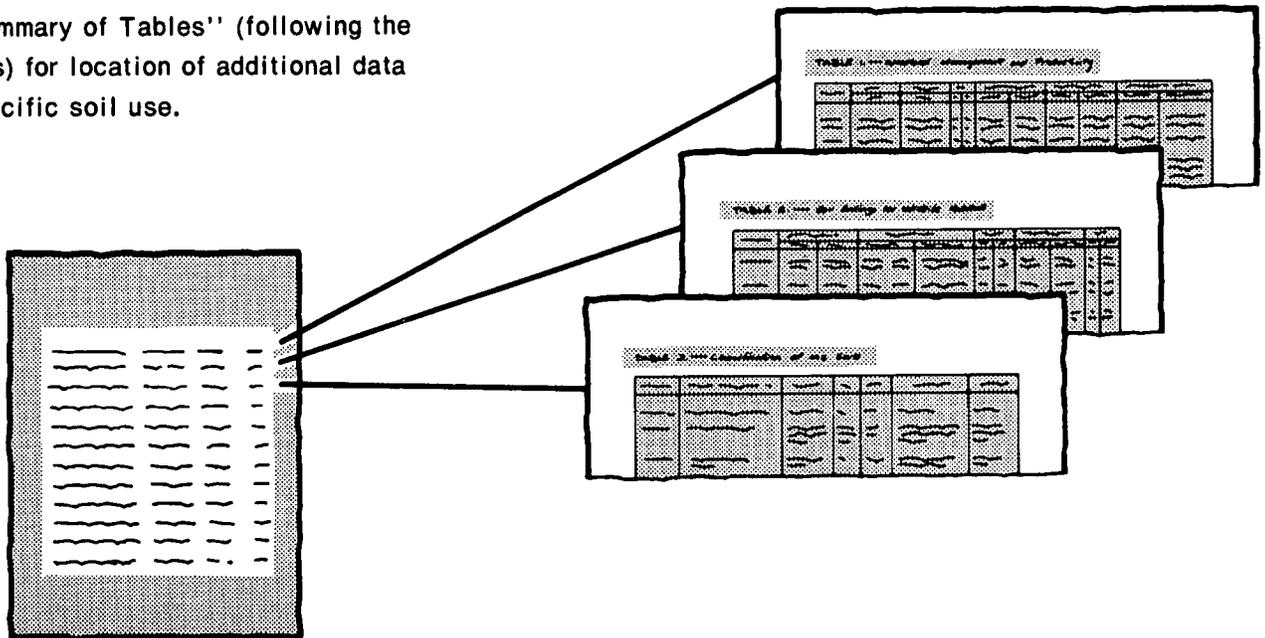
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# THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was performed in the period 1976-77. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Middle South Georgia Soil and Water Conservation District.

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

*Cover: Peanuts and corn growing on Tifton soils. Tifton soils are well suited to these crops.*

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# foreword

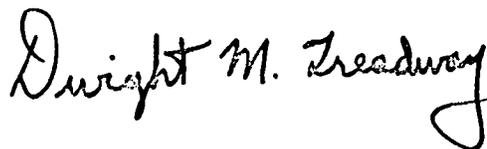
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This soil survey contains information that can be used in land-planning programs in Crisp and Turner Counties. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil,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

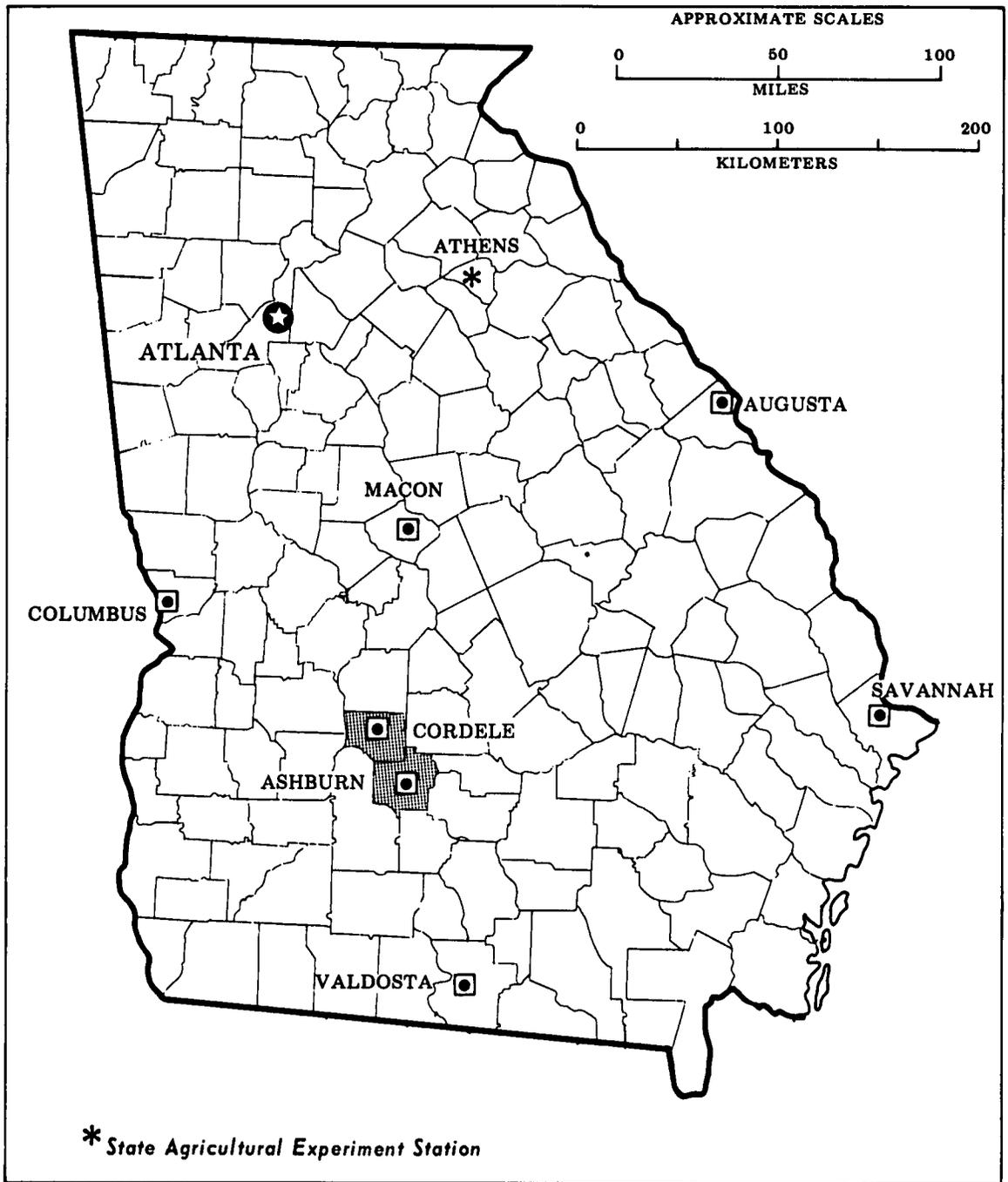
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use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

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

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



Dwight M. Treadway  
State Conservationist  
Soil Conservation Service



*Location of Crisp and Turner Counties in Georgia.*

# soil survey of Crisp and Turner Counties Georgia

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By John W. Calhoun, Soil Conservation Service

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CRISP AND TURNER COUNTIES are in south-central Georgia. They cover an area of 374,400 acres, or 585 square miles. Crisp County occupies 187,072 acres (292.3 square miles). Its population is 18,087. Cordele, the county seat, has a population of 10,733. Turner County occupies 187,328 acres (292.7 square miles) and has a population of 8,790. Its county seat, Ashburn, has a population of 4,209.

Crisp and Turner Counties are mainly agricultural. Farm equipment, pulpwood, textiles, lumber, concrete products, sheet metal, plastic pipe, and chemicals are a few of the important industries.

The most important resource in the counties is soil. Well-managed soils produce abundant market crops, including wood crops and livestock.

## general nature of the counties

Crisp and Turner Counties are in the Southern Coastal Plain major land resource area. The survey area is drained mainly by the Alapaha, Flint, and Little Rivers and their tributaries. Lake Blackshear, through which the Flint River flows, is the western boundary of Crisp County. The Alapaha River separates the upper part of Turner County from Ben Hill County to the east. Little River and Daniels, Deep, Hat, and Lime Creeks and their tributaries are within the survey area. The southwestern part of Crisp County has many ponds and sinks, some as large as 40 acres. They hold water for several months each year.

The landscape is nearly level to sloping and is dissected by many shallow streams. The most sloping soils in the survey area are irregular and choppy. These soils are on uplands about 1 to 3 miles wide. These uplands extend generally southward from northeastern Crisp County to the northwestern corner of Turner County and across Turner County generally to the east.

Most of the soils are well drained and have a sandy surface layer and a mottled clayey subsoil. Nearly level to gently sloping soils on the uplands are extensive. Most of these soils are well drained and have smooth, convex slopes. In places, poorly drained soils are in depressions and drainageways. The soils have a sandy surface layer and a loamy subsoil. Nearly level soils on flood plains are common near the rivers and creeks. These soils are poorly drained and mainly loamy throughout.

Elevation ranges from 230 feet at Smoaks Bridge over Swift Creek in the southwestern tip of Crisp County to 480 feet at a point 1 mile east of Penia in Crisp County. Cordele is at 310 feet, and Ashburn is at 450 feet.

Deep wells drilled into the Ocala Limestone aquifer produce abundant water. These wells range from 230 to 500 feet in depth. In addition to the regular uses, they provide water for irrigation. There are also many farm ponds that are used for watering livestock and for irrigation and recreation. Several flowing wells are near Lake Blackshear in the western part of Crisp County. The Flint River; Gum, Cedar, Limestone, and Swift Creeks; and Lake Blackshear also provide water.

The two counties have many ground transportation routes to local and out-of-state markets. Air transportation is also available. Several produce and livestock markets are at Ashburn and Cordele. Railroad companies and truck lines provide freight service to and from Ashburn and Cordele.

## climate

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

Crisp and Turner Counties have long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short, with only a rare cold wave that moderates in 1 or 2 days. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation, mainly afternoon thundershowers, is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Cordele in the period 1951 to 1976. 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 39 degrees. The lowest temperature on record, which occurred at Cordele on January 30, 1966, is 5 degrees. In summer the average temperature is 80 degrees, and the average daily maximum temperature is 92 degrees. The highest recorded temperature, which occurred on June 29, 1954, is 105 degrees.

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

The total annual precipitation is 45 inches. Of this, 24 inches, or 53 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 4.70 inches at Cordele on December 6, 1972. Thunderstorms occur on about 60 days each year, and most occur in summer.

Snowfall is rare. In 95 percent of the winters, there is no measurable snowfall. In 5 percent, the snowfall, usually of short duration, is more than 3 inches. The heaviest 1-day snowfall on record was more than 4 inches.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the west-northwest. Average windspeed is highest, 10 miles per hour, in March.

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

## settlement

This area was originally occupied by Cherokee, Creek, and Seminole Indians. The first white settlers came mainly from the Carolinas, Maryland, Tennessee, and Virginia and the older settlements in Georgia. Settlement of the area advanced slowly until the building of the Georgia Southern and Florida Railroad in 1888. The development of the lumber and turpentine industries also promoted settlement. In 1890 the first sawmill in the area was used. After the trees were harvested, the land was cleared for crops. By 1910, the population of Crisp County was 16,423, and the population of Turner County was 10,075.

Both Ashburn and Cordele were founded in 1888. Cordele was named for Cordelia Hawkins, daughter of Samuel H. Hawkins, president of the Savannah, Americus, and Montgomery Railroad.

Crisp County was established by the General Assembly of Georgia on August 17, 1905, and Turner County was established the next day. Crisp County was formed from part of Dooly County and was named for Charles Frederick Crisp, a Georgia lawyer and politician. Turner county was formed from parts of Irwin, Wilcox, Dooly, and Worth Counties. It was named for Henry Gray Turner, a captain in the Confederate Army who became a noted legislator in Congress and a judge.

As farm machinery came into use, farms increased in size but fewer people were needed to produce the crops. By 1969 the rural population had decreased to 8,087 in Crisp County and to only 4,581 in Turner County.

## farming

Agricultural development in the survey area was slight before 1888. At the time there were only about a dozen farms. Cotton was the cash crop. The settlers hauled products such as cotton, hides, and tallow to Albany and Montezuma for marketing. Other crops and a few cattle that grazed on native wiregrass were used for subsistence. The Georgia Southern and Florida Railway, opened in 1888, attracted more farmers to the two counties and stimulated agricultural development.

In 1910 cotton and corn were the principal crops. Oats and peanuts were also important. Cotton was grown on about half of the cultivated land in the two counties. Cowpeas, velvetbeans, sweet potatoes, sugarcane, and vegetable crops, such as beans, peas, tomatoes, and Irish potatoes were also grown. Crimson clover, alfalfa, wheat, rye, and barley were the chief hay and forage

crops. Canteloups, pecans, peaches, pears, plums, figs, and watermelons were important fruit crops. In 1914, 100 carloads of canteloups were shipped from Ashburn to northern markets.

Improved varieties, seed selection, and improved cultivation methods were important factors in the early agricultural development. Cotton grew and produced best on Tifton loamy sand and Dothan loamy sand. The Census of 1910 indicates that large amounts of commercial fertilizer were used to increase crop yields.

Hog production was the most important livestock enterprise. Cattle, sheep, and goats also were important. Most farm families had a milch cow to supply milk and butter.

The economic depression in the early 1930's led to misuse of the land. This misuse increased erosion on most sloping soils. Many fields were abandoned because of low crop yields. Changes in land ownership were common, and soil fertility was not maintained in most places. There was definite need to protect land against depletion.

The enactment of soil conservation district legislation in 1937 by the State of Georgia was supported by the leading farmers in Crisp and Turner Counties. The Middle South Georgia Soil and Water Conservation District was organized in 1939, and Crisp and Turner Counties were two of the nine counties included in the District. Farmers in these counties recognized the need for soil conservation to prevent erosion and to improve or maintain fertility. Land use changes were needed in places. Terraces, grassed waterways, improved pastures, and ponds were installed on many farms to control erosion and increase productivity. The land was used according to its capability and treated in accordance with its needs. The soil survey maps made by the Soil Conservation Service were the basis for determining the capability of every acre. Many sloping, seriously eroded, formerly cultivated fields were put in grass or trees.

In 1969 farms covered 153,441 acres (82.0 percent) of Crisp County and 146,013 acres (77.9 percent) of Turner County. These counties produce large acreages of high-yielding peanuts, corn, soybeans, cotton, hay, tobacco, pecans, and truck crops. The acreage of improved bermudagrass and bahiagrass pasture is increasing.

With greater use of farm machinery and improved tillage methods, the number of farms has decreased but the average size has increased. In 1964, Crisp County had 437 farms averaging 336 acres. By 1969, the number of farms had decreased to 384 and the average size had increased to 399 acres. In 1964, Turner County had 508 farms averaging 290 acres; by 1969 there were 427 farms averaging 342 acres.

The sale of crops, including nursery products and hay, produces about 69 percent to the total farm income in the two counties. There are five commercial nurseries in the survey area. Sales from livestock and poultry and their products amount to about 28 percent of the farm income. There are two livestock markets. Forest products are also important.

Many of the soils in these counties are well suited to sprinkler irrigation. Most of the irrigated land is used for peanuts, corn, tobacco, and truck crops. The amount of land under irrigation increased from 1,003 acres in 1964 to 5,057 acres in 1969. By 1978, there were 160 irrigation systems in the area watering about 17,000 acres.

About 103,300 acres in the survey area has wetness limitations. By 1969, 5,118 acres had been artificially drained.

## how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.



# general soil map units

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

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

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

The soils in the survey area differ in suitability for major land uses. In this section, the major land uses for each map unit are given, the main concerns of management are pointed out, and soil properties that limit use are indicated. Cultivated farm crops are mainly corn, soybeans, and peanuts; some cotton is also grown. Pasture crops are mainly improved bermudagrass and bahiagrass. Woodland is land that produces either native trees or introduced species. Nonfarm uses include residential, commercial, and industrial developments and campsites, picnic areas, ballfields, and other areas used for intensive recreation.

## Crisp County

### nearly level soils on flood plains

These soils are in two map units in Crisp County. Slope ranges from 0 to 2 percent. The soils have a grayish, loamy surface layer and grayish, mottled, loamy or sandy underlying layers.

#### 1. Kinston-Osier

*Nearly level soils that are loamy or mainly sandy throughout and are strongly acid to very strongly acid, on flood plains*

This map unit consists of poorly drained soils on long, narrow flood plains. Slope is mostly less than 1 percent. These soils are adjacent to Swift and Deep Creeks.

This map unit makes up about 1 percent of Crisp County. Kinston soils make up about 50 percent of the unit, Osier soils make up about 30 percent, and minor soils make up about 20 percent.

Kinston soils are loamy throughout. Typically, the surface layer is dark gray fine sandy loam about 6 inches thick. The subsoil extends to a depth of about 44 inches. It is gray sandy clay loam that has yellowish brown mottles. To a depth of 62 inches, the substratum is gray sandy loam that has light gray and brownish yellow mottles.

Osier soils are mainly sandy. Typically, the surface layer is about 12 inches thick. It is very dark gray fine sandy loam in the upper part and dark gray loamy sand in the lower part. Below this, to a depth of 65 inches or more, are layers of grayish sand or coarse sand that has gray and brown mottles.

Minor in this unit are Ocilla, Rains, and Wahee soils. Ocilla and Wahee soils are somewhat poorly drained and are on stream terraces. Rains soils are poorly drained and are on flats and in slight depressions on terraces.

The soils in this unit are used mainly for woodland. Sweetgum, blackgum, and water oak are the dominant trees, but slash pine and loblolly pine are grown in a few places. A few areas are in pasture. Cattle and hogs are the main kinds of livestock. The main concerns in management are overcoming wetness and controlling flooding. The flooding hazard and the seasonal high water table severely limit most nonfarm uses.

#### 2. Herod

*Nearly level soils that are loamy throughout and are mainly medium acid to neutral, on flood plains*

This map unit consists of poorly drained soils on long, narrow flood plains. Slope is mostly less than 1 percent. These soils are adjacent to Limestone, Gum, Gully, and Cedar Creeks.

This map unit makes up about 2 percent of Crisp County. Herod soils make up about 70 percent of the unit, and minor soils make up about 30 percent.

Typically, Herod soils have a mainly gray sandy loam surface layer about 11 inches thick. The substratum is stratified clay loam, sandy clay loam, and sandy loam that are mostly gray and have yellowish brown mottles.

Minor soils in this unit are Osier, Rains, and Wahee soils. Poorly drained Osier soils are on flood plains near the stream channels. Poorly drained Rains soils and

somewhat poorly drained Wahee soils are on slightly higher stream terraces.

The soils in this unit are used mainly for woodland. Sweetgum, blackgum, and water oak are the dominant trees, but slash pine and loblolly pine are grown in a few places. A few areas are in pasture. Beef cattle and hogs are the main kinds of livestock. The main concerns in management are overcoming wetness and controlling flooding. The flooding hazard and the seasonal high water table severely limit most nonfarm uses.

**nearly level and very gently sloping soils on uplands and nearly level soils in depressions and along drainageways**

These soils are in one map unit in Crisp County. Areas are smooth and convex, and slope is 0 to 5 percent. The soils on higher parts of the landscape are excessively drained and well drained. They are brownish and sandy throughout, or they have a brownish, sandy surface layer and a yellowish, loamy subsoil that is mottled in the lower part. The soils on lower parts of the landscape are poorly drained. They have mainly a grayish, sandy surface layer and a grayish, loamy, mottled subsoil.

**3. Lakeland-Fuquay-Alapaha**

*Nearly level and very gently sloping soils that have a sandy surface layer and sandy or loamy underlying layers, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops, along the intervening narrow intermittent drainageways, and in depressions. Slope ranges from 0 to 5 percent. These soils are mostly adjacent to and east of Lake Blackshear in the western part of Crisp County.

This map unit makes up about 4 percent of Crisp County. Lakeland soils make up about 45 percent of this unit, Fuquay soils make up about 25 percent, Alapaha soils make up about 15 percent, and minor soils make up about 15 percent.

Lakeland soils are on broad ridgetops on the uplands. These excessively drained soils are sandy throughout. Typically, the surface layer is grayish brown sand about 6 inches thick. The substratum is sand to a depth of 80 inches. The upper part is yellowish brown, the middle part is light yellowish brown, and the lower part is yellow with very pale brown mottles.

Fuquay soils are on broad ridgetops on the uplands. These well drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow

sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are in the upper 51 inches.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the lower part of the subsoil.

Minor in this map unit are Albany, Leefield, Lucy, and Pelham soils. Somewhat poorly drained Albany and Leefield soils are in low areas on uplands. Well drained Lucy soils are on ridgetops and hillsides. Poorly drained Pelham soils are in depressions and along drainageways.

This unit is used mainly for woodland. Peanuts, corn, and soybeans are grown in a few places, and a few areas are in pasture. Beef cattle and hogs are the main kinds of livestock. The main concern in management is low available water capacity on the Lakeland and Fuquay soils. Wetness is the main limitation of the Alapaha soils for crops, and the wetness severely limits most nonfarm uses.

**nearly level to gently sloping soils on uplands and nearly level soils in depressions and along drainageways**

These soils are in three map units in Crisp County. Most areas are smooth and convex. Slope is mostly 0 to 5 percent but ranges to 8 percent in places. The soils on higher parts of the landscape are well drained. They have a brownish, sandy surface layer and a mainly brownish, loam subsoil that is mottled in the lower part. The soils on lower parts of the landscape are poorly drained. They have mainly a grayish, sandy surface layer and a grayish, loamy, mottled subsoil.

**4. Tifton-Dothan-Rains**

*Nearly level or very gently sloping soils that have sandy surface and subsurface layers and loamy underlying layers, on uplands; and nearly level soils that have sandy surface and subsurface layers and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and hillsides and soils along intermittent drainageways and in depressions. Most streams originate within the unit. Slope ranges from 0 to 5

percent. These soils are in the northern part of Crisp County.

This map unit makes up about 10 percent of Crisp County. Tifton soils make up about 50 percent of the unit, Dothan soils make up about 18 percent, Rains soils make up about 17 percent, and minor soils make up about 15 percent.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer and loamy underlying layers.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Dothan soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer, a thin, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is brown loamy sand and extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish brown, the middle part is yellowish brown with red mottles, and the lower part is yellowish brown with red and light gray mottles. Plinthite is below a depth of 42 inches and makes up 5 to 10 percent of the lower part of the subsoil. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

Rains soils are in depressions and along drainageways on the uplands. These poorly drained soils have a sandy surface layer, a thin, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark gray loamy fine sand about 5 inches thick. The subsurface layer is light brownish gray loamy fine sand and extends to a depth of 11 inches. The subsoil extends to a depth of 65 inches or more. The upper few inches is gray sandy loam that has brownish yellow mottles, and the rest is gray sandy clay loam that has brownish yellow, yellowish brown, and light brownish gray mottles.

Minor soils in this map unit are Alapaha, Cowarts, Fuquay, Grady, Leefield, and Stilson soils. Well drained Cowarts and Fuquay soils are on ridgetops and hillsides. Moderately well drained Stilson soils are in areas that are somewhat higher than the nearby depressions and drainageways. Poorly drained Alapaha and Grady soils are in depressions and along drainageways.

This unit is used mainly for peanuts, corn, cotton, soybeans, pecans, and truck crops. Pasture and forest products are also important. Hogs and beef cattle are the main kinds of livestock. The main concerns in management are controlling erosion on the Tifton and Dothan soils and overcoming wetness on the Rains soils. The wetness of the Rains soils severely limits most nonfarm uses.

## 5. Tifton-Alapaha-Dothan

*Nearly level to gently sloping soils that have sandy surface and subsurface layers and loamy underlying layers, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and irregularly shaped hillsides and soils along intermittent drainageways and in depressions. Most streams originate within the unit. Slope ranges from 0 to 8 percent. These soils are throughout all of Crisp County except the northern and western parts.

This map unit makes up about 51 percent of Crisp County. Tifton soils make up about 50 percent of the unit, Alapaha soils make up about 11 percent, Dothan soils make up about 10 percent, and minor soils make up about 29 percent.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish brown, and the lower part is mottled yellowish brown, red, and light gray. Plinthite is below a depth of 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the subsoil.

Dothan soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer, a thin, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is brown loamy sand and extends to a depth of 14 inches. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is mainly yellowish brown, the middle part is yellowish brown with red mottles, and the lower part is yellowish brown with red and light gray mottles. Plinthite is below a depth of 42 inches and makes up 5 to 10 percent of the lower part of the subsoil. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

Minor soils in this map unit are Ardilla, Cowarts, Fuquay, Grady, Leefield, Rains, and Stilson soils. Well drained Cowarts and Fuquay soils are on broad ridgetops or on hillsides. Moderately well drained Stilson soils and somewhat poorly drained Ardilla and Leefield soils are somewhat higher than the soils in nearby depressions and drainageways. Poorly drained Grady and Rains soils are in depressions.

This unit is used mainly for corn, peanuts, cotton, soybeans, pecans, tobacco, and truck crops. Pasture and forest products are also important. Beef cattle and hogs are the main kinds of livestock. The main concerns of management are controlling erosion on the Tifton and Dothan soils and overcoming wetness on the Alapaha soils. Wetness of the Alapaha soils severely limits most nonfarm uses.

## 6. Fuquay-Alapaha-Tifton

*Nearly level and very gently sloping soils that have mainly a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and hillsides and soils along intermittent drainageways and in depressions. Many intermittent ponds are throughout the unit. Slope ranges from 0 to 5 percent but is mostly less than 3 percent. These soils are mostly south of Cordele and in and around Wenona.

This map unit makes up about 15 percent of Crisp County. Fuquay soils make up about 40 percent of the unit, Alapaha soils make up about 15 percent, Tifton soils make up about 14 percent, and minor soils make up about 31 percent.

Fuquay soils are on broad ridgetops on the uplands. These well drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are throughout the upper 51 inches of the soil.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part.

The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish brown, and the lower part is mottled yellowish brown, red, and light gray. Plinthite is below a depth of 38 inches. Many nodules of ironstone are in the surface layer and the upper part of the subsoil.

Minor in this map unit are Clarendon, Dothan, Grady, Leefield, and Stilson soils. Moderately well drained Clarendon and Stilson soils and somewhat poorly drained Leefield soils are somewhat higher than the soils in nearby depressions and drainageways. Well drained Dothan soils are on ridgetops and hillsides. Grady soils are poorly drained and are in depressions.

This unit is used mainly for corn, peanuts, soybeans, pecans, and truck crops. Forest products and pasture are also important. Beef cattle and hogs are the main kinds of livestock. The main concerns in management are controlling erosion on the Tifton soils and increasing available water on the Fuquay soils. Wetness is the main limitation on Alapaha soils for crops, and the wetness severely limits most nonfarm uses.

## mainly very gently sloping to sloping soils on uplands

These well drained or somewhat poorly drained soils are in three map units in Crisp County. These soils are on nearly level and very gently sloping, smooth or undulating, convex ridgetops and gently sloping or sloping, irregular or choppy, convex hillsides. Slope is mainly 5 to 8 percent but ranges from 0 to 12 percent. The soils have a brownish sandy or loamy surface layer. The subsoil is loamy and is brownish, reddish, or yellowish and commonly mottled in the lower part; or the subsoil is clayey and is mottled throughout.

## 7. Esto-Cowarts-Susquehanna

*Very gently sloping to sloping soils that have a sandy or loamy surface layer and clayey or loamy underlying layers, on uplands*

This map unit consists of soils on smooth, undulating or irregular, convex ridgetops and irregular, choppy or short, convex hillsides. Rock outcrops are throughout the unit but are more numerous on hillsides. Slope ranges from 2 to 12 percent. These soils are mostly near Arabi and northeast of Cordele.

This map unit makes up about 5 percent of Crisp County. Esto soils make up about 40 percent of the unit,

Cowarts soils make up about 30 percent, Susquehanna soils make up about 15 percent, and minor soils make up about 15 percent.

Esto soils are on smooth and convex ridgetops and irregular, choppy, convex hillsides. These well drained soils have a loamy surface layer and loamy and clayey underlying layers. Typically, the surface layer is grayish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is reddish yellow sandy clay loam; the middle part is mottled yellowish brown, yellowish red, red, and light gray sandy clay; and the lower part is mottled light gray, dark red, strong brown, yellowish red, and brownish yellow clay. A few nodules of ironstone commonly are in the surface layer and the upper part of the subsoil.

Cowarts soils are on irregular, undulating, convex ridgetops and irregular, choppy, convex hillsides. These well drained soils have a sandy or loamy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown throughout and has red, yellowish red, and light gray mottles in the lower part. The substratum is sandy clay loam to a depth of 65 inches or more. It is mottled and streaked yellowish brown, light gray, red, and yellowish red. The substratum contains pockets of sandier or more clayey material. In many places the surface layer is sandy loam about 4 inches thick.

Susquehanna soils are on smooth, undulating ridgetops and irregular, short hillsides. These somewhat poorly drained soils have a loamy surface layer and clayey underlying layers. Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsoil is mainly clay and extends to a depth of 65 inches or more. The upper part of the subsoil is reddish brown with brown mottles, the middle part is light brownish gray with reddish brown mottles, and the lower part is light gray with red and yellowish red mottles.

Minor in this unit are Alapaha, Fuquay, and Lakeland soils. Well drained Fuquay soils and excessively drained Lakeland soils are on ridgetops on the uplands. Poorly drained Alapaha soils are in depressions and along drainageways.

This map unit is used mainly for woodland and pasture. Corn, peanuts, and soybeans are grown in a few places. Beef cattle and hogs are the main kinds of livestock. The main concern in management is controlling erosion. The moderately slow to very slow permeability of the soils and the large amount of clay in the subsoil are the main limitations for most nonfarm uses.

### **8. Cowarts-Fuquay**

*Nearly level to sloping soils that have mainly a sandy or loamy surface layer and loamy underlying layers, on uplands*

This map unit consists of well drained soils on smooth, irregular, undulating, convex ridgetops and irregular hillsides that commonly are eroded. Slope ranges from 0 to 12 percent. These soils are mostly east and southeast of Cordele.

This map unit makes up about 7 percent of Crisp County. Cowarts soils make up about 75 percent of the unit, Fuquay soils make up about 15 percent, and minor soils make up about 10 percent.

Cowarts soils are on smooth, irregular, undulating, convex ridgetops and irregular, choppy, convex hillsides. These soils have a sandy or loamy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown throughout and has red, yellowish red, and light gray mottles in the lower part. The substratum is sandy clay loam to a depth of 65 inches or more. It is mottled and streaked yellowish brown, light gray, red, and yellowish red. The substratum contains pockets of sandier or more clayey material. In many places the surface layer is sandy loam about 4 inches thick.

Fuquay soils are on broad, smooth, convex ridgetops. These soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are throughout the upper 51 inches of the soil.

Minor in this unit are Alapaha, Dothan, Esto, and Tifton soils. Alapaha soils are in depressions and along drainageways. Well drained Dothan, Esto, and Tifton soils are on ridgetops and hillsides.

This map unit is used mainly for corn, peanuts, soybeans, and pasture. Forest products are also important. Beef cattle and hogs are the main kinds of livestock. The main concern of management is controlling erosion on the Cowarts soils. Low available water capacity is the main limitation on Fuquay soils. This unit is not limited for most nonfarm uses except on the sloping, irregular hillsides.

### **9. Lucy-Orangeburg-Fuquay**

*Nearly level to sloping soils that have mainly a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, on uplands*

This map unit consists of well drained soils on smooth and convex ridgetops and on convex hillsides that are undulating, irregular, or rolling. A few areas are rough

and some are eroded. Slope ranges from 0 to 12 percent. These soils are in the northwestern part of Crisp County bordering Lake Blackshear.

This map unit makes up about 5 percent of Crisp County. Lucy soils make up about 40 percent of the unit, Orangeburg soils make up about 25 percent, Fuquay soils make up about 18 percent, and minor soils make up about 17 percent.

Lucy soils are on smooth, convex ridgetops and hillsides. These soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is strong brown loamy sand and extends to a depth of 28 inches. The subsoil is yellowish red and extends to a depth of 65 inches. It is sandy loam in the upper few inches and sandy clay loam below.

Orangeburg soils are on smooth, convex ridgetops and irregular, convex hillsides. These soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is brown, the middle part is yellowish red, and the lower part is red.

Fuquay soils are on smooth, convex ridgetops. These soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are throughout the upper 51 inches of the soil.

Minor in this unit are Alapaha, Dothan, Faceville, Grady, and Tifton soils. Poorly drained Alapaha and Grady soils are along drainageways or in depressions. Well drained Dothan, Faceville, and Tifton soils are on ridgetops and hillsides.

This unit is used mainly for corn, peanuts, soybeans, pecans, and pasture. Forest products are also important. Beef cattle and hogs are the main kinds of livestock. The main concern of management is controlling erosion on the Orangeburg soil. Low available water capacity is the main limitation on the Fuquay and Lucy soils. This map unit is not limited for most nonfarm uses except on the undulating, irregular hillsides.

## Turner County

### nearly level soils on flood plains

These poorly drained soils are in one map unit in Turner County. Slope ranges from 0 to 2 percent. The

soils have a grayish, mainly loamy surface layer and grayish or brownish, mottled, loamy or sandy underlying layers.

#### 1. Kinston-Osier

*Nearly level soils that are loamy or mainly sandy throughout, on flood plains*

This map unit consists of poorly drained soils on long, narrow flood plains. Slope is mostly less than 1 percent. These soils are mainly along Alapaha River, Little River, Deep Creek, Daniels Creek, and Double Run Creek.

This map unit makes up about 3 percent of Turner County. Kinston soils make up about 50 percent of the unit, Osier soils make up about 30 percent, and minor soils make up about 20 percent.

Kinston soils are loamy throughout. Typically, the surface layer is dark gray fine sandy loam about 6 inches thick. The subsoil is sandy clay loam and extends to a depth of about 44 inches. It is gray with yellowish brown mottles. To a depth of 62 inches, the substratum is gray sandy loam and has light gray and brownish yellow mottles.

Osier soils are mostly sandy. Typically, the surface layer is about 12 inches thick. It is very dark gray fine sandy loam in the upper part and dark gray loamy sand in the lower part. Below this to a depth of 65 inches or more are layers of grayish sand or coarse sand that has gray and brown mottles.

Minor in this unit are Ocilla, Rains, and Wahee soils. Ocilla and Wahee soils are somewhat poorly drained and are on stream terraces. Rains soils are poorly drained and are on flats and in slight depressions on terraces.

The soils in this unit are used mainly for woodland. Sweetgum, blackgum, and water oak are the dominant trees, but slash pine and loblolly pine are grown in a few places. A few areas are in pasture. Beef cattle and hogs are the main kinds of livestock. The main concerns in management are overcoming wetness and controlling flooding. The flooding hazard and the seasonal high water table severely limit most nonfarm uses.

### nearly level soils in low-lying flat areas, in depressions, and along drainageways of uplands

These somewhat poorly drained and poorly drained soils are in one map unit in Turner County. Slope ranges from 0 to 2 percent. The soils have a brownish or grayish, sandy surface layer and brownish or grayish, mottled, loamy underlying layers.

#### 2. Leefield-Alapaha-Pelham

*Nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in low-lying flat areas, in depressions, and along drainageways of uplands*

This map unit consists of nearly level soils in low-lying flat areas and the nearby depressions and along

intermittent drainageways. The flat areas are somewhat higher than the depressions and drainageways. Many intermittent ponds 1 to 4 acres in size are throughout the unit. Slope ranges from 0 to 3 percent. These soils are mostly near the southern and southeastern borders of Turner County.

This map unit makes up about 4 percent of Turner County. Leefield soils make up about 45 percent of the unit, Alapaha soils make up about 21 percent, Pelham soils make up about 16 percent, and minor soils make up about 18 percent.

Leefield soils are in low-lying flat areas. These somewhat poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand that has light gray mottles; it extends to a depth of 31 inches. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is light yellowish brown with light gray and brownish yellow mottles; the middle part is light yellowish brown with light gray and yellowish brown mottles; and the lower part is mottled light gray, light yellowish brown, red, and strong brown. Plinthite is below a depth of 48 inches and makes up 5 to 8 percent of the lower part of the subsoil.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the lower part of the subsoil.

Pelham soils are on flats, in depressions, and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand and extends to a depth of 33 inches. It is gray in the upper part and light gray in the lower part. The subsoil is light gray sandy clay loam that has yellowish brown, brownish yellow, and red mottles; it extends to a depth of 62 inches or more.

Minor in this unit are Albany, Clarendon, Fuquay, Lakeland, Olustee, and Stilson soils. Moderately well drained Stilson soils and somewhat poorly drained Albany soils are in smooth, low-lying, flat areas. Moderately well drained Clarendon soils are in higher lying areas adjacent to natural ponds and drainageways. Well drained Fuquay soils and excessively drained

Lakeland soils are on broad ridgetops. Poorly drained Olustee soils are in low-lying flat areas.

This map unit is used mainly for forest products and pasture. Corn, tobacco, peanuts, and soybeans are grown in some areas. Beef cattle and hogs are the main kinds of livestock. Most streams in this unit are not free flowing. The main concern in management is overcoming wetness. The wetness severely limits most nonfarm uses.

### **nearly level to gently sloping soils on uplands and nearly level soils in low-lying flat areas**

These soils are in one map unit in Turner County. The nearly level to gently sloping, excessively drained soils are on ridgetops and hillsides; and the nearly level, somewhat poorly drained soils are in low-lying flat areas. Slope ranges from 0 to 8 percent. The soils on higher parts of the landscape are sandy throughout and are brownish or yellowish. The soils in the low-lying flat areas have a brownish, sandy surface layer and a brownish, mottled, loamy or sandy subsoil.

### **3. Lakeland-Leefield-Kershaw**

*Nearly level to gently sloping soils that are sandy throughout, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in low-lying flat areas*

This map unit consists of nearly level to gently sloping soils on ridgetops and hillsides and nearly level soils along the intervening narrow drainageways and in depressions. A few shallow ponds are in the unit. Slope ranges from 0 to 8 percent. These soils are mostly adjacent to the flood plain of Deep Creek and near its confluence with the Alapaha River.

This map unit makes up about 2 percent of Turner County. Lakeland soils make up about 45 percent of the unit, Leefield soils make up about 20 percent, Kershaw soils make up about 18 percent, and minor soils make up about 17 percent.

Lakeland soils are on ridgetops on the uplands. These excessively drained soils are sandy throughout. Typically, the surface layer is grayish brown sand about 6 inches thick. The substratum is sand to a depth of 80 inches. The upper part is yellowish brown, the middle part is light yellowish brown, and the lower part is yellow with very pale brown mottles.

Leefield soils are in low-lying flat areas. These somewhat poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand that has light gray mottles; it extends to a depth of 31 inches. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is light yellowish brown with light gray and brownish yellow mottles; the middle part is light yellowish

brown with light gray and yellowish brown mottles; and the lower part is mottled light gray, light yellowish brown, red, and strong brown. Plinthite is below a depth of about 48 inches and makes up 5 to 8 percent of the lower part of the subsoil.

Kershaw soils are on ridgetops and hillsides on the uplands. These excessively drained soils are sandy throughout. Typically, the surface layer is dark grayish brown coarse sand about 4 inches thick. Below this to a depth of 90 inches or more, the soil is coarse sand. The upper part is yellowish brown with a few grayish brown mottles, the middle part is brownish yellow, and the lower part is yellow.

Minor in this unit are Fuquay, Grady, and Pelham soils. Well drained Fuquay soils are on ridgetops on uplands. Poorly drained Grady and Pelham soils are in depressions and along drainageways.

This unit is used mainly for forest products. Corn, peanuts, and soybeans are grown in some places, and a few areas are used for pasture. Beef cattle and hogs are the main kinds of livestock. The main concern in management is the low available water capacity in the Lakeland and Kershaw soils. Wetness of the Leefield soils severely limits most nonfarm uses.

#### **nearly level to sloping soils on uplands and nearly level soils in depressions and along drainageways**

These soils are in three map units in Turner County. The nearly level to sloping, well drained soils are on ridgetops and hillsides, and the poorly drained soils are in depressions and along drainageways. Slope is 0 to 12 percent. The soils on higher parts of the landscape are well drained. They have a brownish, sandy or loamy surface layer and a brownish or yellowish, loamy subsoil that commonly is mottled in the lower part. The soils on lower parts of the landscape are poorly drained. They have a mainly grayish, sandy surface layer and a grayish, mottled subsoil.

#### **4. Tifton-Alapaha-Fuquay**

*Nearly level to gently sloping soils that have a sandy surface layer and sandy or loamy underlying layers, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and hillsides, along intermittent drainageways, and in depressions. Most streams originate within the unit. Slope ranges from 0 to 8 percent. These soils are throughout Turner County.

This map unit makes up about 59 percent of Turner County. Tifton soils make up about 52 percent of the unit, Alapaha soils make up about 16 percent, Fuquay soils make up about 15 percent, and minor soils make up about 17 percent.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface

layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches.

Fuquay soils are on broad, smooth ridgetops on the uplands. These well drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are throughout the upper 51 inches of the soil.

Minor in this map unit are Clarendon, Cowarts, Dothan, Lakeland, Leefield, and Stilson soils. Excessively drained Lakeland soils are on broad ridgetops. Well drained Cowarts and Dothan soils are on ridgetops and hillsides. Moderately well drained Clarendon and Stilson soils and somewhat poorly drained Leefield soils are higher than the soils in nearby depressions and drainageways.

This unit is used mainly for corn, peanuts, cotton, tobacco, soybeans, pecans, and truck crops. Forest products and pasture are also important. Hogs and beef cattle are the main kinds of livestock. The main concerns in management are controlling erosion on the Tifton soils and increasing available water on the Fuquay soils. Wetness is the main limitation of the Alapaha soils for crops, and the wetness severely limits most nonfarm uses.

#### **5. Tifton-Alapaha-Dothan**

*Nearly level to gently sloping soils that have mainly a sandy surface layer and loamy underlying layers, on*

*uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and irregularly shaped hillsides, along intermittent drainageways, and in depressions. Most streams originate within the unit. Slope ranges from 0 to 8 percent. These soils are in the northern part of Turner County.

This map unit makes up about 12 percent of Turner County. Tifton soils make up about 50 percent of the unit, Alapaha soils make up about 17 percent, Dothan soils make up about 16 percent, and minor soils make up about 17 percent.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches.

Dothan soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer, a thin, sandy subsurface layer, and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is brown loamy sand and extends to a depth of 14 inches. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is mainly yellowish brown, the middle part is yellowish brown with red mottles, and the lower part is yellowish brown with red and light gray mottles. Plinthite is below a depth of 42 inches and makes up 5 to 10 percent of the lower part of the subsoil. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

Minor in this map unit are Ardilla, Cowarts, Fuquay, Grady, Lee field, and Stilson soils. Well drained Cowarts and Fuquay soils are on broad ridgetops. Moderately

well drained Stilson soils and somewhat poorly drained Ardilla and Lee field soils are higher than the soils in nearby depressions and drainageways. Poorly drained Grady soils are in depressions.

This map unit is used mainly for corn, peanuts, cotton, soybeans, pecans, tobacco, and truck crops. Pasture and wood crops are also important. Beef cattle and hogs are the main kinds of livestock. The main concerns of management are controlling erosion on the Tifton and Dothan soils and overcoming wetness on the Alapaha soils. Wetness of the Alapaha soils severely limits most nonfarm uses.

## **6. Tifton-Cowarts-Alapaha**

*Nearly level to sloping soils that have a sandy or loamy surface layer and loamy underlying layers, on uplands; and nearly level soils that have a sandy surface layer, a thick sandy subsurface layer, and loamy underlying layers, in depressions and along drainageways*

This map unit consists of soils on smooth and convex ridgetops and irregular hillsides that commonly are eroded, along intermittent drainageways, and in depressions. Slope ranges from 0 to 12 percent. These soils are mostly near Dakota and Amboy.

This map unit makes up about 8 percent of Turner County. Tifton soils make up about 45 percent of the unit, Cowarts soils make up about 30 percent, Alapaha soils make up about 14 percent, and minor soils make up about 11 percent.

Tifton soils are on ridgetops and hillsides on the uplands. These well drained soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of about 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Cowarts soils are on irregular, undulating, convex ridgetops and irregular, choppy, convex hillsides. These well drained soils have a sandy or loamy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown throughout and has red, yellowish red, and light gray mottles in the lower part. The substratum is sandy clay loam to a depth of 65 inches or more. It is mottled and streaked yellowish brown, light gray, red, and yellowish red. The substratum contains pockets of sandier or more clayey material. In many places the surface layer is sandy loam about 4 inches thick.

Alapaha soils are in depressions and along drainageways. These poorly drained soils have a sandy surface layer, a thick, sandy subsurface layer, and loamy

underlying layers. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the lower part of the subsoil.

Minor in this map unit are Dothan and Esto soils. These soils are well drained and are on ridgetops and hillsides with the major soils.

This map unit is used primarily for wood crops and pasture. Corn, peanuts, and soybeans are grown in a few places. Beef cattle and hogs are the main kinds of livestock. The main concerns in management are controlling erosion on the Tifton and Cowarts soils and overcoming wetness of the Alapaha soils. Wetness of the Alapaha soils severely limits most nonfarm uses.

#### **very gently sloping to sloping soils on uplands**

These well drained or somewhat poorly drained soils are in two map units in Turner County. The very gently sloping soils are on smooth or irregular and undulating ridgetops that are convex, and gently sloping and sloping soils are on irregular and choppy, short hillsides. Slope is 2 to 12 percent. The well drained soils have a brownish, sandy or loamy surface layer and a brownish, loamy subsoil that is mottled in the lower part. In some places, the soils are well drained or somewhat poorly drained and have a brownish, loamy surface layer and a clayey subsoil that is mottled throughout.

#### **7. Cowarts-Tifton**

*Very gently sloping to sloping soils that have a sandy or loamy surface layer and loamy underlying layers, on uplands*

This map unit consists of well drained soils on smooth or irregular, convex, undulating ridgetops and irregular hillsides that commonly are eroded. Slope ranges from 2 to 12 percent. These soils are mostly adjacent to the flood plains of Little River and Deep Creek.

This map unit makes up about 7 percent of Turner County. Cowarts soils make up about 60 percent of the unit, Tifton soils make up about 30 percent, and minor soils make up about 10 percent.

Cowarts soils are on irregular, undulating, convex ridgetops and irregular, choppy, convex hillsides. These soils have a sandy or loamy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown throughout and has red, yellowish red, and light gray mottles in the lower part. The substratum is sandy clay loam to a depth of 65

inches or more. It is mottled and streaked yellowish brown, light gray, red, and yellowish red. The substratum contains pockets of sandier or more clayey material. In many places the surface layer is sandy loam about 4 inches thick.

Tifton soils are on smooth, convex ridgetops and irregular, convex hillsides. These soils have a sandy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of about 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

Minor in this unit are Alapaha, Fuquay, and Sunsweet soils. Well drained Fuquay soils are on ridgetops. Well drained Sunsweet soils are on hillsides. Poorly drained Alapaha soils are in depressions and along drainageways.

This map unit is used mainly for pasture and wood crops. Beef cattle and hogs are the main kinds of livestock. Corn, peanuts, and soybeans are grown on the smoother areas. The main concern in management is controlling erosion. This map unit is not limited for most nonfarm uses except on the sloping, irregular hillsides.

#### **8. Esto-Cowarts-Susquehanna**

*Very gently sloping to sloping soils that have a sandy or loamy surface layer and clayey or loamy underlying layers, on uplands*

This map unit consists of soils on smooth or irregular and undulating convex ridgetops and irregular, choppy or short, convex hillsides. Rock outcrops are throughout the unit but are more numerous on the hillsides. Slope ranges from 2 to 12 percent. These soils are mostly near the western border of Turner County and near Dakota.

This unit makes up about 5 percent of Turner County. Esto soils make up about 40 percent of the unit, Cowarts soils make up about 33 percent, Susquehanna soils make up about 17 percent, and minor soils make up about 10 percent.

Esto soils are on smooth, convex ridgetops and irregular, choppy, convex hillsides. These well drained soils have a loamy surface layer and loamy and clayey underlying layers. Typically, the surface layer is grayish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is reddish yellow sandy clay loam; the middle part is mottled yellowish brown, yellowish red, red, and light gray sandy clay; and the lower part is mottled light gray, dark red, strong brown, yellowish red, and brownish yellow clay. A few nodules of ironstone commonly are in the surface layer and the upper part of the subsoil.

Cowarts soils are on irregular, undulating, convex ridgetops and irregular, choppy, convex hillsides. These

well drained soils have a sandy or loamy surface layer and loamy underlying layers. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown throughout and has red, yellowish red, and light gray mottles in the lower part. The substratum is sandy clay loam to a depth of 65 inches or more. It is mottled and streaked yellowish brown, light gray, red, and yellowish red. The substratum contains pockets of sandier or more clayey material. In many places the surface layer is sandy loam about 4 inches thick.

Susquehanna soils are on smooth, undulating ridgetops and irregular, short hillsides. These somewhat poorly drained soils have a loamy surface layer and clayey underlying layers. Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsoil is mainly clay and extends to a depth of 65 inches or more. The upper part of the subsoil is reddish brown with brown mottles, the middle part is light brownish gray with reddish brown mottles, and the lower part is light gray with red and yellowish red mottles.

Minor in this unit are Alapaha and Fuquay soils. Well drained Fuquay soils are on ridgetops on the uplands. Poorly drained Alapaha soils are in depressions and along drainageways.

This map unit is used mainly for wood crops and pasture. Corn, peanuts, and soybeans are grown in a few places. Beef cattle and hogs are the main kinds of livestock. The main concern in management is controlling erosion. The moderately slow to very slow permeability and the high amount of clay in the subsoil are the main limitations for most nonfarm uses.

### **broad land use considerations**

Deciding which land should be used for urban development is a problem in the survey area. Each year more land is converted to urban uses. The general soil map is most helpful in planning the general outline of urban areas, but it cannot be used in selecting sites for specific structures or facilities. The data about specific soils in this survey are also helpful in planning future

land use. Interpretations of the general soil map for broad land use planning are specific for each county. The following consideration, however, refer to the survey area as a whole.

Areas in which urban and recreational development is extremely limited are not extensive in the survey area. However, the Kinston-Osier map unit and the Herod map unit are on flood plains; the flooding and wetness severely limit urban uses. Also, soils in low-lying flat areas, in depressions, and along drainageways in the Leefield-Alapaha-Pelham map unit are seasonally wet and therefore are severely limited. The upland soils in the Esto-Cowarts-Susquehanna map unit have a mostly clayey subsoil that is slowly permeable to water; because of this, development is costly. The soils on uplands in the Lakeland-Leefield-Kershaw map unit and in the Lakeland-Fuquay-Alapaha map unit are mostly excessively drained and sandy throughout; therefore, seepage is a concern. Poorly drained Alapaha soils and somewhat poorly drained Leefield soils are in depressions and along drainageways within these map units. These soils make up about 15 to 20 percent of each map unit and are severely limited by wetness.

The other map units have soils that can be developed for urban and recreational uses at lower cost than the severely limited soils can. These soils are well drained and have a loamy subsoil. These soils are also excellent farmland, and possible use for crops should not be overlooked in planning. In general, soils that are well suited to farming are well suited to urban development. Poorly drained Alapaha and Rains soils and somewhat poorly drained Leefield soils are in depressions and along intermittent drainageways within these map units. These soils make up about 15 percent of each map unit and are severely limited by wetness.

Most of the soils in the survey area are well suited to woodland. However, trees do not grow as well on the excessively drained sandy soils in the less productive Lakeland-Fuquay-Alapaha and Lakeland-Leefield-Kershaw map units or on the predominately clayey soils in the Esto-Cowarts-Susquehanna map unit as they do on the soils that can supply more water to the trees.



## detailed soil map units

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Tifton loamy sand, 2 to 5 percent slopes, is one of several phases in the Tifton series.

Some map units are made up of two or more components. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of areas of a soil and Urban land in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the components are somewhat similar in all areas. Leefield-Urban land complex is an example.

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

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

Table 4 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.

**Ah—Alapaha loamy sand.** This deep, poorly drained, nearly level soil is in the upper part of drainageways and in depressions. It is occasionally flooded for brief periods in winter and spring. Slope ranges from 0 to 2 percent but is mostly less than 1 percent. Mapped areas are 5 to 150 acres.

Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of about 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the lower part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is medium. Tilth is good. The root zone is deep except during winter and spring, when the water table commonly is at a depth of 1 foot to 2 feet.

Included with this soil in mapping are small areas of Leefield and Pelham soils. Bodies of water smaller than 10 acres are also included.

This Alapaha soil is poorly suited to cultivated crops because of wetness and flooding. It is moderately suited to pasture.

Slash pine and loblolly pine are well suited to this soil. Wetness limits use of equipment in managing and

harvesting the trees. Using special equipment and logging during the drier seasons overcome the problems caused by wetness. Some areas can be drained.

This soil is poorly suited to most urban and recreational uses because of the wetness and flooding. Overcoming these limitations is difficult. If outlets are available, wetness can be reduced somewhat by drainage.

This soil is in capability subclass Vw and woodland suitability group 2w.

**An—Alapaha-Urban land complex.** This complex is in the upper parts of drainageways and in depressions. The areas of Alapaha soils and Urban land are so intermingled that they could not be mapped separately at the scale selected. Areas are occasionally flooded for brief periods in winter and spring. Slope ranges from 0 to 2 percent. Mapped areas are 3 to 35 acres.

Alapaha loamy sand makes up about 60 percent of each mapped area. Typically, the surface layer is black loamy sand about 5 inches thick. The subsurface layer is loamy sand and extends to a depth of about 28 inches. It is dark gray in the upper part and gray in the lower part. The subsoil is sandy clay loam and extends to a depth of 70 inches or more. The upper part of the subsoil is gray with light yellowish brown mottles, and the lower part is mottled brownish yellow, red, light gray, and strong brown. Plinthite is below a depth of about 46 inches and makes up 5 to 15 percent of the lower part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is medium. The root zone is deep except during winter and spring, when the water table is at a depth of 1 foot to 2 feet.

Urban land makes up about 40 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping for community development.

This complex is used primarily for urban purposes. It is poorly suited to this use because of wetness and flooding. Shrubs, shade trees, turf, and lawns grow well if adequately drained. If outlets are available, wetness can be reduced somewhat by drainage.

The Alapaha soil is in capability subclass Vw. The complex is not placed in a woodland suitability group.

**AoA—Albany sand, 0 to 2 percent slopes.** This deep, somewhat poorly drained, nearly level soil is in smooth, low-lying areas on the uplands. Mapped areas are 5 to 30 acres.

Typically, the surface layer is very dark grayish brown sand about 6 inches thick. The subsurface layer extends

to a depth of about 46 inches; it is mainly light yellowish brown sand that has gray mottles. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is light yellowish brown sandy loam that has light gray and yellowish red mottles, and the lower part is mottled light yellowish brown, light gray, yellowish brown, and yellowish red sandy clay loam.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the sandy surface and subsurface layers, moderately rapid in the upper part of the subsoil, and moderate in the lower part of the subsoil. Available water capacity is low. Tilth is good and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots except during winter and early spring, when the water table is at a depth of 1 foot to 2.5 feet.

Included with this soil in mapping are small areas of Lakeland, Ocilla, and Pelham soils.

This Albany soil is moderately suited to corn, tobacco, soybeans, hay, and pasture. It is limited by wetness and low available water capacity. The wetness commonly can be overcome by drainage. Returning crop residue to the soil helps increase available water capacity.

Loblolly pine and slash pine are moderately suited to this soil. Equipment limitation and seedling mortality are concerns. Because of the wetness, conventional equipment cannot be used in some places except during the drier months.

This soil is poorly suited to most urban uses because of wetness. Wetness commonly can be reduced somewhat by drainage. This soil is poorly suited to recreational uses because the surface layer is sandy and the soil is wet during winter and early spring.

This soil is in capability subclass IIIw and woodland suitability group 3w.

**ArA—Ardilla loamy sand, 0 to 2 percent slopes.** This deep, somewhat poorly drained, nearly level soil is in smooth, low-lying areas on the uplands. Mapped areas are 3 to 28 acres.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is dark grayish brown loamy sand about 4 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 72 inches or more. The upper part of the subsoil is mainly yellowish brown with strong brown and light gray mottles; the middle part is mottled yellowish brown, light gray, yellowish red, and red; and the lower part is gray with red and yellowish brown mottles. The subsoil is firm, brittle, and compact below a depth of about 26 inches.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Tilth is good. The root zone is deep except

from late fall to spring, when the water table commonly is at a depth of 1 foot to 2 feet.

Included with this soil in mapping are small areas of Alapaha, Clarendon, and Leefield soils. Also included are wet areas less than 3 acres in size; they are indicated by a wet spot symbol on the map.

This Ardilla soil is well suited to corn, soybeans, pasture, and truck crops. It is somewhat limited by wetness. Drainage commonly helps overcome the wetness.

Longleaf pine, slash pine, and yellow-poplar are well suited to this soil. The use of conventional equipment commonly is restricted from late fall to spring because of wetness. Equipment can be used during the drier seasons.

This soil is poorly suited to most urban and recreational uses because of wetness. Wetness can be overcome somewhat by drainage.

This soil is in capability subclass IIw and woodland suitability group 2w.

**Cn—Clarendon loamy sand.** This deep, moderately well drained, nearly level soil is in higher lying areas near natural ponds and drainageways. Slope ranges from 0 to 2 percent. Mapped areas are 5 to 30 acres.

Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsoil extends to a depth of 62 inches or more. The upper part of the subsoil is light olive brown sandy loam; the middle part is light yellowish brown sandy clay loam that has yellowish brown, light gray, and yellowish red mottles; and the lower part is mottled yellowish brown, light gray, red, and light yellowish brown sandy clay loam. Plinthite is below a depth of about 29 inches and makes up 5 to 15 percent of the middle and lower parts of the subsoil. Nodules of ironstone are throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots, except in winter and early spring, when the water table is commonly at a depth of 1.5 to 2.5 feet.

Included with this soil in mapping are small areas of Leefield and Stilson soils. Also included are wet areas less than 3 acres in size; they are indicated by a wet spot symbol on the map.

This Clarendon soil is well suited to corn, cotton, tobacco, soybeans, hay, and pasture. It is somewhat limited by wetness, and in most places drainage is needed for high yields.

Slash pine, loblolly pine, sweetgum, and yellow-poplar are well suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons.

This soil is poorly suited to sanitary facilities and is only moderately suited to most building site development. Wetness limits most uses.

This soil is in capability subclass IIw and woodland suitability group 2w.

**CoB—Cowarts loamy sand, 2 to 5 percent slopes.** This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands (fig. 1). Slopes are irregular, undulating, and convex. Mapped areas are 5 to 30 acres.

Typically, the surface layer is loamy sand about 12 inches thick. It is dark grayish brown in the upper part and brown in the lower part. The subsoil is mainly yellowish brown sandy clay loam and extends to a depth of 35 inches. It has red and very pale brown mottles in the lower part. To a depth of 65 inches or more, the substratum is coarsely mottled yellowish brown, red, and light gray sandy clay loam that has strata of sandy loam and sandy clay.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Runoff is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of soils that are similar to Cowarts soils but that have more clay in the upper part of the subsoil. Also included are areas of Esto soils and areas of eroded soils that have a sandy clay loam surface layer. Wet areas smaller than 3 acres are indicated by a wet spot symbol on the map.

This Cowarts soil is only moderately suited to row crops, small grain, hay, and pasture because of the size of mapped areas and the irregular, undulating landscape. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. It is poorly suited to septic tank absorption fields because of the moderately slow permeability in the lower part of the subsoil. This limitation can be overcome in most places by good design and construction. Slope limits use for sewage lagoons and playgrounds.

This soil is in capability subclass IIe and woodland suitability group 2o.

**CoB2—Cowarts sandy loam, 2 to 5 percent slopes, eroded.** This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. The surface layer is a mixture of the original surface layer and



Figure 1.—Improved bermudagrass hay on Cowarts loamy sand, 2 to 5 percent slopes. This soil is moderately suited to hay and pasture.

material from the upper part of the subsoil. In most places, slopes are undulating and commonly contain rills or galled spots, shallow gullies, and occasional deep gullies. Mapped areas are 5 to 30 acres.

Typically, the surface layer is brown sandy loam about 6 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 36 inches. The upper part of the subsoil is strong brown, the middle part is strong brown with red and yellowish brown mottles, and the lower part is mottled strong brown, red, gray, and yellowish brown. To a depth of 65 inches, the substratum is reticulately mottled yellowish brown, olive yellow, dark red, and light gray sandy clay loam and sandy loam. Nodules of ironstone are in the surface layer and the upper and middle parts of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is

medium to low. Runoff is medium. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of Tifton soils and areas of Cowarts loamy sand. Also included are areas of eroded soils that have a sandy clay loam surface layer.

This Cowarts soil is only moderately suited to row crops and small grain because of the size of the mapped areas and the undulating landscape. This soil is moderately suited to hay and pasture. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. It is poorly suited to septic tank absorption fields

because of the moderately slow permeability in the lower part of the subsoil. This limitation can be overcome in most places by good design and construction. Slope limits use for sewage lagoons and playgrounds.

This soil is in capability subclass IIIe and woodland suitability group 2o.

**CoC—Cowarts loamy sand, 5 to 8 percent slopes.**

This deep, well drained, gently sloping soil is on hillsides between ridgetops and drainageways on the uplands. Slopes are irregular, choppy, and convex. Mapped areas are 10 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 37 inches. It is yellowish brown and has red, yellowish red, and light gray mottles in the lower part. To a depth of 65 inches or more, the substratum is mottled and streaked yellowish brown, light gray, red, and yellowish red sandy clay loam that contains pockets of sandy loam.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of soils that are similar to Cowarts soils but that have more clay in the upper part of the subsoil. Also included are areas of Sunsweet and Esto soils and areas of eroded soils that have a sandy clay loam surface layer.

This Cowarts soil is poorly suited to row crops and small grain because of rapid runoff and the irregular, choppy topography. This soil is moderately suited to pasture. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. It is poorly suited to septic tank absorption fields because of the moderately slow permeability in the lower part of the subsoil. This limitation can be overcome in most places by good design and construction. Slope limits use for sewage lagoons, playgrounds, and small commercial buildings.

This soil is in capability subclass IVe and woodland suitability group 2o.

**CoC2—Cowarts sandy loam, 5 to 8 percent slopes, eroded.** This deep, well drained, gently sloping soil is on hillsides between ridgetops and drainageways on the uplands. The present surface layer is a mixture of the original surface layer and material from the upper part of

the subsoil. In most places, slopes are short and irregular and commonly contain rills, galled spots, and occasional gullies. Mapped areas are 8 to 40 acres.

Typically, the surface layer is brown sandy loam about 4 inches thick. The subsoil is sandy clay loam and extends to a depth of 31 inches. It is yellowish brown throughout and has red, strong brown, and very pale brown mottles in the lower part. To a depth of 65 inches, the substratum is reticulately mottled yellowish brown, red, light gray, and strong brown sandy clay loam. It has strata of sandier or more clayey material. Nodules of ironstone are in the surface layer and in the upper and middle parts of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium to low. Runoff is rapid. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Sunsweet and Tifton soils. Also included are areas of eroded soils that have a sandy clay loam surface layer.

This Cowarts soil is poorly suited to row crops and small grain because of rapid runoff, the size of mapped areas, and the short, irregular slopes. The soil is moderately suited to hay and pasture. Good tilth can be maintained by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. It is poorly suited to septic tank absorption fields because of the moderately slow permeability in the lower part of the subsoil. This limitation can be overcome in most places by good design and construction. Slope limits use for sewage lagoons, playgrounds, and small commercial buildings.

This soil is in capability subclass IVe and woodland suitability group 2o.

**CoD—Cowarts loamy sand, 8 to 12 percent slopes.**

This deep, well drained, sloping soil is on hillsides on uplands adjacent to the larger flood plains. Slopes are irregular and choppy. Mapped areas are 5 to 25 acres.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsoil is sandy clay loam and extends to a depth of 32 inches. It is yellowish brown throughout and has red mottles in the lower part. To a depth of 62 inches, the substratum is mottled and streaked yellowish brown, yellowish red, and light gray sandy clay loam. It has strata of sandy loam and loamy sand.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout

except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of soils that are similar to Cowarts soils but that have more clay in the upper part of the subsoil. Also included in mapping are areas of Esto and Sunsweet soils and areas of eroded soils that have a sandy clay loam surface layer.

This Cowarts soil is poorly suited to crops because of rapid runoff; the irregular, choppy, sloping topography; and the size of mapped areas.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is only moderately suited to most urban and recreational uses. It is poorly suited to septic tank absorption fields because of the moderately slow permeability in the lower part of the subsoil. This limitation can be overcome in most places by good design and construction. Slope limits use for building sites, sewage lagoons, and most recreational uses.

This soil is in capability subclass VIe and woodland suitability group 2o.

**DoA—Dothan loamy sand, 0 to 2 percent slopes.**

This deep, well drained, nearly level soil is on ridgetops on the uplands. Mapped areas are 10 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 66 inches or more. The upper part of the subsoil is yellowish brown, the middle part is yellowish brown with yellowish red and strong brown mottles, and the lower part is mottled yellowish brown, red, gray, and strong brown. Plinthite is below a depth of about 32 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A perched high water table is in the lower part of the subsoil in winter and spring.

Included with this soil in mapping are a few small areas of Tifton and Fuquay soils. Also included are wet areas smaller than 3 acres; they are indicated by a wet spot symbol on the map.

This Dothan soil is well suited to row crops, small grain, hay, and pasture. During dry seasons, irrigation can produce high yields. Minimum tillage and the use of cover crops, including grasses and legumes, increase organic matter content.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. The moderately slow permeability in the lower part of the subsoil and the wetness somewhat limit use of this soil for septic tank absorption fields and for dwellings with basements. These limitations can be overcome in most places by good design and construction. For septic tank fields, the absorption area can be increased or the design of the filter field can be modified.

This soil is in capability class I and woodland suitability group 2o.

**DoB—Dothan loamy sand, 2 to 5 percent slopes.**

This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes commonly are smooth and convex. Mapped areas are 5 to 90 acres.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is brown loamy sand and extends to a depth of 14 inches. The subsoil is mainly sandy clay loam and extends to a depth of 60 inches or more. The upper part of the subsoil is yellowish brown, the middle part is yellowish brown with red mottles, and the lower part is yellowish brown with red and light gray mottles. Plinthite is below a depth of 42 inches and makes up 5 to 10 percent of the lower part of the subsoil. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A perched high water table is in the lower part of the subsoil in winter and spring.

Included with this soil in mapping are a few areas of Cowarts, Fuquay, Stilson, and Tifton soils. Also included are wet areas smaller than 3 acres; they are indicated by a wet spot symbol on the map.

This Dothan soil is well suited to row crops, small grain, pecans, hay, and pasture. During dry seasons, irrigation can produce high yields. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Loblolly pine and slash pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. The moderately slow permeability in the lower part

of the subsoil and the wetness somewhat limit use for septic tank absorption fields and for dwellings with basements. These limitations can be overcome in most places by good design and construction. For septic tank fields, the absorption area can be increased or the design of the filter field can be modified.

This soil is in capability subclass IIe and woodland suitability group 2o.

**EuB—Esto sandy loam, 2 to 5 percent slopes.** This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes commonly are smooth and convex. Mapped areas are 5 to 40 acres.

Typically, the surface layer is grayish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is reddish yellow sandy clay loam; the middle part is mottled yellowish brown, yellowish red, red, and light gray sandy clay; and the lower part is mottled light gray, dark red, strong brown, yellowish red, and brownish yellow clay. A few nodules of ironstone commonly are in the surface layer and in the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep.

Included with this soil in mapping are small areas of Cowarts soils. In some eroded places the surface layer is sandy clay loam. Also included are rock outcrops smaller than 1 acre; they are indicated by a rock outcrop symbol on the map.

This Esto soil is moderately suited to row crops, small grain, hay, and pasture. Because of the rapid runoff, erosion is a hazard if cultivated crops are grown. Good tilth can be maintained in most places by returning crop residue to the soil. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Loblolly pine and slash pine are moderately suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most building site development and moderately suited to most sanitary facilities and recreational uses. This soil is poorly suited to septic tank absorption fields because of the slow permeability in the subsoil. The slow permeability also limits use for playgrounds and camp areas. Slope limits use for playgrounds and sewage lagoons. The clayey subsoil limits use for trench sanitary landfills.

This soil is in capability subclass IIIe and woodland suitability group 3o.

**EuC—Esto sandy loam, 5 to 8 percent slopes.** This deep, well drained, gently sloping soil is on hillsides on the uplands. Slopes are irregular, choppy, and convex in most places. Mapped areas are 5 to 30 acres.

Typically, the surface layer is sandy loam about 6 inches thick. It is dark grayish brown in the upper part and light yellowish brown in the lower part. The subsoil extends to a depth of 65 inches or more. It is mottled strong brown, red, brownish yellow, light gray, and yellowish brown clay. A few nodules of ironstone are in the surface layer.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep.

Included with this soil in mapping are small areas of Susquehanna soils. In some eroded areas, gullies and rills are common. Also included are rock outcrops smaller than 1 acre; they are indicated by a rock outcrop symbol on the map.

This Esto soil is poorly suited to row crops and small grain because of rapid runoff; the size of the mapped areas; the irregular, choppy landscape; and the severe erosion hazard. This soil is moderately suited to pasture.

Loblolly pine and slash pine are moderately suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most building site development and moderately suited to most sanitary facilities and recreational uses. This soil is poorly suited to septic tank absorption fields because of the slow permeability in the subsoil. Permeability also limits use of this soil for camp areas. Slope limits use for playgrounds. The clayey subsoil limits use for trench sanitary landfills.

This soil is in capability subclass IVe and woodland suitability group 3o.

**EuD—Esto sandy loam, 8 to 12 percent slopes.** This deep, well drained, sloping soil is on hillsides on the uplands. Slopes are irregular, choppy, and convex in most places. Mapped areas are 5 to 15 acres.

Typically, the surface layer is sandy loam about 10 inches thick. It is dark grayish brown in the upper part and light yellowish brown in the lower part. The subsoil extends to a depth of 65 inches or more. It is mottled yellowish brown, red, strong brown, and light gray clay.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep.

Included with this soil in mapping are small areas of Susquehanna and Cowarts soils. In some eroded soil areas, gullies and rills are common. Also included are rock outcrops smaller than one-half acre; they are indicated by a rock outcrop symbol on the map.

This Esto soil is poorly suited to row crops and small grain because of rapid runoff; the size of mapped areas; the irregular, choppy landscape; and the severe erosion hazard. This soil is moderately suited to pasture.

Loblolly pine and slash pine are moderately suited to this soil. There are no significant limitations for woodland use or management.

This soil is only moderately suited to most urban and recreational uses. This soil is poorly suited to septic tank absorption fields because of the slow permeability in the subsoil. Permeability also limits use for camp areas. Slope limits use for building sites, sewage lagoons, area sanitary landfills, and most recreational uses. The clayey subsoil limits use for trench sanitary landfills.

This soil is in capability subclass VIe and woodland suitability group 3o.

**FaB—Faceville sandy loam, 2 to 5 percent slopes.**

This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes commonly are smooth and convex. Mapped areas are 10 to 30 acres.

Typically, the surface layer is dark yellowish brown sandy loam about 5 inches thick. The subsoil is mainly sandy clay and extends to a depth of 66 inches or more. The upper part of the subsoil is yellowish red, the middle part is red, and the lower part is red with dark red and yellowish brown mottles. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of a soil that is similar to Faceville soils but that has a subsoil that extends only to a depth of 50 to 55 inches. Also included are a few small areas of Orangeburg and Tifton soils. Also included are wet areas smaller than 2 acres; they are indicated by a wet spot symbol on the map. In some eroded areas, the surface layer is sandy clay loam.

The Faceville soil is well suited to row crops, small grain, hay, and pasture. During dry seasons, irrigation can produce high yields. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are moderately suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. The clayey subsoil limits use for trench sanitary landfills. Slope limits use for playgrounds and sewage lagoons.

This soil is in capability subclass IIe and woodland suitability group 3o.

**FcC2—Faceville sandy clay loam, 5 to 8 percent slopes, eroded.** This deep, well drained, gently sloping soil is on hillsides on the uplands. Slopes are mostly irregular. The present surface layer is a mixture of the original surface layer and material from the upper part of the subsoil. Slopes are mostly irregular and commonly contain rills, galled spots, and occasional deep gullies. Mapped areas are 5 to 50 acres.

Typically, the surface layer is yellowish red sandy clay loam about 4 inches thick. The subsoil is mainly sandy clay and extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish red, the middle part is red, and the lower part is red with brownish yellow mottles. A few nodules of ironstone are in the surface layer and the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is rapid. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of a soil that is similar to Faceville soils but has a subsoil that extends only to a depth of 45 to 55 inches. Also included are a few small areas of Orangeburg and Esto soils. Also included are severely eroded areas, smaller than 3 acres; they are indicated by a severely eroded symbol on the map.

This Faceville soil is only moderately suited to row crops and small grain because of poor tilth and the somewhat gullied landscape. This soil is well suited to hay and pasture. Tilth can be improved by growing grasses and returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are moderately suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban uses. The clayey subsoil limits use of this soil for trench sanitary landfills. Slope limits use for sewage lagoons and small commercial buildings. This soil is only moderately suited to most recreational uses, mainly because of the high content of clay in the surface layer. Slope limits use for playgrounds.

This soil is in capability subclass IIIe and woodland suitability group 3o.

**FsB—Fuquay loamy sand, 0 to 5 percent slopes.**

This deep, well drained, nearly level and very gently sloping soil is on broad ridgetops on the uplands. Slopes are mostly smooth and convex. Mapped areas are 5 to 80 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 26 inches. The subsoil extends to a depth of 65

inches or more. The upper part of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam, and the lower part is brownish yellow sandy clay loam that has red and light gray mottles. Plinthite is below a depth of about 51 inches and makes up 8 to 12 percent of the lower part of the subsoil. A few nodules of ironstone are throughout the upper 51 inches of the soil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available water capacity is low. Runoff is slow. Tillage is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A perched high water table is in the lower part of the subsoil in winter and early spring.

Included with this soil in mapping are a few small areas of Dothan and Lakeland soils. Some areas have more nodules of ironstone than is common for Fuquay soils. Also included are wet areas smaller than 3 acres; they are indicated by a wet spot symbol on the map.

This Fuquay soil is only moderately suited to row crops, small grain, hay, and pasture because of the low available water capacity. Returning crop residue to the soil helps overcome this limitation. During dry seasons, irrigation can produce high yields.

Slash pine and longleaf pine are moderately suited to this soil. Seedling mortality is a concern.

This soil is well suited to most urban uses. The slow permeability in the lower part of the subsoil limits use for septic tank absorption fields. This limitation can be overcome in most places by good design and construction. This soil is only moderately suited to most recreational uses, mainly because of the sandy surface layer.

This soil is in capability subclass IIs and woodland suitability group 3s.

**Gr—Grady sandy loam.** This deep, poorly drained, nearly level soil is in saucer-shaped depressions. It commonly is ponded from winter to early summer. Slope ranges from 0 to 2 percent. Mapped areas range from 3 to 15 acres.

Typically, the surface layer is very dark gray sandy loam about 5 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is gray sandy clay loam that has yellowish brown mottles, and the lower part is gray sandy clay that has mostly yellowish brown mottles.

This soil is low in natural fertility and medium in organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Tillage is good. This soil commonly is saturated or ponded from winter to early summer, limiting plant growth.

Included with this soil in mapping are small areas of Alapaha and Clarendon soils. Also included are areas of a soil that is similar to Grady soils but has a loam surface layer.

This Grady soil is poorly suited to cultivated crops because of wetness and ponding. It is moderately suited to pasture.

Slash pine, loblolly pine, water tupelo, and sweetgum are well suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons. Drainage reduces the high seedling mortality.

This soil is poorly suited to most urban uses. The wetness and ponding are difficult to overcome.

This soil is in capability subclass Vw and woodland suitability group 2w.

**He—Herod sandy loam.** This deep, poorly drained, nearly level soil is on the larger flood plains in the western part of Crisp County. This soil is frequently flooded for brief periods commonly between late fall and early spring. Slope is dominantly less than 1 percent but ranges to 2 percent. Mapped areas are 8 to 90 acres.

Typically, the surface layer is mainly gray sandy loam about 11 inches thick. It is underlain by stratified clay loam, sandy clay loam, and sandy loam that are mainly gray and have yellowish brown mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or medium acid in the surface layer and medium acid to neutral in the stratified layers below. Permeability is moderate, and available water capacity is medium. The water table commonly is at a depth of 0.5 foot to 1.5 feet in winter and early spring.

Included with this soil in mapping are small areas of Osier, Rains, and Wahee soils.

This Herod soil is wooded. Loblolly pine, slash pine, and sweetgum are well suited to this soil. Wetness is the main limitation to equipment use in managing and harvesting the tree crop. However, logging can be successfully performed during the drier seasons. Drainage reduces the high seedling mortality.

This soil is poorly suited to farming and urban uses. Wetness and flooding are the main limitations, and they could be overcome only by major flood control and drainage.

This soil is in capability subclass Vw and woodland suitability group 1w.

**KeC—Kershaw coarse sand, 2 to 8 percent slopes.** This deep, excessively drained, very gently sloping and gently sloping soil is on ridgetops and hillsides on the uplands. Slopes are irregular and convex. Mapped areas are 10 to 80 acres.

Typically, the surface layer is dark grayish brown coarse sand about 4 inches thick. Below this to a depth of 90 inches or more, the soil is coarse sand. The upper part is yellowish brown with a few grayish brown mottles, the middle part is brownish yellow, and the lower part is yellow.

This soil is very low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is very rapid, and available water capacity is very low. Tilth is good. Runoff is slow. The root zone is easily penetrated by plant roots.

Included with this soil in mapping are small areas of Lakeland and Albany soils.

This Kershaw soil is rarely used for cultivated crops and pasture because of the very low available water capacity.

Slash pine and longleaf pine are poorly suited to this soil. Because available water capacity is very low, seedling mortality is a concern. The use of conventional equipment is somewhat restricted because this soil is too sandy.

This soil is well suited to most building site development and to septic tank absorption fields. This soil is poorly suited to other sanitary facilities because of seepage. This soil is poorly suited to recreational uses because it is too sandy.

This soil is in capability subclass VII<sub>s</sub> and woodland suitability group 5<sub>s</sub>.

**KO—Kinston and Osier soils.** This map unit consists of deep, poorly drained, nearly level soils on flood plains of most major streams. It consists of areas of Kinston soils and Osier soils that are closely associated in an irregular pattern. Both soils are in every mapped area. Because of present and predicted use, they were not separated in mapping. These soils are flooded frequently for brief periods, mostly in late winter and early spring. Slope is mainly less than 1 percent but ranges to 2 percent. Mapped areas range from 50 to 150 acres.

A typical area is about 50 percent Kinston soils, 30 percent Osier soils, and 20 percent Ocilla, Rains, and Wahee soils and bodies of water smaller than 10 acres. The proportion of each soil varies. Poorly drained Rains soils are in low-lying flat areas near the major streams, and somewhat drained Ocilla and Wahee soils are on low-lying stream terraces.

Typically, Kinston soils have a dark gray fine sandy loam surface layer about 6 inches thick. The subsoil extends to a depth of about 44 inches. It is gray sandy clay loam that has yellowish brown mottles. To a depth of 62 inches, the substratum is gray sandy loam that has light gray and brownish yellow mottles.

Kinston soils are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is medium. The water table is within 1 foot of the surface from late fall to early summer.

Typically, Osier soils have a surface layer about 12 inches thick. The upper part is very dark gray fine sandy loam, and the lower part is dark gray loamy sand. Below this to a depth of 65 inches or more, the substratum is grayish sand or coarse sand that has gray and brown mottles.

Osier soils are very strongly acid or strongly acid throughout. Permeability is rapid, and available water

capacity is low. The water table is within 1 foot of the surface from late fall to early spring.

These soils are wooded. Loblolly pine, slash pine, and sweetgum are well suited to these soils. Wetness limits use of equipment in managing and harvesting the trees except during the drier months.

These soils are poorly suited to farming and urban uses. Wetness and flooding are the main limitations, and they can be overcome only by major flood control and drainage.

These soils are in capability subclass V<sub>w</sub>. Kinston part is in woodland suitability group 1<sub>w</sub>, and Osier part is in woodland suitability group 3<sub>w</sub>.

**LaB—Lakeland sand, 0 to 5 percent slopes.** This deep, excessively drained, nearly level and very gently sloping soil is on broad ridgetops on the uplands. Slopes are smooth and convex in most places. Mapped areas are 5 to 200 acres.

Typically, the surface layer is grayish brown sand about 6 inches thick. To a depth of 80 inches or more, the substratum is sand. The upper part is yellowish brown, the middle part is light yellowish brown, and the lower part is yellow with very pale brown mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is very rapid, and available water capacity is low. Runoff is slow. The soil has good tilth. The deep root zone is easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Albany and Fuquay soils. Also included are a few small areas of soils that have more clay below a depth of 70 to 80 inches than is common for Lakeland soils.

This Lakeland soil is poorly suited to row crops, small grain, hay, and pasture because of the low available water capacity and the low fertility. Returning residue to the soil helps overcome these limitations. Irrigation can increase yields of the commonly grown crops.

Loblolly pine and slash pine are moderately suited to this soil. Equipment limitations and seedling mortality are concerns.

This soil is well suited to most building site development and to septic tank absorption fields. This soil is poorly suited to most other sanitary facilities because of seepage. This soil is poorly suited to recreational uses because it is too sandy.

This soil is in capability subclass IV<sub>s</sub> and woodland suitability group 4<sub>s</sub>.

**Le—Leefield loamy sand.** This deep, somewhat poorly drained, nearly level soil is in low-lying flat areas on the uplands. Slope ranges from 0 to 2 percent. Mapped areas are 7 to 45 acres.

Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsurface layer extends to a depth of 31 inches. It is light yellowish

brown loamy sand that has light gray mottles. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is light yellowish brown with light gray and brownish yellow mottles, the middle part is light yellowish brown with light gray and yellowish brown mottles, and the lower part is mottled light gray, light yellowish brown, red, and strong brown. Plinthite is below a depth of about 48 inches and makes up 5 to 12 percent of the lower part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is low. Runoff is slow. Tilth is good, and this soil can be worked throughout a wide range of moisture content. The root zone is deep except in winter and early spring, when the water table commonly is at a depth of 1.5 to 2.5 feet.

Included with this soil in mapping are a few small areas of Alapaha and Stilson soils. Also included are wet areas smaller than 3 acres; they are indicated by a wet spot symbol on the map.

This Leefield soil is moderately suited to corn, tobacco, and truck crops. Unless drained, this soil is limited by wetness.

Slash pine and loblolly pine are moderately suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons. Drainage can reduce seedling mortality.

This soil is only moderately suited to most building site development, mainly because of wetness. Because of wetness and the moderately slow permeability in the lower part of the subsoil, this soil is poorly suited to septic tank absorption fields. It is poorly suited to other sanitary facilities because of wetness and seepage. Because of wetness and the sandy texture, this soil is only moderately suited to recreational uses.

This soil is in capability subclass IIw and woodland suitability group 3w.

**Lf—Leefield-Urban land complex.** This complex is on smooth, low-lying uplands. The areas of Leefield soils and Urban land are so intermingled that they could not be mapped separately at the scale selected. Slope ranges from 0 to 2 percent. Mapped areas are 4 to 40 acres. Individual areas of the Leefield soil and Urban land are 2 to 20 acres.

Leefield loamy sand makes up about 60 percent of each mapped area. Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsurface layer extends to a depth of 31 inches. It is light yellowish brown loamy sand and has light gray mottles. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part of the subsoil is light yellowish brown with light gray and brownish yellow mottles, the middle part is light yellowish

brown with light gray and yellowish brown mottles, and the lower part is mottled light gray, light yellowish brown, red, and strong brown. Plinthite is below a depth of about 48 inches and makes up 5 to 12 percent of the lower part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and moderately slow in the lower part. Available water capacity is low. The root zone is deep except in winter and early spring, when the water table is commonly at a depth of 1.5 to 2.5 feet.

Urban land makes up about 40 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping for community development.

This complex is used primarily for urban purposes. It is only moderately suited to this use because of wetness. Home vegetable gardens, shrubs, shade trees, turf, and lawns grow well. Wetness can be reduced somewhat by drainage.

The Leefield soil is in capability subclass IIw. The complex is not placed in a woodland suitability group.

**LmB—Lucy loamy sand, 0 to 5 percent slopes.** This deep, well drained, nearly level and very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes are smooth and convex in most places. Mapped areas are 5 to 80 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is strong brown loamy sand and extends to a depth of 28 inches. The subsoil is yellowish red and extends to a depth of 65 inches. It is sandy loam in the upper part and sandy clay loam in the lower part.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Orangeburg and Faceville soils.

This Lucy soil is only moderately suited to row crops, small grain, hay, and pasture because of the low available water capacity and low fertility. Returning crop residue to the soil helps overcome these limitations. During dry seasons, irrigation can produce high yields.

Slash pine and longleaf pine are moderately suited to this soil (fig. 2). Equipment limitations and seedling mortality are concerns.

This soil is well suited to most urban uses. It is only moderately suited to recreational uses because of the sandy surface layer.



Figure 2.—Slash pine planted on Lucy loamy sand, 0 to 5 percent slopes. This soil is moderately suited to the common wood crops.

This soil is in capability subclass IIs and woodland suitability group 3s.

**LmC—Lucy loamy sand, 5 to 8 percent slopes.** This deep, well drained, gently sloping soil is on hillsides on the uplands. Slopes are rolling and convex in most places. Mapped areas are 5 to 20 acres.

Typically, the surface layer is dark brown loamy sand about 6 inches thick. The subsurface layer is brown loamy sand and extends to a depth of 24 inches. The subsoil extends to a depth of 65 inches. The upper part of the subsoil is yellowish red sandy loam, and the lower part is yellowish red sandy clay loam that has brownish yellow mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is low. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Orangeburg and Faceville soils.

This Lucy soil is moderately suited to row crops, small grain, hay, and pasture. It is limited by the low available water capacity, the low fertility, and the small size of mapped areas. Gullies can form if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion. Returning crop residue to the soil increases available water capacity and decreases leaching of plant nutrients.

Slash pine and longleaf pine are moderately suited to this soil. Equipment limitations and seedling mortality are concerns.

This soil is well suited to most urban uses. This soil is only moderately suited to most recreational uses because of the sandy surface layer. Slope limits use for playgrounds.

This soil is in capability subclass IIs and woodland suitability group 3s.

**Oc—Ocilla loamy sand.** This deep, somewhat poorly drained, nearly level soil is on stream terraces. Ocilla soils are rarely flooded in winter and spring. Slope ranges from 0 to 2 percent. Mapped areas range from 5 to 40 acres.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer, which extends to a depth of 24 inches, is light yellowish brown loamy sand that has brown mottles. The subsoil extends to a depth of 70 inches or more. The upper part of the subsoil is light yellowish brown sandy loam that has light gray and yellowish brown mottles, and the lower part is light yellowish brown sandy clay loam that has light gray, yellowish brown, yellowish red, and red mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is low. Runoff is slow. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep except in winter and spring, when the water table commonly is at a depth of 1 foot to 2.5 feet.

Included with this soil in mapping are a few small areas of Rains and Wahee soils.

This Ocilla soil is poorly suited to corn, soybeans, and pasture because of wetness.

Most of this soil is wooded. Slash pine and loblolly pine are moderately suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons. Drainage can reduce the high seedling mortality.

This soil is poorly suited to most urban uses. It is moderately suited to most recreational uses. The wetness and flooding are difficult to overcome.

This soil is in capability subclass IVw and woodland suitability group 3w.

**Oe—Olustee sand.** This deep, poorly drained, nearly level soil is in low flat areas. Slope ranges from 0 to 2 percent. Mapped areas are 5 to 50 acres.

Typically, the surface layer is very dark gray sand about 9 inches thick. Below this to a depth of 22 inches is dark brown sand that is weakly cemented in the upper part. The next 15 inches of the soil is loose, light gray sand that has grayish brown and very pale brown mottles. Below this, light gray sandy clay loam that has yellowish brown and strong brown mottles extends to a depth of 65 inches or more.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is moderate in most of the profile but is rapid in the loose sand. Available water capacity is low. Tilth is good, and this soil can be worked throughout a wide range of moisture content. The root zone is deep except in winter and spring, when the water table is commonly above a depth of 1 foot.

Included with this soil in mapping are a few areas of Leefield and Pelham soils.

This Olustee soil is only moderately suited to most commonly grown row crops and vegetables because of wetness.

Slash pine and loblolly pine are moderately suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons. Drainage reduces seedling mortality.

This soil is poorly suited to most urban and recreational uses, mainly because of wetness. The wetness can be overcome somewhat by drainage.

This soil is in capability subclass Illw and woodland suitability group 3w.

**OrA—Orangeburg loamy sand, 0 to 2 percent slopes.** This deep, well drained, nearly level soil is on ridgetops on the uplands. Mapped areas are 30 to 70 acres.

Typically, the surface layer is brown loamy sand about 10 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish red sandy loam, the middle part is red sandy clay loam, and the lower part is red sandy clay loam that has a few brownish mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that have a redder surface layer than is common for Orangeburg soils. Also included are a few small areas of Lucy soils.

This Orangeburg soil is well suited to row crops, small grain, hay, and pasture. During dry seasons, irrigation

can produce high yields. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage and the use of cover crops, including grasses and legumes, help increase organic matter content.

Loblolly pine and slash pine are well suited to this soil. There are no limitations for woodland use or management.

This soil is well suited to most urban and recreational uses.

This soil is in capability class I and woodland suitability group 2o.

**OrB—Orangeburg loamy sand, 2 to 5 percent slopes.** This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes commonly are smooth and convex. Mapped areas are 5 to 90 acres.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is brown in the upper part, yellowish red in the middle part, and red in the lower part.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Lucy soils and soils that have a redder surface layer than is common for Orangeburg soils. Also included are areas that have a few shallow gullies.

This Orangeburg soil is well suited to row crops, small grain, hay, and pasture. During dry seasons, irrigation can produce high yields. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Loblolly pine and slash pine are well suited to this soil. There are no limitations for woodland use or management.

This soil is well suited to most urban and recreational uses.

This soil is in capability subclass IIe and woodland suitability group 2o.

**OrC—Orangeburg loamy sand, 5 to 8 percent slopes.** This deep, well drained, gently sloping soil is on hillsides on the uplands. Slopes are irregular and convex. Mapped areas are 5 to 30 acres.

Typically, the surface layer is brown loamy sand about 6 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches. The upper part of the subsoil is yellowish red, the middle part is red, and the lower part is red with brownish yellow mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is medium. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Faceville and Lucy soils. Also included are areas that have a few shallow gullies.

This Orangeburg soil is moderately suited to row crops and small grain because of runoff, the small size of mapped areas, and slope. This soil is well suited to hay and pasture. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Slash pine and loblolly pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. Slope limits use for playgrounds, sewage lagoons, and small commercial buildings.

This soil is in capability subclass IIIe and woodland suitability group 2o.

**OsD2—Orangeburg sandy loam, 8 to 12 percent slopes, eroded.** This deep, well drained, sloping soil is on short hillsides and narrow ridgetops on the uplands. The surface layer is a mixture of the original surface layer and material from the upper part of the subsoil. Slopes are irregular and commonly contain rills, galled spots, and occasional gullies. Mapped areas are 5 to 48 acres.

Typically, the surface layer is brown sandy loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part of the subsoil is yellowish red sandy loam, the middle part is red sandy clay loam, and the lower part is red sandy loam that has reddish yellow mottles.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is rapid. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Faceville and Lucy soils.

This Orangeburg soil is poorly suited to row crops because of runoff, the small size of mapped areas, and slope. This soil is well suited to hay and pasture. Erosion is a severe hazard if cultivated crops are grown.

Loblolly pine and slash pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is only moderately suited to most urban and recreational uses, mainly because of slope.

This soil is in capability subclass IVe and woodland suitability group 2o.

**Pe—Pelham loamy sand.** This deep, poorly drained, nearly level soil is in flat areas and depressions on the uplands and along poorly defined drainageways. It is occasionally flooded for brief periods in winter and early spring. Slope is generally less than 1 percent but ranges to 2 percent. Mapped areas are 5 to 40 acres.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand and extends to a depth of 33 inches. It is gray in the upper part and light gray in the lower part. The subsoil is mainly sandy clay loam and extends to a depth of 62 inches or more. It is light gray with yellowish brown, brownish yellow, and red mottles.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Runoff is slow. Tilth is good. The root zone is deep except in winter and spring, when the water table commonly is at a depth of 0.5 foot to 1.5 feet.

Included with this soil in mapping are small areas of Albany and Leefield soils.

This Pelham soil is poorly suited to cultivated crops because of wetness and flooding. This soil is moderately suited to pasture.

Slash pine and loblolly pine are well suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons.

This soil is poorly suited to most urban and recreational uses. The wetness and flooding are difficult to overcome.

This soil is in capability subclass Vw and woodland suitability group 2w.

**Ra—Rains loamy fine sand.** This deep, poorly drained, nearly level soil is in flat areas and slight depressions on terraces near the larger streams. Slope ranges from 0 to 2 percent. Mapped areas are 5 to 60 acres.

Typically, the surface layer is dark gray loamy fine sand about 5 inches thick. The subsurface layer is light brownish gray loamy fine sand and extends to a depth of 11 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is gray sandy loam that has brownish yellow mottles, and the lower part is gray sandy clay loam that has brownish yellow, yellowish brown, and light brownish gray mottles.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is slow. Tilth is good. The root zone is deep except from late fall to spring, when this soil commonly is saturated.

Included with this soil in mapping are a few small areas of Ocilla and Wahee soils. Also included are areas of a Rains soil that has a loamy sand surface layer.

This Rains soil is poorly suited to cultivated crops and pasture because of wetness.

Most of this soil is wooded. Slash pine, loblolly pine, and sweetgum are well suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons. Drainage reduces seedling mortality.

This soil is poorly suited to urban uses. The wetness is difficult to overcome.

This soil is in capability subclass Vw and woodland suitability group 2w.

**Se—Stilson loamy sand.** This deep, moderately well drained, nearly level soil is in smooth, low areas on the uplands. Slope ranges from 0 to 2 percent. Mapped areas are 5 to 40 acres.

Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 27 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish brown sandy loam that has olive yellow mottles, and the lower part is mainly brownish yellow sandy clay loam that has light gray and yellowish brown mottles. Plinthite is below a depth of about 44 inches and makes up 5 to 15 percent of the lower part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Runoff is slow. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A perched high water table is in the upper part of the subsoil in winter and spring.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, and Lee field soils. Also included are wet areas less than 3 acres in size; they are indicated by a wet spot symbol on the map.

This Stilson soil is only moderately suited to corn, tobacco, peanuts, soybeans, truck crops, hay, and pasture because of wetness. During dry seasons, irrigation can produce high yields.

Slash pine and loblolly pine are moderately suited to this soil. Wetness limits use of equipment in managing and harvesting the trees except during the drier seasons.

This soil is moderately suited to most urban uses. This soil is poorly suited to septic tank absorption fields. Wetness limits use of this soil for dwellings with basements and for most sanitary facilities and recreational uses.

This soil is in capability subclass Ilw and woodland suitability group 3s.

**Sr—Stilson-Urban land complex.** This complex is in low, nearly level areas on the uplands. These areas of

Stilson soil and Urban land are so intermingled that they could not be mapped separately at the scale selected. Slope ranges from 0 to 2 percent. Mapped areas are 7 to 45 acres.

Stilson loamy sand makes up about 50 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 27 inches. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish brown sandy loam that has olive yellow mottles, and the lower part is mainly brownish yellow sandy clay loam that has light gray and yellowish brown mottles. Plinthite is below a depth of about 44 inches.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A perched high water table is in the upper part of the subsoil in winter and spring.

Urban land makes up about 40 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping for community development.

Included in mapping are small areas of Lee field and Fuquay soils.

This complex is used primarily for urban purposes. It is only moderately suited to this use because of wetness. Home vegetable gardens, shrubs, shade trees, turf, and lawns grow well.

The Stilson soil is in capability subclass Ilw. The complex is not placed in a woodland suitability group.

**StD2—Sunsweet sandy loam, 5 to 12 percent slopes, eroded.** This deep, well drained, gently sloping and sloping soil is on hillsides, narrow ridgetops, and knolls on the uplands. The present surface layer is a mixture of the original surface layer and material from the upper part of the subsoil. Slopes are short and irregular and commonly contain rills, galled spots, and occasional gullies. Mapped areas are 5 to 25 acres.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsoil is sandy clay and extends to a depth of 65 inches or more. The upper part of the subsoil is mostly strong brown and has dark red and yellowish brown mottles, and the lower part is mottled yellowish red, red, light gray, and yellowish brown. Plinthite is below a depth of about 8 inches and makes up 6 to 15 percent of the subsoil. Many nodules of ironstone are in the surface layer and the upper part of the subsoil.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout

except in the surface layer in limed areas. Permeability is moderately slow, and available water is medium. Runoff is rapid. Tilth is fair. The root zone is restricted by the firm, clayey subsoil.

Included with this soil in mapping are small areas of Esto and Cowarts soils. Also included are several severely eroded areas in which the surface layer is sandy clay loam.

This Sunsweet soil is poorly suited to row crops, small grain, hay, and pasture because of rapid runoff, the small size of mapped areas, the irregular landscape, and the severe erosion hazard.

Slash pine and loblolly pine are well suited to this soil. Equipment limitations and seedling mortality are concerns.

This soil is moderately suited to most urban and recreational uses. This soil is poorly suited to septic tank absorption fields because of the moderately slow permeability in the subsoil. Slope limits use of this soil for sewage lagoons, playgrounds, and small commercial buildings.

This soil is in capability subclass VIe and woodland suitability group 3c.

**SuB—Susquehanna sandy loam, 2 to 5 percent slopes.** This deep, somewhat poorly drained, very gently sloping soil is on ridgetops on the uplands. Slopes commonly are smooth and undulating. Mapped areas are 5 to 20 acres.

Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsoil is dominantly clay and extends to a depth of 65 inches or more. It is reddish brown with brown mottles in the upper part, light brownish gray with reddish brown mottles in the middle part, and light gray with red and yellowish red mottles in the lower part.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is very slow, and available water capacity is medium. Runoff is moderate. Tilth is fair. The root zone is somewhat restricted by the very firm, clayey subsoil. This soil is wet during periods of high rainfall.

Included with this soil in mapping are areas of Esto and Cowarts soils. Also included are rock outcrops less than 1 acre in size; they are indicated by a rock outcrop symbol on the map. In some places the surface layer is sandy clay loam.

This Susquehanna soil is poorly suited to row crops and small grain because the subsoil is clayey and very firm and the erosion hazard is severe. This soil is moderately suited to hay and pasture.

Loblolly pine is moderately suited to this soil. Equipment limitations are a concern.

This soil is poorly suited to most urban uses. The very slow permeability in the subsoil severely limits use for septic tank absorption fields. The high shrink-swell potential limits use for dwellings, buildings, and roads.

This soil is moderately suited for recreational uses because of the permeability and wetness.

This soil is in capability subclass IVe and woodland suitability group 3c.

**SuD—Susquehanna sandy loam, 5 to 12 percent slopes.** This deep, somewhat poorly drained, gently sloping and sloping soil commonly is on hillsides on the uplands. Slopes are irregular and short. Mapped areas are 5 to 15 acres.

Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 65 inches or more. The upper part of the subsoil is yellowish red clay loam that has red and yellowish brown mottles, and the lower part is mottled gray and red clay.

This soil is low in natural fertility and organic matter. Reaction is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Permeability is very slow, and available water capacity is medium. Runoff is very rapid. Tilth is fair. The root zone is somewhat restricted by the very firm, clayey subsoil. This soil is wet during periods of high rainfall.

Included with this soil in mapping are areas of Esto and Cowarts soils. Also included are areas that have a few shallow gullies. In some places the clay content in the lower part of the subsoil is less than is typical for Susquehanna soils. Also included are rock outcrops less than one-half acre in size; they are indicated by a rock outcrop symbol on the map.

This Susquehanna soil is poorly suited to row crops, small grain, hay, and pasture because the subsoil is clayey and very firm and the erosion hazard is severe.

Loblolly pine is moderately suited to this soil. Equipment limitations are a concern.

This soil is poorly suited to most urban uses. The very slow permeability in the subsoil severely limits use for septic tank absorption fields. The high shrink-swell potential limits use for dwellings, buildings, and roads. This soil is moderately suited to most recreational uses because of the very slow permeability and wetness. Slope limits use for playgrounds.

This soil is in capability subclass VIe and woodland suitability group 3c.

**TfA—Tifton loamy sand, 0 to 2 percent slopes.** This deep, well drained, nearly level soil is on ridgetops on the uplands. Mapped areas are 5 to 80 acres.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown and has red and gray mottles in the lower part. Plinthite is below a depth of about 36 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the

surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Tillage is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan and Fuquay soils. Also included are wet areas less than 3 acres in size; they are indicated by a wet spot symbol on the map.

This Tifton soil is well suited to row crops, small grain, truck crops, hay, and pasture. During dry seasons, irrigation can produce high yields. Minimum tillage and the use of cover crops, including grasses and legumes, help maintain organic matter content.

Loblolly pine and slash pine are well suited to this soil. There are no limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. Slow absorption of effluent in the subsoil somewhat limits the use for septic tank absorption fields. This limitation can be overcome in most places by good design and construction. The many nodules of ironstone on the surface limit use for playgrounds.

This soil is in capability class I and woodland suitability group 2o.

**TfB—Tifton loamy sand, 2 to 5 percent slopes.** This deep, well drained, very gently sloping soil is on ridgetops and hillsides on the uplands. Slopes commonly are smooth and convex. Mapped areas are 5 to 150 acres.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown in the upper part, and mottled yellowish brown, red, and light gray in the lower part. Plinthite is below a depth of about 38 inches, and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is moderate. This soil has good tillage and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, and Orangeburg soils. Also included are wet areas less than 1 acre in size; they are indicated by a wet spot symbol on the map. Also included are areas that have a few shallow gullies and rills.

This Tifton soil is well suited to row crops, small grain, hay, and pasture (fig. 3). During dry seasons, irrigation can produce high yields. Good tillage is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Minimum

tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Loblolly pine and slash pine are well suited to this soil. There are no limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. Slow absorption of effluent in the subsoil somewhat limits the use of this soil for septic tank absorption fields. The limitation can be overcome in most places by increasing the absorption area or modifying the design of the system. Slope and seepage limit use for sewage lagoons. The many nodules of ironstone in the surface and the slope limit use for playgrounds.

This soil is in capability subclass IIe and woodland suitability group 2o.

**TfC—Tifton loamy sand, 5 to 8 percent slopes.** This deep, well drained, gently sloping soil is on hillsides on the uplands. Slopes are irregular and convex. Mapped areas are 5 to 25 acres.

Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is pale brown loamy sand and extends to a depth of 10 inches. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. It is yellowish brown or strong brown and has yellowish red and light gray mottles in the middle part and light gray mottles in the lower part. Plinthite is below a depth of about 32 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is moderate. This soil has good tillage. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Cowarts soils and a few areas of a Tifton soil that has a sandy loam surface layer. Also included are areas of eroded soils that have shallow gullies and rills.

This Tifton soil is only moderately suited to row crops and small grain because of the irregular landscape and the small size of mapped areas. This soil is well suited to hay and pasture. Good tillage can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Loblolly pine and slash pine are well suited to this soil. There are no significant limitations for woodland use or management.

This soil is well suited to most urban and recreational uses. Slow absorption of effluent in the subsoil somewhat limits the use of this soil for septic tank absorption fields. Slope and seepage limit use for



Figure 3.—Field peas on Tifton loamy sand, 2 to 5 percent slopes. This soil is prime farmland and is well suited to the commonly grown truck crops.

sewage lagoons. Slope also limits use of this soil for small commercial buildings and for playgrounds.

This soil is in capability subclass IIIe and woodland suitability group 2o.

**TuB—Tifton-Urban land complex, 2 to 5 percent slopes.** This complex is on very gently sloping ridgetops and hillsides on the uplands. The areas of Tifton soil and Urban land are so intermingled that they could not be mapped separately at the scale selected. Mapped areas are 15 to 90 acres.

Tifton loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is brown loamy sand about 7 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, and the rest is strong brown. Red, yellowish brown, and light gray mottles are in the lower part. Plinthite is below a depth of about 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is moderate.

Urban land makes up about 35 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping for community development.

Although this complex is used primarily for nonfarm purposes, it is well suited to home vegetable gardens, shrubs, shade trees, small parks, and lawns.

This complex is well suited to most urban and recreational uses. Slow absorption of effluent in the subsoil somewhat limits use for septic tank absorption fields. In most places this limitation can be overcome by careful design and installation. The many nodules of ironstone on the surface and the slope limits use for playgrounds.

The Tifton soil is in capability subclass IIe. The complex is not placed in a woodland suitability group.

**TuC—Tifton-Urban land complex, 5 to 8 percent slopes.** This complex is on gently sloping hillsides on the uplands. The areas of Tifton soil and Urban land are so intermingled that they could not be mapped separately at the scale selected. Mapped areas are 8 to 40 acres. Individual areas of the Tifton soil and Urban land are 4 to 20 acres.

Tifton loamy sand makes up about 50 percent of each mapped area. Typically, the surface layer is brown loamy sand about 5 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, and the rest is strong brown. Red, yellowish brown, and light gray mottles are in the lower part. Plinthite is below a depth of 38 inches and makes up 5 to 15 percent of the lower part of the subsoil. Many nodules of ironstone are on the surface and throughout the soil.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid throughout except in the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is moderate.

Urban land makes up about 35 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping for community development.

Although this complex is used primarily for nonfarm purposes, it is well suited to home vegetable gardens, shrubs, shade trees, small parks, and lawns.

This complex is well suited to most urban and recreational uses. Slow absorption of effluent in the subsoil somewhat limits use for septic tank absorption fields. In most places this limitation can be overcome by careful design and installation. Slope limits the use of the soil for playgrounds.

The Tifton soil is in capability subclass IIIe. This complex is not placed in a woodland suitability group.

**Wa—Wahee fine sandy loam.** This deep, somewhat poorly drained, nearly level soil is on terraces of the larger streams. This soil commonly is flooded for brief periods in winter and spring. Slope is generally less than

1 percent but ranges to 2 percent. Mapped areas are 5 to 60 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 8 inches thick. The subsurface layer is brown fine sandy loam and extends to a depth of 14 inches. The subsoil extends to a depth of 53 inches. The upper part of the subsoil is brown clay that has yellowish brown and yellowish red mottles, the middle part is light brownish gray clay that has yellowish brown mottles, and the lower part is light gray sandy clay that has yellowish brown mottles. The substratum is mottled light gray, yellowish brown, and brownish yellow coarse sandy loam and loamy sand.

This soil is low in natural fertility and organic matter. Reaction is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Runoff is slow. The water table is within 1 foot of the surface during winter and early spring, limiting penetration of roots of all except water-tolerant plants.

Included with this soil in mapping are areas of Ocilla and Rains soils.

This Wahee soil is poorly suited to cultivated crops because of wetness and flooding. This soil is moderately suited to hay and pasture. If this soil is drained, protected against flooding, and properly managed, good yields can be obtained.

Slash pine, loblolly pine, sweetgum, and yellow-poplar are well suited to this soil. Wetness and flooding limit the use of equipment and cause seedling mortality to be high. Drainage will reduce these problems in some places. Logging during the drier seasons also helps overcome the problems.

This soil is poorly suited to most urban uses. The wetness and flooding can be overcome only by major flood control and drainage.

This soil is in capability subclass IIIw and woodland suitability group 2w.



## use and management of the soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid 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 behavior 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 recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

James E. Helm, conservation agronomist, Soil Conservation Service, helped prepare this section.

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

yields of the main crops and hay and pasture plants are listed for each soil.

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

Soil erosion is the major concern on about 53 percent of the cropland and pasture in Crisp and Turner Counties. If slope is more than 2 percent, erosion is a hazard. Cowarts, Dothan, Esto, Faceville, Orangeburg, Susquehanna, and Tifton soils, for example, have slopes of 2 to 5 percent.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Esto, Faceville, Sunsweet, and Susquehanna soils. Erosion also reduces productivity on soils that tend to be droughty, such as Fuquay and Lucy soils. Second, soil erosion on farmland results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping fields, tilling the soil or preparing a good seedbed is difficult on clayey spots left after the original friable surface soil has been eroded away. Such spots are common in areas of moderately eroded Cowarts, Orangeburg, and Sunsweet soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps plant cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the grass forage crops in the cropping system reduce erosion on sloping land and improve tilth for the following crop.

Using minimum tillage and leaving crop residue on the surface increase infiltration and reduce runoff and erosion. These practices can be used on most soils in the survey area. No-tillage for corn, use of which is increasing, reduces erosion on sloping land and can be adapted to most soils in the area.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical

on deep, well drained soils that have regular slopes. Cowarts, Dothan, Esto, Faceville, Orangeburg, and Tifton soils are suitable for terraces.

Contouring is a widely used erosion control practice in the survey area. It is most effective on soils that have smooth, uniform slopes, including most areas of the sloping Cowarts, Dothan, Esto, Faceville, Orangeburg, and Tifton soils.

Soil blowing is a concern on the sandy Lakeland and Kershaw soils. Soil blowing can damage these soils and the young plants growing on them if winds are strong and the soils are dry and nearly bare of vegetation or surface mulch. Maintaining plant cover or surface mulch or keeping the surface rough through proper tillage minimizes soil blowing. Windbreaks of pine trees effectively reduce soil blowing in broad open fields.

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

Soil drainage is the major management need on about 28 percent of the area used for crops and pasture in the two counties. Some soils are so wet that production of crops common in the area is generally not possible. These are the poorly drained and very poorly drained Alapaha, Grady, Herod, Kinston, Olustee, Osier, Pelham, and Rains soils, which cover about 69,586 acres in Crisp and Turner Counties. Most of this land is wooded.

Unless artificially drained, the somewhat poorly drained soils are so wet that crops are damaged during most years. In this category are the Albany, Ardilla, Leefield, Ocilla, and Wahee soils, which cover about 13,602 acres. Clarendon and Stilson soils are moderately well drained, but they also need artificial drainage in most years.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most areas of poorly drained and very poorly drained soils before they can be used for intensive row cropping. Drains have to be more closely spaced in slowly permeable soils than in more permeable soils. Tile drainage is very slow in Grady and Rains soils. Finding adequate outlets for tile drainage systems is difficult in many areas of Alapaha, Grady, Pelham, and Rains soils.

Soil fertility is naturally low in most soils in the survey area. All but Herod soils are naturally acid. Herod soils, which are on flood plains, are slightly acid or neutral. The soils in depressions, along drainageways, and on flood plains—such as Alapaha, Grady, Kinston, Osier, Pelham, and Rains soils—have slightly more organic matter and somewhat more plant nutrients than most well drained soils on uplands.

Many soils on uplands are very strongly acid in their natural state. If they have never been limed, applications of ground limestone are required to raise the pH level sufficiently for good growth of clover and other crops that grow on nearly neutral soils. Available phosphorus and potash levels are naturally low in most of these

soils. On all soils additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in the survey area have a surface layer of loamy sand that is low in organic matter. Tilth is generally good except on the eroded Cowarts, Faceville, Orangeburg, and Sunsweet soils, in which the subsoil is exposed. Regular additions of crop residue, manure, and other organic material help improve or maintain tilth.

Fall plowing is generally not a good practice in this area. Most of the cropland consists of sloping soils that are subject to damaging erosion if plowed in fall.

Many field crops are suited to the soils and climate of Crisp and Turner Counties. Corn, peanuts (fig. 4), soybeans, cotton, tobacco, and grain sorghum are grown extensively. Sunflowers, navy beans, sugar beets, and similar crops can be grown.

Rye, oats, and wheat are the common close-grown crops. Barley could be grown, and seed could be produced from bahiagrass, tall fescue, crimson clover, and arrowleaf clover.

Special crops grown commercially in the area are watermelons, canteloup, vegetables, pecans, peaches, blueberries, and nursery plants. Field peas, butter beans, turnips, collards, mustard, English peas, tomatoes, sweet potatoes, okra, sweet corn, and cabbage are the common vegetable crops.

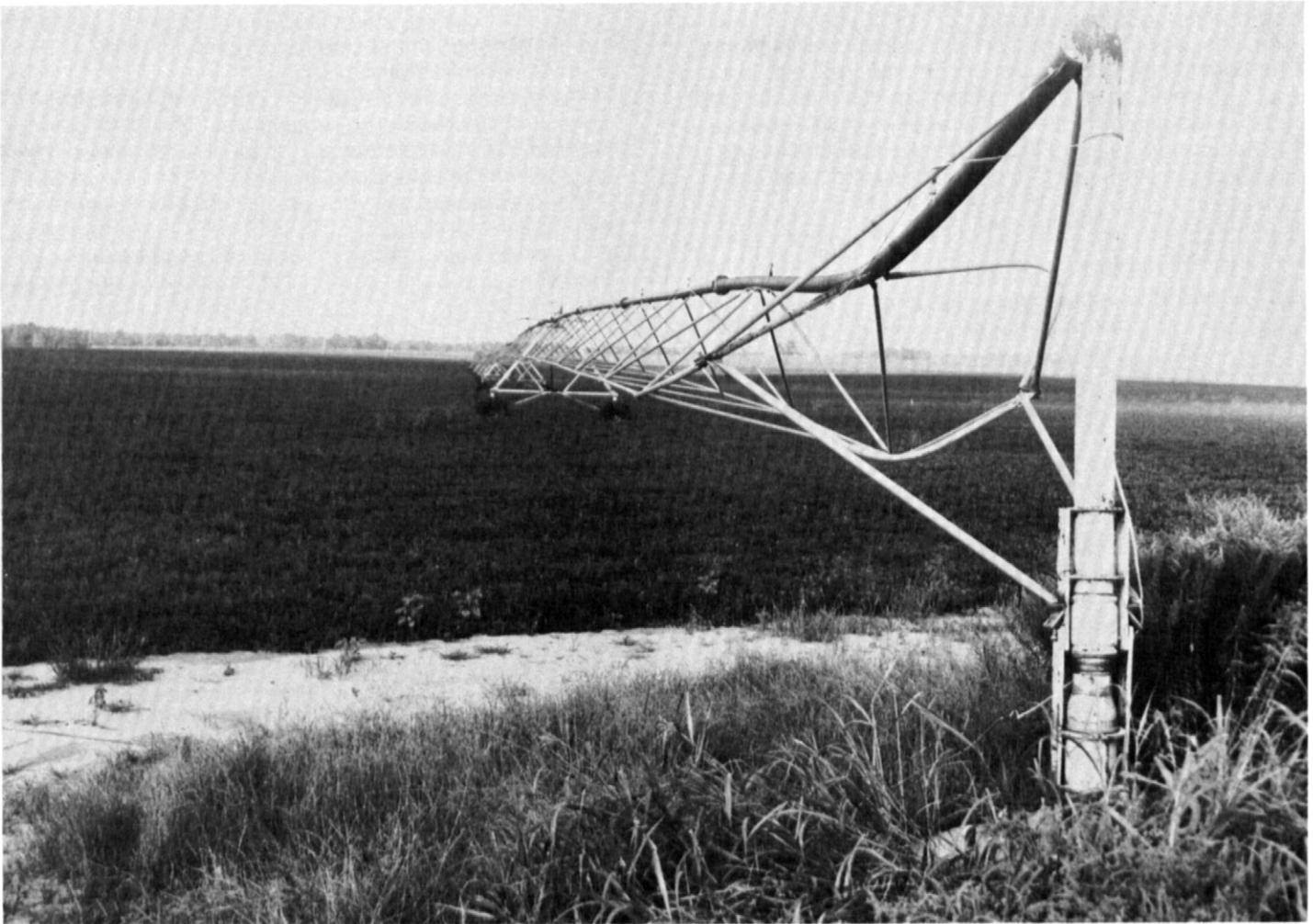
Deep soils that have good natural drainage and that warm up early in spring are especially well suited to many vegetables and small fruits. In the survey area these are the Cowarts, Dothan, Faceville, Orangeburg, and Tifton soils that have slopes of less than 5 percent. These soils cover about 164,996 acres. If irrigated, about 49,383 acres of Fuquay, Lucy, and Lakeland soils that have slopes of less than 5 percent are also well suited to vegetables and small fruits. Crops can generally be planted and harvested earlier on all of these soils than on the other soils in the area.

If excess water is removed, the moderately well drained soils in the county are well suited to a wide range of vegetables. Clarendon and Stilson soils cover about 8,790 acres of the survey area.

Most of the well drained soils in the survey area are suitable for orchards and nursery plants. Soils in low positions where frost is frequent and air drainage is poor generally are poorly suited to early vegetables, small fruits, and orchards.

Latest information and suggestions for growing special crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

Farming and other land uses are competing for large



*Figure 4.*—Peanuts under a center pivot irrigation system on Tifton loamy sand, 0 to 2 percent slopes. Peanut yields commonly can be increased by 25 percent if irrigation and other good management are used on this soil.

areas in these counties. About 14,000 acres was urban or built-up land in 1967. Much of this acreage had been well suited to crops. Each year additional land is being developed for urban uses in Ashburn and Cordele. In general, the soils in the survey area that are well suited to crops are also well suited to urban development. The data about specific soils in this survey can be used in planning future land use.

Prime farmland makes up 190,592 acres of Crisp and Turner Counties. This is the best land available for producing food, feed, forage, fiber, and oilseed crops. The prime farmland is Clarendon, Cowarts, Dothan, Faceville, Orangeburg, Stilson, and Tifton soils that commonly have slopes of less than 8 percent. Even when these areas are not used for crops, there are alternatives that do not preclude their later use as farmland.

### **yields per acre**

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties;

appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss. Fertilizer needs of specific crops on specific soils can be determined by soil tests. General fertilizer recommendations for field crops are also available (3).

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

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

### 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 grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider 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 this area, soils are generally grouped at two levels: capability class and subclass. These levels are defined in the following paragraphs.

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

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

The acreage of soils in each capability class and subclass in each county is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

### woodland management and productivity

W. P. Thompson, forester, Soil Conservation Service, helped prepared this section.

Virgin forest originally covered 96 percent of Crisp and Turner Counties. In 1971, about 43 percent of the area was commercial forest (7). On ridges and other areas of better drained soils grow mainly longleaf and slash pine, red oak, water oak, yellow-poplar, sweetgum, and sycamore. In low, wet areas the main species are blackgum, cypress, maple, and tupelo gum.

The value of wood products is substantial, but it could be greater (fig. 5). Other values of woodland are wildlife habitat, recreation, natural beauty, and conservation of soil and water. This section explains how soils affect growth and management of trees in Crisp and Turner Counties.

Table 7 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 (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.



Figure 5.—Slash pine ready for market. This pulpwood was harvested from a nearby area of Lucy loamy sand, 0 to 5 percent slopes.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *c*, clay in the upper part of the soil; and *s*, sandy texture. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: *w*, *c*, *s*.

In table 7, *slight*, *moderate*, and *severe* indicate the degree of the major soil limitations to be considered in management.

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

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland

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

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

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. Site index was calculated at age 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species. 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.

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

## recreation

Crisp and Turner Counties provide many possibilities for recreation (fig. 6). It is only necessary to find the best uses for each kind of soil. Fishing and boating are available on the many farm ponds and Lake Blackshear as well as the Alapaha and Little Rivers. The flood plains along these streams are well suited to nature study, hunting, and similar activities. The well drained, nearly level or very gently sloping Cowarts, Dothan, Faceville, Orangeburg, and Tifton soils commonly are on ridgetops and are well suited to playgrounds. If necessary, the very gentle slopes can be leveled and smoothed for ballfields and tennis courts. Most of the well drained, nearly level

to gently sloping soils are also well suited to campsites and picnic areas. The sloping Cowarts, Esto, Orangeburg, and Sunsweet soils on hillsides are well suited to parks, paths and trails, golf courses, and nature study areas.

The soils of the survey area are rated in table 8 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 sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning



Figure 6.—Picnic area near Lake Blackshear on Orangeburg loamy sand, 2 to 5 percent slopes. This soil is well suited to many recreational uses.

recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

*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, horseback riding, and bicycling 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.

## wildlife habitat

Jesse Mercer, Jr., biologist, Soil Conservation Service, helped prepare this section.

Although Crisp and Turner Counties are used mainly for farming, they do provide habitat for a variety of wildlife. The two counties are about 43 percent

woodland, which supports deer, squirrel, raccoon, many nongame animals, and songbirds. Quail, rabbits, and dove are abundant in wooded areas adjacent to cropland. Lake Blackshear and about 100 acres of beaver ponds provide habitat for waterfowl and other aquatic wildlife. Lake Blackshear and the more than 1,000 farm ponds in the survey area provide excellent fishing.

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 9, 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 established, 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 flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also

considerations. Examples of grasses and legumes are fescue, lovegrass, brome grass, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

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

*Coniferous plants* furnish browse, seeds, and cones. 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, spruce, fir, cedar, and juniper.

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

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

*Habitat for openland wildlife* consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, pheasant, 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, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

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

## engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. 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 need to 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, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water

conservation; and (8) 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 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

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

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They

have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to a cemented pan, a high water table, flooding, 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.

### **sanitary facilities**

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and 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 a cemented pan, and flooding affect absorption of the effluent. A cemented pan interferes 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 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 effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

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

Table 11 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 a cemented pan, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. Slope and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

*Sanitary landfills* are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

### construction materials

Table 12 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, topsoil, and sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential or slopes of 15 to 25 percent. 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, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

*Sand and gravel* are used in great quantities in many kinds of construction. The ratings in table 12 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

*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 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, 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 slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

### **water management**

Table 13 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. 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 a cemented pan or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

*Grassed waterways* are natural or constructed

channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# soil properties

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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 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

## engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

*Rock fragments* larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry 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 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 15 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.

*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, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage 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 change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion 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 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

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

## soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Flooding*, 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 and water in swamps and marshes are not considered flooding.

Table 16 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, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

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 absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

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. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. 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.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

## engineering index test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by the Office of Materials and Research, Georgia Department of Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); Volume change (Abercrombie)—Georgia Highway Standard.



# classification of the soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories ( $\beta$ ). 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. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

**ORDER.** Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

**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 Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plains, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

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

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class,

mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, silicious, acid, thermic Typic Fluvaquents.

**SERIES.** The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

## soil series and their morphology

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

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

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

### Alapaha series

The Alapaha series consists of deep, poorly drained soils that are moderately slowly permeable in the lower part of the subsoil. These soils formed in sandy and loamy marine sediments. Alapaha soils are in drainageways and depressions. The water table is within 1 foot to 2 feet of the surface during winter and spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Alapaha soils are near Leefield, Pelham, and Stilson soils. Leefield soils have dominant chroma of 3 or more throughout the argillic horizon, are in somewhat higher areas, and are somewhat poorly drained. Pelham soils

do not contain plinthite. Stilson soils are in higher lying areas and are moderately well drained.

Typical pedon of Alapaha loamy sand, in a woodland pasture 0.5 mile south of bridge over Little River on Georgia Highway 112, 0.5 mile east on county road, 300 feet southwest of road; Turner County:

- A1—0 to 5 inches; black (10YR 2/1) loamy sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.
- A21—5 to 12 inches; dark gray (N 4/0) loamy sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.
- A22—12 to 28 inches; gray (10YR 5/1) loamy sand; few medium distinct very pale brown (10YR 7/4) mottles; weak fine granular structure; very friable; common medium roots; common clean sand grains; very strongly acid; clear wavy boundary.
- B21tg—28 to 46 inches; gray (10YR 6/1) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.
- B22tg—46 to 70 inches; mottled brownish yellow (10YR 6/6), red (10R 4/8), light gray (10YR 7/1), and strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; firm; patchy clay films on pedis; about 15 percent plinthite; very strongly acid.

The solum is 70 inches or more thick. The soil is very strongly acid or strongly acid throughout, except in the surface layer in limed areas.

The A horizon is 20 to 40 inches thick. The A1 horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 0 or 1. The A2 horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 0 or 1.

The B1 horizon, where present, has hue of 10YR, value of 6 or 7, and chroma of 1. The B21tg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has common or many, medium or coarse, brown and red mottles. The B22tg horizon is mottled in hue of 10YR to 10R, value of 4 to 7, and chroma of 1, 2, 3, 4, 6, or 8. It contains 5 to 15 percent plinthite.

### Albany series

The Albany series consists of deep, somewhat poorly drained soils that are rapidly permeable in the thick sandy surface and subsurface layers and moderately permeable in the subsoil. These soils formed in sandy and loamy marine sediment. Albany soils are on low-lying, nearly level uplands. The water table is at a depth of 1 foot to 2.5 feet during winter and early spring. Slope is dominantly 1 percent, but ranges from 0 to 2 percent.

Albany soils are near Lakeland, Ocilla, and Pelham soils. Lakeland soils do not have an argillic horizon and are in higher lying areas. Ocilla soils are arenic. Pelham soils are arenic and poorly drained and commonly are in lower lying areas.

Typical pedon of Albany sand, 0 to 2 percent slopes, in a cultivated field 0.7 mile south of Iraha on U.S. Highway 41, 4.1 miles east on county road, 2,640 feet south into field; Turner County:

- Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) sand; single grained; loose; common fine roots; strongly acid; abrupt smooth boundary.
- A21—6 to 25 inches; light yellowish brown (10YR 6/4) sand; few medium distinct light brownish gray (10YR 6/2) and grayish brown (10YR 5/2) mottles; single grained; loose; common fine roots in upper part; very strongly acid; clear wavy boundary.
- A22—25 to 38 inches; light yellowish brown (10YR 6/4) sand; common medium distinct light gray (10YR 7/2) and brownish yellow (10YR 6/6) mottles; single grain; loose; very strongly acid; gradual wavy boundary.
- A23—38 to 46 inches; light yellowish brown (10YR 6/4) loamy sand; common medium distinct light gray (10YR 7/2) and yellowish brown (10YR 5/6) mottles; single grained; very friable; very strongly acid; gradual wavy boundary.
- B1—46 to 54 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct light gray (10YR 7/2) and yellowish red (5YR 4/6) mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; few light gray lenses of sand; very strongly acid; gradual wavy boundary.
- B2t—54 to 65 inches; mottled light yellowish brown (10YR 6/4), light gray (10YR 7/1), yellowish brown (10YR 5/8), and yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; discontinuous clay films in some pores; sand grains coated and bridged with clay; few light gray lenses of sand; very strongly acid.

The solum is 60 to 80 inches or more thick. The soils are very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 40 to 46 inches thick. The A1 horizon or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8. It has few or common mottles of gray, yellow, or brown.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. The Bt horizon is mottled in hue of 2.5Y to 5YR or is neutral; and it has value of 5 to 7 and chroma of 0, 1, 2, 3, 4, 6, or 8. In some pedons, the Bt horizon has a brown or gray matrix that has common or many mottles of red, brown, and gray. The Bt horizon is sandy loam or sandy clay loam.

## Ardilla series

The Ardilla series consists of deep, somewhat poorly drained soils that are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These soils formed mainly in loamy marine sediment. Ardilla soils are on low-lying, nearly level uplands. The water table is at a depth of 1 foot to 2 feet from late fall to spring. Slope is dominantly 1 percent but ranges from 0 to 2 percent.

Ardilla soils are near Alapaha, Dothan, and Tifton soils. Alapaha soils are arenic and poorly drained and commonly are in somewhat lower lying areas. Dothan and Tifton soils are well drained and commonly are in somewhat higher lying areas.

Typical pedon of Ardilla loamy sand, 0 to 2 percent slopes, in a cultivated field 1.9 miles north of Ebenezer Church on Georgia Highway 257, 0.6 mile west on county road, 40 feet north; Crisp County:

- Ap—0 to 6 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.
- A2—6 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.
- B1—10 to 14 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; common fine roots; few nodules of ironstone; strongly acid; clear wavy boundary.
- B21t—14 to 26 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) and light gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on peds; common fine roots in upper part; few nodules of ironstone; very strongly acid; gradual wavy boundary.
- B22t—26 to 37 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 6/1), yellowish red (5YR 5/8), and red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; 40 percent is yellowish brown, yellowish red, and red and is firm, brittle, and compact; gray part is friable; thin patchy clay films on peds; few nodules of ironstone; about 7 percent nodular plinthite; very strongly acid; gradual wavy boundary.
- B23t—37 to 62 inches; coarsely mottled yellowish brown (10YR 5/8), red (2.5YR 4/8), and light gray (10YR 7/1) sandy clay loam; weak medium subangular blocky structure; firm, brittle, compact; thin patchy clay films on peds; few nodules of ironstone; about 3 percent plinthite; very strongly acid; gradual wavy boundary.
- B24t—62 to 72 inches; light gray (5Y 7/1) sandy clay loam; common medium prominent red (2.5YR 4/6)

mottles and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm, brittle, compact; thin patchy clay films on peds; very strongly acid.

The solum is 62 to 80 inches or more thick. These soils are strongly acid or very strongly acid throughout except in the surface layer in limed areas. Depth to horizons that have more than 5 percent plinthite is 26 to 34 inches.

The Ap horizon or A1 horizon is 6 to 10 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The A2 horizon is 4 to 6 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2.

The B1 horizon has hue of 10YR or 2.5Y; value of 5 or 6; and chroma of 4, 6, or 8.

The B21t horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. It has common or many mottles of light gray, yellow, yellowish red, or strong brown.

The B22t and B23t horizons are mottled in colors including yellowish brown, light gray, red, yellowish red, and strong brown. Content of plinthite ranges from 5 to 12 percent. From 40 to 60 percent of the lower part of the Bt horizon is brittle.

## Clarendon series

The Clarendon series consists of deep, moderately well drained soils that are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These nearly level soils formed mainly in loamy marine sediment. Clarendon soils are on low-lying uplands. The water table is about 1.5 to 2.5 feet below the surface in winter and early spring. Slope is dominantly about 1 percent but ranges to 2 percent.

Clarendon soils are near Alapaha, Leefield, and Stilson soils. Those associated soils are arenic. Alapaha soils are poorly drained and are in depressions and drainageways. Leefield soils are somewhat poorly drained and commonly are in somewhat lower lying areas.

Typical pedon of Clarendon loamy sand, in a cultivated field 0.7 mile south of Iraha on U.S. Highway 41, 3.4 miles east on county road, 50 feet north of road; Turner County:

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.
- B1—9 to 16 inches; light olive brown (2.5Y 5/6) sandy loam; weak fine subangular blocky structure; very friable; many fine roots; few nodules of ironstone; strongly acid; clear wavy boundary.
- B21t—16 to 29 inches; light yellowish brown (10YR 6/4) sandy clay loam; few medium distinct yellowish

brown (10YR 5/8) and yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; friable; few fine roots; common nodules of ironstone; few patchy clay films on peds and in pores; strongly acid; gradual wavy boundary.

B22t—29 to 45 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct light gray (10YR 7/2) and yellowish red (5YR 4/8) mottles; moderate medium subangular blocky structure; friable; few nodules of ironstone; patchy clay films on peds and in pores; about 5 percent plinthite; very strongly acid; gradual wavy boundary.

B23t—45 to 62 inches; mottled yellowish brown (10YR 5/8), light gray (10YR 7/1), red (2.5YR 4/6), and light yellowish brown (10YR 6/4) sandy clay loam; moderate medium subangular blocky structure; firm; patchy clay films on peds and in pores; common fine pores; about 15 percent plinthite; very strongly acid.

The solum is 60 to 70 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 7 to 12 inches thick. The Ap horizon has hue of 10YR, value of 4, and chroma of 1 or 2. The A2 horizon, if present, has hue of 10YR or 2.5Y, value of 6, and chroma of 3 or 4. The A horizon contains few or common nodules of ironstone.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. It includes many, medium and coarse, red and brown mottles. Few or common, gray mottles are 20 to 30 inches from the surface. Plinthite content ranges from 5 to 15 percent, but the plinthite is mostly in the lower part. This horizon commonly is sandy clay loam, but in some pedons has a thin subhorizon that is sandy loam or sandy clay.

### Cowarts series

The Cowarts series consists of deep, well drained soils (fig. 7). They are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These soils formed in mostly loamy marine sediment. Cowarts soils are on uplands. Slope is dominantly about 6 percent but ranges from 2 to 12 percent.

Cowarts soils are near Esto soils. Esto soils are clayey.

Typical pedon of Cowarts loamy sand, 5 to 8 percent slopes, 1.1 miles east of Worth County line on Georgia Highway 32, 0.2 mile south on county road, on east road bank; Turner County:

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.

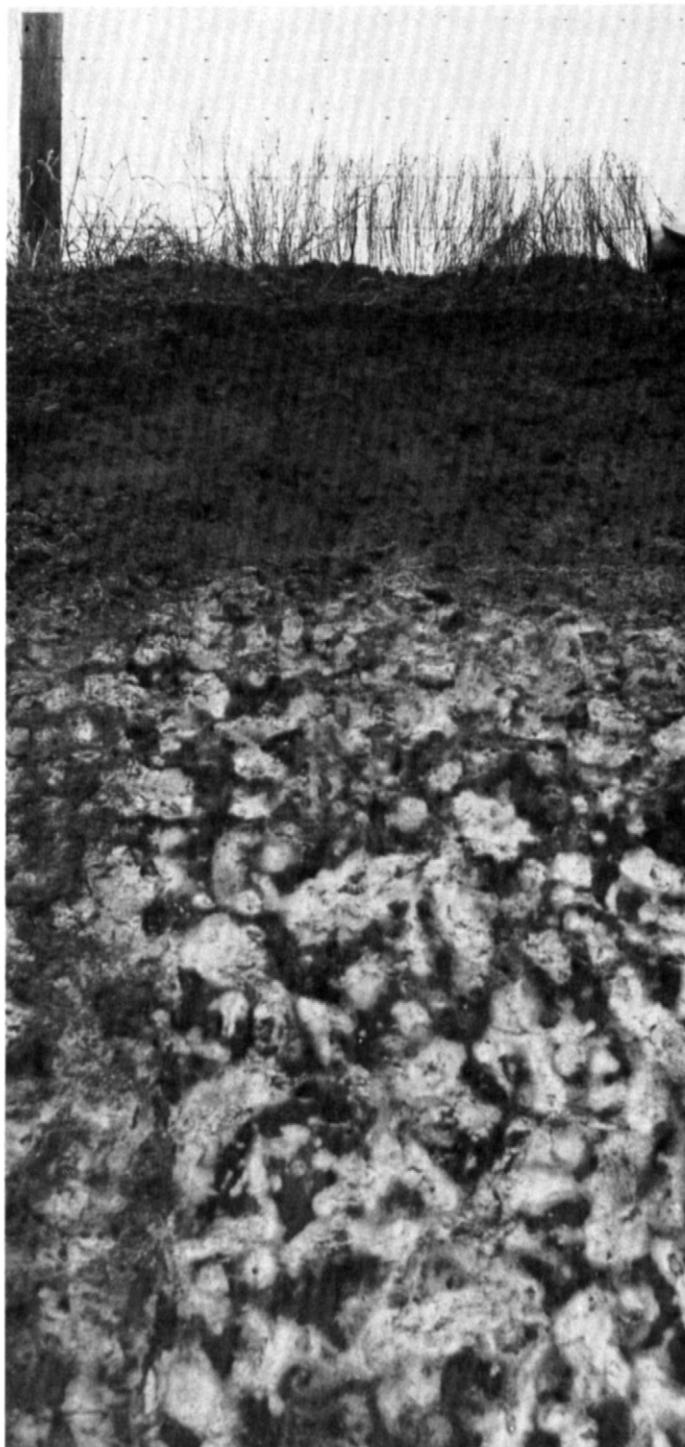


Figure 7.—Profile of Cowarts sandy loam. This soil is reticulately mottled below a depth of about 24 inches.

B1—5 to 10 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable;

many fine and medium roots; few nodules of ironstone; strongly acid; clear wavy boundary.

**B21t**—10 to 22 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; thin patchy clay films on peds; few nodules of ironstone; very strongly acid; gradual wavy boundary.

**B22t**—22 to 37 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) and yellowish red (5YR 4/8) mottles and few fine distinct light gray mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on peds; few nodules of ironstone; about 3 percent nodular plinthite; very strongly acid; gradual wavy boundary.

**C**—37 to 65 inches; mottled and streaked yellowish brown (10YR 5/8), light gray (10YR 7/1), red (2.5YR 4/8) and yellowish red (5YR 4/8) sandy clay loam that has pockets of sandier or more clayey material; massive; firm; thin patchy clay films on peds; about 1 percent platy plinthite; very strongly acid.

The solum is 30 to 40 inches or more thick. The soil is strongly acid or very strongly acid throughout except in the surface layer in limed areas.

The A horizon is 5 to 10 inches thick. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2. The A2 horizon, if present, has hue of 10YR or 2.5Y, value of 6, and chroma of 4 or 6. Nodules of ironstone make up 2 to 4 percent of the A horizon.

The B horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8.

The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Nodules of ironstone make up 2 to 3 percent of this horizon. The lower part of the Bt horizon has common, medium or coarse mottles of red, gray, yellow, or brown. The gray mottles do not represent wetness. Nodules of ironstone make up 0 to 3 percent of the upper part of the B horizon.

The C horizon is mottled in hue of 10YR to 10R; value of 4 to 8; and chroma of 1, 2, 3, 4, 6, or 8. The C horizon is sandy clay loam or sandy loam. This horizon commonly has pockets or layers of sandier or more clayey material.

Soils in map units CoB2 and CoC2 have more than 5 percent nodules of ironstone on the surface and in the A horizon; therefore, these soils are taxadjuncts to the Cowarts series.

### Dothan series

The Dothan series consists of deep, well drained soils that are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These soils formed in mostly loamy marine sediment. Dothan soils are on uplands. Slope is dominantly 3 percent but ranges from 0 to 5 percent.

Dothan soils are near Fuquay, Stilson, and Tifton soils. Fuquay and Stilson soils are arenic. Stilson soils have chroma of 2 or less between depths of 30 and 40 inches, and they are in lower lying areas. Tifton soils commonly have more nodules of ironstone throughout.

Typical pedon of Dothan loamy sand, 2 to 5 percent slopes, in a cultivated field 1.6 miles south of intersection of U.S. Highway 41 and Georgia Highway 112 in Ashburn, 0.3 mile west on county road, 600 feet north; Turner County:

**Ap**—0 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; medium acid; abrupt smooth boundary.

**A2**—10 to 14 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; medium acid; clear smooth boundary.

**B1**—14 to 17 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; few nodules of ironstone; strongly acid; clear wavy boundary.

**B21t**—17 to 42 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots and pores; few clean sand grains; few nodules of ironstone; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.

**B22t**—42 to 50 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; common fine pores; thin patchy clay films on peds; few nodules of ironstone; 8 percent nodular plinthite; very strongly acid; gradual wavy boundary.

**B23t**—50 to 60 inches; yellowish brown (10YR 5/8) sandy clay loam; many medium prominent red (2.5YR 4/8) mottles and few medium distinct light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable; common fine pores; thin patchy clay films on peds; 5 percent nodular plinthite; very strongly acid.

The solum is 60 to 72 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Depth to horizons with plinthite content of 5 to 15 percent ranges from 32 to 44 inches.

The A horizon is 10 to 15 inches thick in more than 30 percent of any pedon, but ranges to 20 inches in thickness. The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. Nodules of ironstone make up 2 to 4 percent by volume of the A horizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 6 or 8. It is mainly sandy clay loam but

ranges to sandy loam. The lower part of the Bt horizon includes many medium and coarse mottles of brown, yellow, red, and gray. Nodules of ironstone make up less than 5 percent of the upper part of the Bt horizon.

### Esto series

The Esto series consists of deep, well drained, slowly permeable soils. They formed in mostly clayey marine sediment. Esto soils are on uplands. Slope is dominantly 4 percent but ranges from 2 to 12 percent.

Esto soils are near Cowarts and Susquehanna soils. Cowarts soils are fine-loamy. Susquehanna soils have a very firm, very sticky, and very plastic subsoil.

Typical pedon of Esto sandy loam, 2 to 5 percent slopes, in a cultivated area 0.75 mile east of Georgia Highway 90 on U.S. Highway 280, on north road bank; Crisp County:

- Ap—0 to 6 inches; grayish brown (10YR 5/2) sandy loam; weak medium granular structure; very friable; many fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.
- B1—6 to 12 inches; reddish yellow (7.5YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; few thin patchy clay films on peds; very strongly acid; clear wavy boundary.
- B21t—12 to 36 inches; mottled yellowish brown (10YR 5/6), red (10YR 4/6), yellowish red (5YR 4/6), and light gray (10YR 7/1) sandy clay; moderate medium subangular blocky structure; firm; patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B22t—36 to 60 inches; mottled light gray (10YR 7/1), strong brown (7.5YR 5/6), dark red (10R 3/6), reddish brown (5YR 5/4), and brownish yellow (10YR 6/6) clay; moderate medium subangular blocky structure; firm; patchy clay films on peds; very strongly acid.

The solum is 60 to 72 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 4 to 9 inches thick. The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Nodules of ironstone make up 0 to 3 percent of the A horizon.

The B1 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6.

The Bt horizon is mottled in hue of 10YR to 10R; value of 3 to 7; and chroma of 1, 2, 3, 4, 6, or 8. Some pedons have a matrix that has hue of 10YR to 5YR; value of 4 to 6; and chroma of 4, 6, or 8 and many, medium or coarse mottles of gray, red, yellow, and brown. The Bt horizon is clay or sandy clay.

### Faceville series

The Faceville series consists of deep, well drained, moderately permeable soils. They formed mainly in clayey marine sediment. Faceville soils are on uplands. Slope is dominantly about 6 percent but ranges from 2 to 8 percent.

Faceville soils are near Esto, Orangeburg, and Tifton soils. Esto soils have mottles in the upper part of the argillic horizon. Orangeburg soils are fine-loamy. Tifton soils commonly are on smoother landscapes, are fine-loamy, and contain plinthite and many nodules of ironstone.

Typical pedon of Faceville sandy loam, 2 to 5 percent slopes, in a cultivated field 4.4 miles north of Daphne Station on county road, 2.6 miles east on county road, 2,100 feet north; Crisp County:

- Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; common fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.
- B1—5 to 9 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; few nodules of ironstone; common pores filled with soil from Ap horizon; strongly acid; clear wavy boundary.
- B21t—9 to 36 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; friable; clay films on peds; very strongly acid; gradual wavy boundary.
- B22t—36 to 58 inches; red (2.5YR 4/8) sandy clay; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B23t—58 to 66 inches; red (2.5YR 4/8) sandy clay; common medium distinct dark red (10R 3/6) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on peds; very strongly acid.

The solum is 65 to 70 inches or more thick. The soil is very strongly acid or strongly acid except in the surface layer in limed areas.

The Ap horizon has hue of 10YR, 7.5YR, or 5YR; value of 4 or 5; and chroma of 3, 4, 6, or 8. The A2 horizon, where present, has hue of 10YR or 7.5YR, value of 6, and chroma of 3 or 4. The A horizon is sandy loam or sandy clay loam and contains few or common nodules of ironstone.

The Bt horizon has hue of 2.5YR or 5YR; value of 4 or 5; and chroma of 4, 6, or 8. Yellow, brown, and red mottles generally are common in the lower part of the Bt horizon. The Bt horizon is sandy clay or clay and contains few or common nodules of ironstone.

## Fuquay series

The Fuquay series consists of deep, well drained soils that are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. These soils formed in sandy and loamy marine sediment. Fuquay soils are on uplands. Slope is dominantly 3 percent but ranges from 0 to 5 percent.

Fuquay soils are near Dothan, Lakeland, and Stilson soils. Dothan soils have an A horizon less than 20 inches thick. Lakeland soils are sandy throughout and do not have an argillic horizon. Stilson soils have chroma of 2 or less between depths of 30 and 40 inches, and they are in lower lying areas.

Typical pedon of Fuquay loamy sand, 0 to 5 percent slopes (fig. 8), in a pasture 3.1 miles west of Turner County courthouse on county road, 60 feet south; Turner County:

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; few hard nodules of ironstone; strongly acid; abrupt smooth boundary.
- A2—8 to 26 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; many fine roots; few hard nodules of ironstone; very strongly acid; clear wavy boundary.
- B1—26 to 31 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; few hard nodules of ironstone; very strongly acid; clear wavy boundary.
- B21t—31 to 51 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; few hard nodules of ironstone; common fine pores; few patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B22t—51 to 65 inches; brownish yellow (10YR 6/6) sandy clay loam; many coarse prominent red (2.5YR 4/6) mottles and common medium distinct light gray (10YR 7/2) mottles; weak medium subangular blocky structure; firm; common fine pores; about 8 percent nodular plinthite; few patchy clay films on peds; very strongly acid.

The solum is more than 80 inches thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Depth to plinthite ranges from 45 to 60 inches.

The A horizon is 20 to 40 inches thick. It contains few nodules of ironstone or none. The Ap or A1 horizon has hue of 10YR, value of 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 4.

The Bt horizon has hue of 10YR; value of 5 or 6; and chroma of 4, 6, or 8. The lower part of the Bt horizon includes common, medium and coarse mottles of brown, red, and gray. Plinthite content ranges from 5 to 12



Figure 8.—Profile of Fuquay loamy sand. This soil has a thick, light colored subsurface layer.

percent in the lower part of the Bt horizon. Few or common nodules of ironstone are in the upper part of the Bt horizon.

## Grady series

The Grady series consists of deep, poorly drained, slowly permeable soils. They formed in clayey marine sediment. Grady soils are nearly level and are in depressions. This soil commonly is ponded or the water table is within 1 foot of the surface from winter to early summer. Slope is dominantly less than 1 percent but ranges to 2 percent.

Grady soils are near Clarendon, Dothan, Stilson, and Tifton soils. The well drained Dothan and Tifton soils and the moderately well drained Clarendon soils contain plinthite and are on higher lying positions than Grady soils. The moderately well drained Stilson soils are arenic and are also on higher lying landscapes.

Typical pedon of Grady sandy loam, 0.4 mile north of Farmers Market on U.S. Highway 41, 1,050 feet west; Crisp County:

- A1—0 to 5 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
- B1g—5 to 9 inches; gray (10YR 6/1) sandy clay loam; few medium distinct yellowish brown (10YR 5/4) mottles; few pockets of very dark gray (10YR 3/1) sandy loam; weak medium subangular blocky structure; friable; common fine and few medium roots; very strongly acid; clear wavy boundary.
- B21tg—9 to 24 inches; gray (10YR 6/1) sandy clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium roots; common fine pores; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B22tg—24 to 32 inches; gray (10YR 6/1) sandy clay; common medium distinct yellowish brown (10YR 5/4) and yellowish red (5YR 4/8) mottles; moderate medium subangular blocky structure; firm; common fine pores; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B23tg—32 to 65 inches; gray (10YR 6/1) sandy clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine pores; thin patchy clay films on peds; very strongly acid.

The solum is 60 to 70 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 5 to 8 inches thick. The A1 or Ap horizon has hue of 10YR and 2.5Y or is neutral and has value of 2 or 3 and chroma of 0 or 1.

The B1g horizon has hue of 10YR, value of 5 or 6, and chroma of 1. In some pedons this horizon has few or common, brown or gray mottles.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1. It has few to many mottles of brown, yellow, and red. The Btg horizon is sandy clay or clay.

## Herod series

The Herod series consists of deep, poorly drained, moderately permeable soils. They formed in loamy alluvial sediment. Herod soils are nearly level and are on flood plains. The water table commonly is 0.5 foot to 1.5 feet below the surface in winter and early spring. Slope dominantly is less than 1 percent but ranges to 2 percent.

Herod soils are near Osier and Wahee soils. Osier soils are Psammments. Wahee soils are in somewhat higher lying areas and are somewhat poorly drained.

Typical pedon of Herod sandy loam, in a wooded area 4.4 miles north of Daphne Station on county road to road junction, 0.9 mile east on county road, 200 feet north; Crisp County:

- A11—0 to 4 inches; very dark grayish brown (10YR 3/2) sandy loam; common sand strata 0.2 inch thick; moderate medium granular structure; friable; many fine and medium roots; many partially decayed bits of forest litter; medium acid; clear wavy boundary.
- A12—4 to 11 inches; gray (10YR 5/1) sandy loam; common sand strata 0.2 inch thick; few fine distinct brown mottles; weak medium granular structure; friable; many fine and medium roots; few bits of partially decomposed forest litter; medium acid; clear wavy boundary.
- C1g—11 to 35 inches; gray (10YR 5/1) clay loam; common loamy sand strata 0.2 inch thick; common medium distinct dark gray (10YR 4/1) mottles and few medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few medium roots; few bits of partially decomposed forest litter; slightly acid; gradual wavy boundary.
- C2g—35 to 48 inches; gray (10YR 5/1) sandy clay loam; common loamy sand strata 0.2 inch thick; few fine distinct brownish yellow mottles; massive; friable; slightly acid; gradual wavy boundary.
- C3g—48 to 62 inches; mottled dark gray (10YR 4/1), light gray (10YR 6/1), and yellowish brown (10YR 5/6) sandy loam; pockets of light gray (10YR 6/1) coarse sand; massive; friable; slightly acid.

Loamy sediments are 60 to 70 inches or more thick. The A horizon is strongly acid or medium acid, and the C horizon is medium acid to neutral.

The A horizon is 8 to 14 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The C1g and C2g horizons have hue of 10YR, value of 4 to 6, and chroma of 1 or 2. They are clay loam, loam, or sandy clay loam. These horizons have common, gray or brown mottles. The C3g horizon is sandy loam or sandy clay loam. Thin, sandy or clayey strata are common throughout the C horizon.

## Kershaw series

The Kershaw series consists of deep, excessively drained, very rapidly permeable soils. They formed in coarse, sandy marine sediment. Kershaw soils are on uplands. Slope is dominantly about 4 percent but ranges from 2 to 8 percent.

Kershaw soils are near Pelham and Lakeland soils. Pelham soils are in drainageways and depressions, have an argillic horizon, and are poorly drained. Lakeland soils have 5 to 10 percent silt plus clay in the control section.

Typical pedon of Kershaw coarse sand, 2 to 8 percent slopes, in a partially wooded area 0.3 mile northeast of bridge over Deep Creek on Georgia Highway 112, 2,400 feet northwest on field road; Turner County:

- A1—0 to 4 inches; dark grayish brown (10YR 4/2) coarse sand; single grained; loose; many fine and medium roots; strongly acid; abrupt smooth boundary.
- C&A—4 to 9 inches; yellowish brown (10YR 5/6) coarse sand; few medium distinct grayish brown (10YR 5/2) mottles; single grained; loose; common fine and medium roots; strongly acid; clear wavy boundary.
- C1—9 to 65 inches; brownish yellow (10YR 6/6) coarse sand; single grained; loose; few medium roots in upper part; very strongly acid; gradual wavy boundary.
- C2—65 to 90 inches; yellow (10YR 7/6) coarse sand; single grained; loose; very strongly acid.

The sand is 85 to 90 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A1 horizon or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2.

The C&A horizon has hue of 10YR, value of 4 or 5, and chroma of 4 or 6.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 4 or 6. Light gray or white mottles are below a depth of 60 inches in some pedons.

## Kinston series

The Kinston series consists of deep, poorly drained, moderately permeable soils. They formed in loamy alluvial sediment. Kinston soils are nearly level and are on flood plains. The water table commonly is 1 foot or less from the surface from late fall to early summer. Slope is dominantly less than 1 percent but ranges to 2 percent.

Kinston soils are near Osier soils. Osier soils are Psamments.

Typical pedon of Kinston fine sandy loam in an area of Kinston and Osier soils, in a wooded area 0.6 mile northeast of Rebecca on Georgia Highway 90, 0.5 mile northeast on field road on river flood plain; Turner County:

- A1—0 to 6 inches; dark gray (10YR 4/1) fine sandy loam; moderate medium granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.
- B1g—6 to 12 inches; gray (10YR 5/1) sandy clay loam; few medium faint gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; common medium roots; very strongly acid; clear wavy boundary.
- B21g—12 to 28 inches; gray (10YR 5/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; massive in place, parting to weak medium subangular blocky structure; firm; few medium roots; very strongly acid; gradual wavy boundary.
- B22g—28 to 44 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; massive in place, parting to weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.
- IIcG—44 to 62 inches; gray (10YR 6/1) sandy loam; common medium distinct light gray (10YR 7/1) and brownish yellow (10YR 6/6) mottles; massive; coarse sand and gravel strata; friable; very strongly acid.

The solum is 44 to 60 inches or more thick. The soil is strongly acid or very strongly acid throughout.

The A horizon is 5 to 7 inches thick. It has hue of 10YR, value of 4, and chroma of 1 or 2.

The B1g horizon has hue of 10YR or is neutral, and it has value of 5 or 6 and chroma of 0, 1, or 2.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1. It is loam or sandy clay loam. The Btg horizon has few to many strong brown or yellowish brown mottles.

The C horizon is sandy loam or loamy sand. The C horizon commonly has strata of coarse sand.

## Lakeland series

The Lakeland series consists of deep, excessively drained, very rapidly permeable soils. They formed in sandy marine sediment. Lakeland soils are on uplands. Slope is dominantly about 3 percent but ranges from 0 to 5 percent.

Lakeland soils are near Alapaha, Albany, Cowarts, and Fuquay soils. Alapaha soils are in drainageways and depressions, are arenic, and are poorly drained. Albany soils are in smoother, lower lying areas; are grossarenic; and are somewhat poorly drained. Cowarts and Fuquay soils are well drained and have an argillic horizon. Fuquay soils are arenic.

Typical pedon of Lakeland sand, 0 to 5 percent slopes, in a pasture 2.2 miles north of bridge over Swift Creek on Georgia Highway 257, 0.3 mile northwest on county road, 200 feet west; Crisp County:

Ap—0 to 6 inches; grayish brown (10YR 5/2) sand; single grained; loose; common clean uncoated white (10YR 8/1) sand grains; many fine and medium roots; strongly acid; abrupt smooth boundary.

C1—6 to 46 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine and medium roots; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—46 to 68 inches; light yellowish brown (10YR 6/4) sand; few medium faint very pale brown (10YR 7/3) mottles; single grained; loose; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C3—68 to 80 inches; yellow (10YR 7/6) sand; common medium faint very pale brown (10YR 7/3) mottles; single grained; loose; many uncoated sand grains; very strongly acid.

The sand is 80 to 86 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon ranges from 3 to 6 inches in thickness. The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2.

The C horizon has hue of 10YR; value of 5 to 7; and chroma of 3, 4, or 6. Small pockets of light gray or white sand are below a depth of 40 inches in some pedons.

### Leefield series

The Leefield series consists of deep, somewhat poorly drained soils that are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These soils formed in loamy and sandy marine sediment. Leefield soils are on nearly level, low-lying uplands. The water table is about 1.5 to 2.5 feet below the surface in late winter and early spring. Slope is dominantly less than 1 percent but ranges to 3 percent.

Leefield soils are near Alapaha, Fuquay, and Stilson soils. Alapaha soils are in lower lying depressions and drainageways and are poorly drained. Fuquay soils are on adjacent upland ridgetops and are well drained. Stilson soils are in somewhat higher lying areas and do not have chroma of 2 or less in the upper 30 inches.

Typical pedon of Leefield loamy sand, in area of reforested pine 3.0 miles west of Turner County courthouse on county road, 50 feet south; Turner County:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2—8 to 31 inches; light yellowish brown (10YR 6/4) loamy sand; common medium distinct light gray (10YR 7/2) mottles; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

B1—31 to 37 inches; light yellowish brown (2.5Y 6/4) sandy loam; common medium distinct brownish yellow (10YR 6/6) and light gray (10YR 7/2) mottles; weak fine subangular blocky structure; very friable; few medium roots; very strongly acid; clear wavy boundary.

B21t—37 to 48 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct light gray (10YR 7/1) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; sand grains coated and bridged with clay; few nodules of ironstone; 5 percent nodular plinthite; very strongly acid; gradual wavy boundary.

B22t—48 to 65 inches; reticulately mottled light yellowish brown (10YR 6/4), red (2.5YR 4/6), light gray (10YR 7/1), and strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; firm; few thin patchy films on peds; about 8 percent nodular plinthite; very strongly acid.

The solum is 60 to 68 inches or more thick. The soil is strongly acid or very strongly acid throughout except in the surface layer in limed areas. Depth to horizons with more than 5 percent plinthite is 38 to 48 inches.

The A horizon ranges from 20 to 40 inches in thickness. The Ap or A1 horizon ranges from 5 to 8 inches in thickness and has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon is 17 to 23 inches thick. It has hue of 2.5Y or 10YR, value of 6, and chroma of 2 to 4 and has few or common gray or yellow mottles.

The B1 horizon has few or common light gray or brownish yellow mottles.

The B21t horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. It has common, medium or coarse, brown and gray mottles. In some pedons this horizon has a few nodules of ironstone.

The B22t horizon is mottled gray, brown, and red; or it has hue of 10YR to 2.5Y; value of 6 to 8; and chroma of 4, 6, or 8 and many or common mottles of gray, brown, and red. Content of plinthite ranges from 5 to 12 percent. In some pedons this horizon has few nodules of ironstone.

### Lucy series

The Lucy series consists of deep, well drained, moderately permeable soils. They formed in loamy and sandy marine sediment. Lucy soils are on uplands. Slope is dominantly 3 percent but ranges from 0 to 8 percent.

Lucy soils are near Orangeburg and Faceville soils. Orangeburg and Faceville soils have a sandy A horizon less than 22 inches thick. Faceville soils have a clayey B horizon.

Typical pedon of Lucy loamy sand, 0 to 5 percent slopes, in a pasture 2.3 miles north of Daphne Station on county road, 1.4 miles east on county road, 0.6 mile south; Crisp County:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

A2—8 to 28 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; few fine roots; very strongly acid; gradual smooth boundary.

B1—28 to 36 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual smooth boundary.

B2t—36 to 65 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few thin discontinuous clay films on pedis; very strongly acid.

The solum is 60 to 65 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas. In some pedons, few nodules of ironstone are on the surface and in the soil.

The A horizon is 22 to 30 inches thick. The A1 or Ap horizon has hue of 10YR or 7.5YR; value of 4 to 6; and chroma of 2, 3, 4, 6, or 8.

The B1 horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. Some pedons have yellow or brown mottles below a depth of 36 inches. The Bt horizon is mainly sandy clay loam but ranges to sandy loam and clay loam.

### Ocilla series

The Ocilla series consists of deep, somewhat poorly drained, moderately permeable soils. They formed in sandy and loamy sediment. These nearly level soils are on stream terraces. The water table is 1 foot to 2.5 feet below the surface in late winter and spring. Slope is predominantly less than 1 percent but ranges to 2 percent.

Ocilla soils are near Rains and Wahee soils. Rains and Wahee soils are on lower lying terraces. Rains soils are poorly drained. Wahee soils have a clayey subsoil.

Typical pedon of Ocilla loamy sand, in a wooded area 2.2 miles west of Hatley, on improved county road, 100 feet north; Crisp County:

A1—0 to 6 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

A2—6 to 24 inches; light yellowish brown (10YR 6/4) loamy sand; few medium distinct brown (10YR 4/3) mottles; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

B1—24 to 32 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct light gray

(10YR 7/2) and yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; few medium roots; very strongly acid; gradual wavy boundary.

B21t—32 to 50 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct light gray (10YR 7/2), yellowish brown (10YR 5/8), and yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; about 2 percent plinthite; very strongly acid; gradual wavy boundary.

B22t—50 to 62 inches; mottled light yellowish brown (10YR 6/4), light gray (10YR 7/2), yellowish brown (10YR 5/6), and red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; about 1 percent plinthite; very strongly acid; gradual wavy boundary.

B23t—62 to 72 inches; mottled yellowish brown (10YR 5/6) light gray (2.5Y 7/2) and red (2.5YR 4/6) sandy clay loam that has pockets of sandy loam; weak coarse subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid.

The solum is 72 to 80 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 20 to 40 inches thick. The Ap or A1 horizon is 4 to 6 inches thick and has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon is 16 to 34 inches thick. It has hue of 2.5Y or 10YR; value of 5, 6, or 7; and chroma of 2 to 4. The A2 horizon has few or common, gray or brown mottles.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. It has common, gray or brown mottles.

The B21t horizon has hue of 10YR or 2.5Y; value of 5 to 7; and chroma of 4, 6, or 8. It has few or common mottles of gray, brown, and yellowish red.

The B22t and B23t horizons are mottled gray, brown, yellow, and red; or they have hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 4, 6, or 8 and common or many mottles of gray, brown, and red. Content of plinthite ranges from 0 to 3 percent.

### Olustee series

The Olustee series consists of deep, poorly drained soils that are moderately permeable except in the rapidly permeable A1 and A'2 horizons. These soils formed in sandy and loamy marine sediment in low, flat areas. The water table is less than 1 foot below the surface in winter and spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Olustee soils are near Alapaha, Leefield, and Pelham soils. Alapaha and Pelham soils are in somewhat lower lying areas. Alapaha soils contain more than 5 percent

plinthite in the lower part of the subsoil. Pelham soils are arenic. Somewhat poorly drained Leefield soils contain plinthite and are arenic.

Typical pedon of Olustee sand, in a field 0.7 mile south of Inaha on U.S. Highway 41, 4.1 miles east on county road, 1,500 feet south; Turner County:

- Ap—0 to 9 inches; very dark gray (10YR 3/1) sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
- Bh—9 to 15 inches; dark brown (7.5YR 3/2) sand; massive in place, parting to weak fine granular structure; friable; weakly cemented; common fine roots; strongly acid; clear smooth boundary.
- B3&Bh—15 to 22 inches; dark brown (7.5YR 4/2) sand; few medium distinct light gray (10YR 6/1) mottles; single grained; loose; common fine dark brown (7.5YR 3/2) weakly cemented bodies; few medium roots; very strongly acid; gradual wavy boundary.
- A'2—22 to 37 inches; light gray (10YR 6/1) sand; few fine faint grayish brown and very pale brown mottles; single grained; loose; few medium roots; very strongly acid; gradual wavy boundary.
- B'2tg—37 to 65 inches; light gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) mottles and few fine distinct strong brown mottles; weak medium subangular blocky structure; friable; patchy clay films on peds and in pores; very strongly acid.

The solum is 62 to 72 inches thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas. Depth to the B't horizon ranges from 32 to 40 inches.

The Ap horizon is 5 to 9 inches thick. It has hue of 10YR, value of 2 to 4, and chroma of 1.

The Bh horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 2.

The B3&Bh horizon has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 3.

The A'2 horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2.

The B't horizon has hue of 10YR, value of 5 to 7, and chroma of 1. It has common or many, coarse mottles of yellowish brown, yellowish red, brownish yellow, and red. This horizon is sandy loam or sandy clay loam.

### Orangeburg series

The Orangeburg series consists of deep, well drained, moderately permeable soils. They formed mainly in loamy marine sediment. Orangeburg soils are on uplands. Slope is dominantly 3 percent but ranges from 0 to 12 percent.

Orangeburg soils are near Dothan, Faceville, Lucy, and Tifton soils. Dothan and Tifton soils commonly are on smoother landscapes and have more than 5 percent

plinthite in some horizons between depths of 30 and 50 inches. Faceville soils have a clayey Bt horizon. Lucy soils are arenic.

Typical pedon of Orangeburg loamy sand, 2 to 5 percent slopes, in a cultivated field 1,630 feet northeast of Coney Station; Crisp County:

- Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.
- B1—10 to 15 inches; brown (7.5YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; many fine roots; strongly acid; clear wavy boundary.
- B21t—15 to 52 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots in upper part; many fine and medium pores; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.
- B22t—52 to 65 inches; red (2.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; thin patchy clay films on peds; very strongly acid.

The solum is 60 to 72 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon ranges from 4 to 13 inches in thickness. The Ap horizon has hue of 10YR or 7.5YR; value of 3, 4, or 5; and chroma of 2, 3, or 4. The A2 horizon, where present, has hue of 10YR; value of 4 or 5; and chroma of 3, 4, or 6. The Ap horizon is loamy sand or sandy loam. In some pedons the A horizon has a few nodules of ironstone.

The B1 horizon has hue of 5YR or 7.5YR; value of 4 or 5; and chroma of 4, 6, or 8.

The Bt horizon has hue of 5YR or 2.5YR; value of 3, 4, or 5; and chroma of 6 or 8. In some pedons the lower part of the Bt horizon has common brown mottles. The B21t horizon is sandy clay loam or sandy loam, and the B22t horizon is sandy clay loam or sandy clay.

Soils in map unit OsD2 have a decrease in clay content in the upper 60 inches of more than 20 percent; therefore, these soils are taxadjuncts to the Orangeburg series.

### Osier series

The Osier series consists of deep, poorly drained, rapidly permeable soils. They formed in sandy alluvial sediment. These nearly level soils are on flood plains. The water table is less than 1 foot below the surface from late fall to early spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Osier soils are near Kinston soils. Kinston soils are fine-loamy.

Typical pedon of Osier fine sandy loam in an area of Kinston and Osier soils, in a pasture 3.9 miles southwest

of U.S. Highway 41 on Georgia Highway 112, 0.6 mile east on county road, 0.3 mile north on county road, 450 feet west; Turner County:

- A11—0 to 6 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; friable; many fine roots; thin strata of sand; strongly acid; clear smooth boundary.
- A12—6 to 12 inches; dark gray (10YR 4/1) loamy sand; few medium distinct grayish brown (10YR 5/2) mottles; weak fine granular structure; very friable; many fine roots; thin strata of sand; strongly acid; clear wavy boundary.
- C1g—12 to 42 inches; gray (10YR 5/1) sand; few medium distinct dark gray (10YR 4/1) mottles; few thin strata of loamy sand; single grained; loose; strongly acid; gradual wavy boundary.
- C2g—42 to 50 inches; light gray (10YR 7/1) sand; few medium distinct light brownish gray (10YR 6/2) mottles; few thin strata of coarse sand; single grained; loose; strongly acid; gradual wavy boundary.
- C3g—50 to 65 inches; light gray (10YR 7/1) coarse sand; few medium distinct very pale brown (10YR 7/4) mottles; single grained; loose; very strongly acid.

The sandy layers are 72 inches or more thick. The soil is very strongly acid to strongly acid throughout. Thin strata ranging from sand to sandy loam are in most horizons.

The A horizon is 3 to 12 inches thick. It has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It is sand or coarse sand. This horizon has few or common mottles of dark gray, light brownish gray, brownish yellow, and very pale brown.

### **Pelham series**

The Pelham series consists of deep, poorly drained, moderately permeable soils. They formed in sandy and loamy marine sediment. These nearly level soils are on broad flats, in depressions on uplands, and near drainageways. A water table commonly is 0.5 foot to 1.5 feet below the surface in winter and early spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Pelham soils are near Albany and Leefield soils. Those soils are in higher lying areas and are somewhat poorly drained. Albany soils are grossarenic. Leefield soils have more than 5 percent plinthite above a depth of 60 inches.

Typical pedon of Pelham loamy sand, in a wooded area 0.3 mile southwest of railroad crossing at Rebecca on Georgia Highway 112, 0.6 mile south on county road, 100 feet east; Turner County:

- A1—0 to 6 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; very friable;

many fine and medium roots; strongly acid; abrupt smooth boundary.

- A21—6 to 22 inches; gray (10YR 5/1) loamy sand; single grained; loose; many fine and medium roots; very strongly acid; clear wavy boundary.
- A22—22 to 33 inches; light gray (10YR 6/1) loamy sand; single grained; loose; common medium roots; very strongly acid; gradual wavy boundary.
- B1—33 to 38 inches; light gray (5Y 6/1) sandy loam; common medium distinct gray (10YR 5/1) and yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; very strongly acid; gradual wavy boundary.
- B2tg—38 to 62 inches; light gray (5Y 7/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) mottles and few fine prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid.

The solum is 60 to 72 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 27 to 35 inches thick. The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1. The A2 horizon has hue of 10YR or is neutral, and it has value of 5 to 7 and chroma of 0 or 1.

The B1 horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. The B2t horizon has hue of 10YR to 5Y or is neutral and has value of 5 to 7 and chroma of 0 to 2. In some pedons, the B2t horizon has few to many, fine or medium, brown or red mottles. This horizon is sandy clay loam or sandy loam.

### **Rains series**

The Rains series consists of deep, poorly drained, moderately permeable soils. They formed in loamy fluvial and marine sediment. These nearly level soils are on flats and in slight depressions on terraces near the larger streams. The water table commonly is within 1 foot of the surface from late fall to spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Rains soils are near Ocilla and Wahee soils. Those soils are in somewhat higher lying areas and are somewhat poorly drained. Ocilla soils are arenic. Wahee soils are clayey.

Typical pedon of Rains loamy fine sand, in a sparsely wooded area 1.2 miles west of Wilcox County line on Georgia Highway 90, 0.7 mile south on county road, 1,320 feet west; Crisp County:

- A1—0 to 5 inches; dark gray (10YR 4/1) loamy fine sand; weak fine granular structure; very friable; many fine roots; very strongly acid; abrupt smooth boundary.
- A2—5 to 11 inches; light brownish gray (10YR 6/2) loamy fine sand; few fine distinct yellowish brown

mottles; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

B1g—11 to 16 inches; gray (10YR 6/1) sandy loam; few medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; common fine roots; sand grains coated and bridged with clay; very strongly acid; clear wavy boundary.

B21tg—16 to 42 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; many fine pores; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.

B22tg—42 to 54 inches; gray (10YR 6/1) sandy clay loam that has lumps of sandy clay; common medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; many fine pores; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.

B23tg—54 to 65 inches; gray (10YR 6/1) sandy clay loam; few medium distinct brownish yellow (10YR 6/6) mottles and few medium faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on peds; very strongly acid.

The solum is 60 to 70 inches or more thick. The soil is strongly acid or very strongly acid throughout except in the surface layer in limed areas.

The A horizon is 8 to 16 inches thick. The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 1. The Bt horizon has hue of 10YR or is neutral and has value of 6 and chroma of 0 or 1. It has few to many mottles of yellowish brown, strong brown, brownish yellow, and yellowish red. The Bt horizon is generally sandy clay loam or clay loam, but some pedons are sandy clay below a depth of 40 inches.

## Stilson series

The Stilson series consists of deep, moderately well drained, moderately permeable soils. They formed in sandy and loamy marine sediment. These nearly level soils are on uplands. The water table is perched within 2.5 to 3.0 feet of the surface in winter and spring. Slope is dominantly less than 1 percent but ranges to 3 percent.

Stilson soils are near Dothan, Leefield, and Alapaha soils. Dothan soils are in higher lying areas, are well drained, and have an A horizon less than 20 inches thick. Leefield soils are in slightly lower lying areas and have mottles with chroma of 2 or less in the upper 30 inches. Alapaha soils are in drainageways and depressions and have dominant chroma of 2 or less in the Bt horizon.

Typical pedon of Stilson loamy sand, in a cultivated field 0.8 mile south of bridge over Swift Creek on Georgia Highway 33, 200 feet west on county road, 40 feet south; Crisp County:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.

A2—9 to 27 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; common fine roots; few nodules of ironstone; strongly acid; clear wavy boundary.

B1—27 to 31 inches; yellowish brown (10YR 5/6) sandy loam; few medium faint olive yellow (2.5Y 6/6) mottles; weak fine subangular blocky structure; very friable; few nodules of ironstone; about 2 percent plinthite; very strongly acid; gradual wavy boundary.

B21t—31 to 38 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct light gray (10YR 7/2) mottles and common medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine pores; few nodules of ironstone; thin patchy clay films on some peds; very strongly acid; gradual wavy boundary.

B22t—38 to 44 inches; yellow (10YR 7/6) sandy clay loam; common medium distinct light gray (10YR 7/1) and yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine pores; few nodules of ironstone; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.

B23t—44 to 65 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct light gray (10YR 7/1) mottles, common medium prominent yellowish red (5YR 4/8) mottles, and common medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine pores; few nodules of ironstone; thin patchy clay films on peds; about 15 percent nodular plinthite in lower part; very strongly acid.

The solum is 60 to 70 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas. In some pedons the soil has a few nodules of ironstone throughout.

The A horizon is 23 to 28 inches thick. The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 2 or 4.

The Bt horizon has hue of 2.5Y or 10YR, value of 5 to 7, and chroma of 4 or 6. Few or common, gray mottles are at a depth of 30 to 40 inches. The lower part of the Bt horizon has distinct or prominent mottles of gray, red, yellowish red, yellowish brown, and strong brown. The Bt horizon is commonly sandy clay loam, but it is sandy loam in some pedons. Plinthite makes up 5 to 15 percent of the lower part of the Bt horizon.

## Sunsweet series

The Sunsweet series consists of deep, well drained, moderately slowly permeable soils. They formed mainly in clayey marine sediment. Sunsweet soils are on uplands. Slope is dominantly about 7 percent but ranges from 5 to 12 percent.

Sunsweet soils are near Cowarts and Tifton soils. Those soils are fine-loamy. Tifton soils are on smoother landscapes and have plinthite at a greater depth.

Typical pedon of Sunsweet sandy loam, 5 to 12 percent slopes, eroded, in a cultivated area 3.1 miles southwest of Sycamore on improved county road, east road bank at road intersection; Turner County:

- Ap<sub>cn</sub>—0 to 4 inches; dark brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable; common fine roots; about 15 percent nodules of ironstone 0.25 to 0.50 inch in diameter; strongly acid; abrupt smooth boundary.
- B21<sub>tcn</sub>—4 to 8 inches; strong brown (7.5YR 5/6) sandy clay; few medium distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; common fine roots; thin patchy clay films on peds; 10 percent nodules of ironstone; very strongly acid; clear wavy boundary.
- B22<sub>t</sub>—8 to 14 inches; yellowish red (5YR 5/6) sandy clay; common medium distinct dark red (10R 3/6) and yellowish brown (10YR 5/6) mottles; moderate medium angular blocky structure; firm; thin patchy clay films on peds; few nodules of ironstone; 6 percent plinthite; very strongly acid; clear wavy boundary.
- B23<sub>t</sub>—14 to 20 inches; strong brown (7.5YR 5/6) sandy clay; common medium distinct dark red (10R 3/6), yellowish brown (10YR 5/6), and light gray (10YR 7/1) mottles; moderate medium angular blocky structure; firm; thin continuous clay films on peds; 10 percent plinthite; very strongly acid; clear wavy boundary.
- B24<sub>t</sub>—20 to 65 inches; coarsely mottled yellowish red (5YR 5/6), red (10R 5/6), light gray (10YR 7/1), and yellowish brown (10YR 5/6) sandy clay; moderate medium angular blocky structure; firm; thin continuous clay films on peds; 12 percent plinthite; very strongly acid.

The solum is 60 to 72 inches or more thick. The soils are strongly acid or very strongly acid throughout except in the surface layer in limed areas. Depth to horizons with more than 5 percent plinthite is 8 to 12 inches.

The A horizon is 3 to 6 inches thick. The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Nodules of ironstone make up 5 to 20 percent, by volume, of the A horizon.

The Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy clay or clay. The B21<sub>t</sub> horizon and the B22<sub>t</sub> horizon have few or common,

medium, red and brown mottles. Commonly, the B23<sub>t</sub> horizon has red, brown, and gray mottles, and the B24<sub>t</sub> horizon has medium and coarse mottles of red, brown, and gray. The gray mottles do not represent wetness. Content of nodules of ironstone ranges from 5 to 15 percent in the upper part of the Bt horizon and from 0 to 5 percent in the lower part of the Bt horizon. Plinthite makes up 6 to 8 percent of the B22<sub>t</sub> horizon, 8 to 12 percent of the B23<sub>t</sub> horizon, and 10 to 15 percent of the B24<sub>t</sub> horizon.

## Susquehanna series

The Susquehanna series consists of deep, somewhat poorly drained, very slowly permeable soils. They formed in clayey marine sediment. Susquehanna soils are on uplands. The water table commonly is at a depth of more than 6 feet. These soils are wet during periods of high rainfall, but they do not have a free water table. Slope is dominantly about 4 percent but ranges from 2 to 12 percent.

Susquehanna soils are near Cowarts and Esto soils. Those soils are well drained. Cowarts soils are fine-loamy.

Typical pedon of Susquehanna sandy loam, 2 to 5 percent slopes, in a cultivated field 0.1 mile north of Arabi on U.S. Highway 41, west on county road to field road, 1,500 feet north on field road, 400 feet west; Crisp County:

- Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; friable; common fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.
- B21<sub>t</sub>—6 to 14 inches; reddish brown (2.5YR 4/4) clay; common fine prominent brown (10YR 5/3) mottles; moderate medium subangular blocky structure; very firm; common fine roots; continuous thin clay films on most peds; very strongly acid; clear wavy boundary.
- B22<sub>t</sub>—14 to 44 inches; light brownish gray (2.5Y 6/2) clay; common medium distinct reddish brown (5YR 5/4) mottles and few fine prominent reddish brown mottles; strong medium subangular blocky structure; very firm; continuous clay films on peds; very strongly acid; gradual wavy boundary.
- B23<sub>t</sub>—44 to 70 inches; light gray (5Y 7/1) clay; many fine prominent red mottles and common medium prominent yellowish red (5YR 4/6) mottles; strong medium subangular blocky structure; very firm; continuous clay films on peds; very strongly acid; gradual wavy boundary.
- B3—70 to 80 inches; light olive gray (5Y 6/2) clay loam; common medium prominent reddish brown (5YR 5/3) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is 60 to 70 inches thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. There are a few nodules of ironstone in some pedons.

The upper part of the Bt horizon has hue of 2.5YR to 7.5YR; value of 4 or 5; and chroma of 4, 6, or 8 and has few or common, red and brown mottles. The lower part of the Bt horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 to 7; and chroma of 1 or 2 and has few to many, red and brown mottles. In some pedons, the lower part of the Bt horizon is mottled red, brown, and gray with no dominant color. The Bt horizon is clay but ranges to clay loam in the lower part.

### Tifton series

The Tifton series consists of deep, well drained, moderately permeable soils. They formed mainly in loamy marine sediment. Tifton soils are on uplands. Slope is dominantly 3 percent but ranges from 0 to 8 percent.

Tifton soils are near Cowarts, Clarendon, and Dothan soils. Cowarts soils, in most places, are on more sloping hillsides and contain less than 5 percent plinthite. Clarendon soils are in lower lying areas and have chroma of 2 or less above a depth of 30 inches. Dothan soils are on smoother landscapes and contain fewer nodules of ironstone.

Typical pedon of Tifton loamy sand, 2 to 5 percent slopes, in a cultivated field 2.4 miles east of Sycamore on Georgia Highway 32, 1.1 miles north on county road, west roadcut; Turner County:

Apcn—0 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; 18 percent nodules of ironstone 0.12 to 0.50 inch in diameter; strongly acid; abrupt smooth boundary.

B1cn—10 to 15 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; 15 percent nodules of ironstone; strongly acid; clear wavy boundary.

B21tcn—15 to 38 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; patchy clay films on peds; 10 percent nodules of ironstone; very strongly acid; gradual wavy boundary.

B22t—38 to 51 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles and few medium distinct light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on peds; 2 percent nodules of ironstone; 8 percent nodular plinthite; very strongly acid; gradual smooth boundary.

B23t—51 to 65 inches; reticulately mottled yellowish brown (10YR 5/8), red (10R 4/8), and light gray (10YR 7/1) sandy clay loam; weak medium subangular blocky structure; firm; patchy clay films on peds; 5 percent dominantly nodular plinthite; very strongly acid.

The solum is 60 to 72 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is less than 12 inches thick in more than 60 percent of the pedons, but it ranges to 17 inches in thickness. The Ap horizon has hue of 10YR, value of 4, and chroma of 2 or 3. The A2 horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. Nodules of ironstone make up 5 to 25 percent, by volume, of the A horizon.

The B21t and B22t horizons have hue of 10YR or 7.5YR; value of 5; and chroma of 4, 6, or 8. The B22t horizon has few or common red and gray mottles. The B23t horizon is reticulately mottled red, brown, and gray; or it has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8. Plinthite content ranges from 5 to 15 percent between depth of 30 and 60 inches. Nodules of ironstone make up 10 to 20 percent of the upper part of the Bt horizon and 0 to 10 percent of the middle and lower parts of the Bt horizon.

### Wahee series

The Wahee series consist of deep, somewhat poorly drained, slowly permeable soils. They formed in loamy and clayey sediment. These soils are on terraces near the larger streams. The water table is within 0.5 to 1.5 feet of the surface in late winter and early spring. Slope is dominantly less than 1 percent but ranges to 2 percent.

Wahee soils are near Ocilla and Rains soils. Ocilla soils are arenic. Rains soils are in lower laying terraces and have no horizon with dominant chroma of 3 or more in the upper 30 inches.

Typical pedon of Wahee fine sandy loam, in a wooded area 0.2 mile southwest of Rebecca on Georgia Highway 112, 5.7 miles on county road, 300 feet east; Turner County:

A1—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

A2—8 to 14 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; friable; few worm casts of very dark grayish brown material from A1 horizon; many fine and medium roots; very strongly acid; clear wavy boundary.

B21tg—14 to 20 inches; brown (10YR 5/3) clay; common medium distinct yellowish brown (10YR 5/8) and yellowish red (5YR 4/8) mottles; moderate

medium subangular blocky structure; firm; common medium roots; gray silt coats on peds; very strongly acid; gradual wavy boundary.

**B22tg**—20 to 45 inches; light brownish gray (10YR 6/2) clay; common coarse distinct yellowish brown (10YR 5/8) mottles; strong medium subangular blocky structure; firm, plastic; few medium roots; continuous clay films on peds; very strongly acid; gradual wavy boundary.

**B3g**—45 to 53 inches; light gray (10YR 6/1) sandy clay; many coarse distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable, slightly sticky; few medium roots; few fine pores; few discontinuous clay films in old root holes; very strongly acid; gradual wavy boundary.

**C1g**—53 to 60 inches; light gray (10YR 6/1) coarse sandy loam; common medium distinct yellowish brown (10YR 5/8) and light yellowish brown (10YR 6/4) mottles; massive; very friable; few medium roots; very strongly acid; gradual wavy boundary.

**C2g**—60 to 70 inches; light brownish gray (10YR 6/2) coarse loamy sand; common medium distinct yellowish brown (10YR 5/8) and common fine

distinct brownish yellow mottles; single grained; loose; very strongly acid.

The solum is 53 to 65 inches or more thick. The soil is very strongly acid or strongly acid throughout except in the surface layer in limed areas.

The A horizon is 6 to 14 inches thick. The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3.

The B1 horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 3. It contains common or many mottles of yellow, brown, and red. The Btg horizon commonly is sandy clay, silty clay, or clay but ranges to clay loam. The B3g horizon, where present, is mottled gray, brown, yellow, and red; or it has a matrix with hue of 10YR, value of 6 or 7, and chroma of 1.

The Cg horizon, where present, has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Yellow or brown mottles are present in some pedons. This horizon is coarse loamy sand or coarse sandy loam.



# formation of the soils

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Soil characteristics are determined by the physical and mineral composition of the parent material; the climate under which the parent material accumulated and has existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material (4). All of these factors influence every soil, but the significance of each factor varies from place to place. In one area one factor may dominate soil formation; in another area a different factor may be the most important.

The interrelationships among these five factors is complex, and the effects of any one factor cannot be isolated and completely evaluated. It is convenient, however, to discuss each factor separately and to indicate the probable effects of each.

## parent material

Parent material is the unconsolidated mass in which soil forms. It is largely responsible for the chemical and mineralogical composition of the soil.

Crisp and Turner counties are underlain by Coastal Plain sedimentary rock (5). About two-thirds of the soils in Crisp County are underlain by limestone commonly at a depth of 50 to 100 feet. The soils west of Cordele and in the vicinity of Lake Blackshear are underlain by Ocala Limestone. North and south of Cordele is an area about five miles wide that is underlain by the Suwannee Limestone and its residuum. Sandy and loamy marine sediments commonly overlie the limestone.

The rest of the soils in the survey area are underlain by sedimentary material classified as Neogene Undifferentiated. In most of the survey area, all of these marine sediments are stratified and weakly consolidated.

The soils on the uplands formed in these sediments and are mostly low in base saturation; they are strongly acid or very strongly acid throughout except in the surface layer in limed areas. The loamy soils, such as Cowarts, Dothan, and Tifton soils, have siliceous mineralogy. The clayey soils, such as Esto, Faceville, and Sunsweet soils, are mainly kaolinitic. The sandy soils, such as Kershaw and Lakeland soils, have very little silt and clay and very high content of quartz sand.

The soils on flood plains formed in more recent sediments than the soils on the uplands. Herod and Osier soils formed in these sediments and are "young" because they do not have a subsoil. The soils have

siliceous mineralogy, and they reflect the characteristics of the upland soils from which the parent material washed. Since Herod soils are influenced by the underlying limestone, they are medium acid to neutral. Conversely, the Osier soils are influenced primarily by more acid sediments; they are very strongly acid or strongly acid throughout.

## plants and animals

The role of plants, animals, and other organisms is significant in soil development. Plants and animals increase the amounts of organic matter and nitrogen, increase or decrease content of plant nutrients, and change soil structure and porosity.

Plants recycle nutrients, accumulate organic matter, and provide food and cover for animals. Plants stabilize the surface layer so that soil-forming processes can continue. Vegetation also provides a more stable environment for soil-forming processes by protecting the soils from extremes in temperature.

The soils of Crisp and Turner Counties formed under a succession of briars, brambles, and woody plants that yielded to pines and hardwood trees. Later, the hardwoods suppressed most other plants and became the climax vegetation.

Animals rearrange soil material by roughening the surface, forming and filling channels, and shaping the peds and voids. The soil is mixed by ants, wasps, worms, and spiders that make channels; by crustacea, such as crabs and crayfish; and by turtles and foxes that dig burrows. Humans affect the soil-forming process by tilling the crops, removing natural vegetation and establishing different plants, and reducing or increasing fertility.

Bacteria, fungi, and other micro-organisms hasten decomposition of organic matter and increase the release of minerals for plant growth.

The net gains and losses caused by plants and animals in the soil-forming process are important in Crisp and Turner Counties. However, the relationship between plants and animals, climate, and parent material is very close; therefore, the soils do not differ significantly because of the role of plants and animals.

## climate

The present climate of Crisp and Turner Counties is thought to be similar to the climate that existed as the

soils formed. The relatively high rainfall and warm temperature contribute to rapid soil formation and are the two most important climatic features that relate to soil properties.

Water, from precipitation, is essential in the formation of soil. Water dissolves soluble materials and is used by plants and animals. It transports material from one part of the soil to another part or from one area to another area.

Soils in Crisp and Turner Counties formed under a thermic temperature regime; that is, the soil temperature at a depth of 20 inches averages about 68 to 70 degrees F. The rate of chemical reactions and other processes in the soil depends to some extent on temperature. In addition, temperature affects the type and quantity of vegetation, the amount and kind of organic matter, and the rate of decomposition of organic matter.

### **relief**

Relief is the elevations, or inequalities, of land surface considered collectively. Color of the soil, wetness, thickness of the A horizon, content of organic matter, and plant cover are commonly related to relief. In Crisp and Turner Counties the obvious effects of relief are color of the soil and wetness.

Dothan and Tifton soils have a yellowish brown subsoil; Grady and Rains soils are primarily gray throughout the subsoil. This color difference results from a difference in relief and a corresponding difference in internal drainage. Dothan and Tifton soils are higher lying

and better drained than the other soils; therefore, the soil material is better oxidized and the subsoil is browner.

The movement of water across the surface and through the soil is controlled to a large extent by relief. Water flowing over the soil commonly carries solid particles and causes erosion or deposition, depending on the kind or relief. More water runs off sloping areas and less water enters the soil, so the soils are drier. Lower lying areas receive the water that flows off and through the higher soils and are commonly wetter.

### **time**

The length of time that soil-forming factors act on the parent material determines to a large degree the characteristics of the soil. Determinations of when soil formation began in the survey area are not exact, but most soils in Crisp and Turner Counties are considered mature. A mature soil is in equilibrium with the environment. It has readily recognized pedogenic horizons and a regular decrease in content of carbon with depth. Some areas of Dothan, Orangeburg, and Tifton soils are on rather broad, stable landscapes where the soil-forming processes have been active for thousands of years. These mature soils have a thick solum and well expressed zones of eluviation and illuviation.

Herod and Osier soils receive sediment annually from floodwaters. These young soils are stratified and lack a zone of illuviation. Young soils do not have pedogenic horizons. Content of carbon decreases irregularly with depth.

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# glossary

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**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—

	<i>Inches</i>
Very low.....	0 to 3
Low.....	3 to 6
Medium.....	6 to 9
High.....	9 to 12
Very high.....	More than 12

**Base saturation.** The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

**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 vegetation.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

**Coarse textured soil.** Sand or loamy sand.

**Complex slope.** Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

**Compressible** (in tables). Excessive decrease in volume of soft soil under load.

**Concretions.** Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The

composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

**Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—  
*Loose.*—Noncoherent when dry or moist; does not hold together in a mass.

*Friable.*—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

*Firm.*—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

*Plastic.*—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a “wire” when rolled between thumb and forefinger.

*Sticky.*—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

*Hard.*—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

*Soft.*—When dry, breaks into powder or individual grains under very slight pressure.

*Cemented.*—Hard; little affected by moistening.

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Corrosive.** High risk of corrosion to uncoated steel or deterioration of concrete.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Drainage class** (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

*Excessively drained.*—Water is removed from the soil very rapidly. Excessively drained soils are

commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

*Somewhat excessively drained.*—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

*Well drained.*—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

*Moderately well drained.*—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

*Somewhat poorly drained.*—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

*Poorly drained.*—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

*Very poorly drained.*—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**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.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion (geologic).* Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.  
*Erosion (accelerated).* Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

**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.

**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.

**Fine textured soil.** Sandy clay, silty clay, and clay.

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

**Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

**A horizon.**—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

**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. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

**C horizon.**—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

**R layer.**—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

**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 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.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are—  
**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.

**Basin.**—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

**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.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Low strength.** The soil is not strong enough to support loads.

**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.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common, and many*; size—*fine, medium, and coarse*; and contrast—*faint, distinct, and prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

**Munsell notation.** A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition.

**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 affecting the specified use.

**Permeability.** The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow.....	less than 0.06 inch
Slow.....	0.06 to 0.20 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid.....	2.0 to 6.0 inches
Rapid.....	6.0 to 20 inches
Very rapid.....	more than 20 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (in tables). 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.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction

because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	<i>pH</i>
Extremely acid.....	Below 4.5
Very strongly acid.....	4.5 to 5.0
Strongly acid.....	5.1 to 5.5
Medium acid.....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral.....	6.6 to 7.3
Mildly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline.....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Residuum (residual soil material).** Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rill.** A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

**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 groundwater 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.

**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 or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shrink-swell.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05

- millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.
- Slow intake** (in tables). The slow movement of water into the soil.
- Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.
- 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 and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.
- 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.
- Substratum.** The part of the soil below the solum.
- Subsurface layer.** Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.
- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."
- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.
- Terrace.** An embankment, or ridge, constructed 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 is generally 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 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.
- Unstable fill** (in tables). Risk of caving or sloughing on banks of fill material.
- Upland** (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- 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.



**tables**

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TABLE 1.--TEMPERATURE AND PRECIPITATION  
 [Recorded in the period 1951-76 at Cordele, Georgia]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
	OF	OF	OF	OF	OF	Units	In	In	In	In	
January----	61.8	37.4	47.3	79	16	340	3.87	1.94	5.44	6	0.0
February---	64.6	39.8	52.1	82	20	133	4.62	2.11	6.66	7	0.1
March-----	70.9	45.9	58.4	88	26	292	4.94	2.39	7.02	7	0.0
April-----	79.0	53.4	66.2	91	35	486	3.36	1.39	4.94	5	0.0
May-----	85.8	60.9	73.4	97	44	725	3.56	1.77	5.01	6	0.0
June-----	90.6	67.5	79.1	99	52	873	3.85	2.19	5.19	7	0.0
July-----	92.0	70.5	81.2	100	61	967	5.39	2.90	7.42	8	0.0
August-----	92.3	69.9	81.1	99	61	964	4.05	2.42	5.50	7	0.0
September--	87.8	65.6	76.7	97	50	801	3.42	1.38	5.06	5	0.0
October----	79.6	53.1	66.4	92	32	508	1.94	.48	3.10	3	0.0
November---	69.5	43.6	54.3	86	24	433	2.08	.78	3.11	4	0.0
December---	63.3	38.7	46.4	80	17	460	3.82	1.89	5.39	6	0.0
Yearly----	78.1	53.9	65.2	100**	15**	6,982	44.90	35.21	54.64	71	0.1

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

\*\* Extremes.

TABLE 2.--FREEZE DATES IN SPRING AND FALL  
 [Recorded in the period 1951-76 at Cordele, Georgia]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 6	March 22	March 31
2 years in 10 later than--	February 24	March 15	March 25
5 years in 10 later than--	February 5	March 3	March 14
First freezing temperature in fall:			
1 year in 10 earlier than--	November 18	November 4	October 25
2 years in 10 earlier than--	November 26	November 11	October 30
5 years in 10 earlier than--	December 12	November 23	November 8

TABLE 3.--GROWING SEASON  
 [Recorded in the period 1951-76 at Cordele, Georgia]

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	276	240	217
8 years in 10	287	248	224
5 years in 10	309	265	239
2 years in 10	339	283	254
1 year in 10	>365	298	261

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Crisp county Acres	Turner county Acres	Total--	
				Area Acres	Extent Pct
Ah	Alapaha loamy sand-----	16,127	25,230	41,357	11.0
An	Alapaha-Urban land complex-----	138	110	248	0.1
AoA	Albany sand, 0 to 2 percent slopes-----	197	146	343	0.1
ArA	Ardilla loamy sand, 0 to 2 percent slopes-----	1,474	465	1,939	0.5
Cn	Clarendon loamy sand-----	1,515	320	1,835	0.5
CoB	Cowarts loamy sand, 2 to 5 percent slopes-----	5,069	3,115	8,184	2.2
CoB2	Cowarts sandy loam, 2 to 5 percent slopes, eroded-----	2,357	1,978	4,335	1.2
CoC	Cowarts loamy sand, 5 to 8 percent slopes-----	6,757	7,768	14,525	3.9
CoC2	Cowarts sandy loam, 5 to 8 percent slopes, eroded-----	5,201	7,732	12,933	3.5
CoD	Cowarts loamy sand, 8 to 12 percent slopes-----	528	292	820	0.2
DoA	Dothan loamy sand, 0 to 2 percent slopes-----	3,556	249	3,805	1.0
DoB	Dothan loamy sand, 2 to 5 percent slopes-----	10,233	9,354	19,587	5.2
EuB	Esto sandy loam, 2 to 5 percent slopes-----	2,081	1,485	3,566	1.0
EuC	Esto sandy loam, 5 to 8 percent slopes-----	2,044	3,053	5,097	1.4
EuD	Esto sandy loam, 8 to 12 percent slopes-----	277	670	947	0.3
FaB	Faceville sandy loam, 2 to 5 percent slopes-----	392	0	392	0.1
FoC2	Faceville sandy clay loam, 5 to 8 percent slopes, eroded---	182	0	182	*
FsB	Fuquay loamy sand, 0 to 5 percent slopes-----	18,000	18,413	36,413	9.7
Gr	Grady sandy loam-----	4,477	348	4,825	1.3
He	Herod sandy loam-----	3,850	0	3,850	1.0
KeC	Kershaw coarse sand, 2 to 8 percent slopes-----	0	807	807	0.2
KO	Kinston and Osier soils-----	2,133	7,324	9,457	2.5
LaB	Lakeland sand, 0 to 5 percent slopes-----	5,102	4,118	9,220	2.5
Le	Leefield loamy sand-----	4,646	5,357	10,003	2.7
Lf	Leefield-Urban land complex-----	105	8	113	*
LmB	Lucy loamy sand, 0 to 5 percent slopes-----	3,750	0	3,750	1.0
LmC	Lucy loamy sand, 5 to 8 percent slopes-----	594	0	594	0.2
Oc	Ocilla loamy sand-----	352	35	387	0.1
Oe	Olustee sand-----	0	162	162	*
OrA	Orangeburg loamy sand, 0 to 2 percent slopes-----	140	0	140	*
OrB	Orangeburg loamy sand, 2 to 5 percent slopes-----	1,999	0	1,999	0.5
OrC	Orangeburg loamy sand, 5 to 8 percent slopes-----	659	0	659	0.2
OsD2	Orangeburg sandy loam, 8 to 12 percent slopes, eroded-----	114	0	114	*
Pe	Pelham loamy sand-----	1,237	1,951	3,188	0.8
Ra	Rains loamy fine sand-----	6,094	653	6,747	1.8
Se	Stilson loamy sand-----	4,274	2,681	6,955	1.9
Sr	Stilson-Urban land complex-----	94	27	121	*
StD2	Sunsweet sandy loam, 5 to 12 percent slopes, eroded-----	791	981	1,772	0.5
SuB	Susquehanna sandy loam, 2 to 5 percent slopes-----	532	474	1,006	0.3
SuD	Susquehanna sandy loam, 5 to 12 percent slopes-----	962	1,195	2,157	0.6
TfA	Tifton loamy sand, 0 to 2 percent slopes-----	9,430	2,582	12,012	3.2
TfB	Tifton loamy sand, 2 to 5 percent slopes-----	49,638	64,904	114,542	30.6
TfC	Tifton loamy sand, 5 to 8 percent slopes-----	3,949	12,016	15,965	4.3
TuB	Tifton-Urban land complex, 2 to 5 percent slopes-----	1,652	1,012	2,664	0.7
TuC	Tifton-Urban land complex, 5 to 8 percent slopes-----	82	6	88	*
Wa	Wahee fine sandy loam-----	623	307	930	0.2
	Water-----	3,665	0	3,665	1.0
	Total-----	187,072	187,328	374,400	100.0

\* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. 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	Corn		Soybeans		Peanuts		Cotton lint		Improved bermudagrass		Bahagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Lb	Lb	Lb	Lb	AUM*	AUM*	AUM*	AUM*
Ah----- Alapaha	---	---	---	---	---	---	---	---	---	---	5.0	6.5
An----- Alapaha-Urban land	---	---	---	---	---	---	---	---	---	---	---	---
AoA----- Albany	65	105	25	33	1,700	2,300	---	---	7.0	9.0	6.5	8.0
ArA----- Ardilla	85	135	45	55	---	---	---	---	8.5	10.5	8.5	10.5
Cn----- Clarendon	110	175	40	50	---	---	---	---	10.5	13.0	10.0	12.5
CoB----- Cowarts	80	125	35	40	2,400	3,300	650	800	8.0	10.0	7.5	9.5
CoB2----- Cowarts	70	115	25	30	2,000	2,700	600	750	7.5	9.5	7.0	9.0
CoC----- Cowarts	70	110	25	28	1,800	2,500	600	700	7.5	9.5	7.0	9.0
CoC2----- Cowarts	60	100	20	23	1,600	2,200	500	600	7.0	9.0	6.5	8.5
CoD----- Cowarts	---	---	---	---	---	---	---	---	7.0	9.0	6.5	8.5
DoA----- Dothan	120	190	40	45	3,800	5,100	900	1,100	10.5	13.0	9.0	11.5
DoB----- Dothan	120	190	35	40	3,600	4,800	900	1,100	10.5	13.0	9.0	11.5
EuB----- Esto	50	80	35	40	1,700	2,050	500	600	6.0	7.5	6.0	7.0
EuC----- Esto	40	65	30	35	1,500	1800	450	550	5.8	7.0	5.8	6.5
EuD----- Esto	---	---	---	---	---	---	---	---	5.5	6.5	5.5	6.0
FaB----- Faceville	115	185	45	50	3,800	4,550	875	1,050	10.0	12.5	7.0	9.0
FcC2----- Faceville	75	120	20	23	2,600	3,100	500	600	8.0	10.0	5.0	6.5
FsB----- Fuquay	80	140	30	40	2,900	4,350	650	800	7.5	9.5	7.5	9.0
Gr----- Grady	---	---	---	---	---	---	---	---	---	---	---	---
He----- Herod	---	---	---	---	---	---	---	---	---	---	10.0	12.5
KeC----- Kershaw	---	---	---	---	---	---	---	---	3.5	4.5	3.5	4.0

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn		Soybeans		Peanuts		Cotton lint		Improved bermudagrass		Bahagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Lb	Lb	Lb	Lb	AUM*	AUM*	AUM*	AUM*
KO----- Kinston and Osier	---	---	---	---	---	---	---	---	---	---	---	---
LaB----- Lakeland	55	110	20	35	2,000	3,500	---	---	7.0	10.0	7.0	10.0
Le----- Leefield	85	135	45	55	---	---	---	---	8.7	10.5	8.0	10.0
Lf----- Leefield-Urban land	---	---	---	---	---	---	---	---	---	---	---	---
LmB----- Lucy	80	140	33	45	3,000	4,500	650	800	8.0	10.0	8.5	10.0
LmC----- Lucy	70	120	25	35	2,500	3,750	600	750	7.5	9.5	8.5	9.0
Oc----- Ocilla	65	105	30	40	---	---	---	---	8.5	10.5	8.0	10.0
Oe----- Olustee	70	95	30	38	---	---	---	---	---	---	8.5	10.5
OrA----- Orangeburg	120	190	45	55	4,000	5,400	900	1,100	10.5	13.0	8.5	10.5
OrB----- Orangeburg	120	190	45	50	3,800	5,100	850	1,000	10.5	13.0	8.5	10.5
OrC----- Orangeburg	95	150	35	40	3,200	4,300	800	1,000	10.0	12.5	8.0	10.0
OsD2----- Orangeburg	75	120	30	35	2,600	3,500	600	750	9.0	11.5	7.0	10.0
Pe----- Pelham	---	---	---	---	---	---	---	---	---	---	---	---
Ra----- Rains	---	---	---	---	---	---	---	---	---	---	6.0	---
Se----- Stilson	80	130	35	45	---	---	---	---	10.0	12.5	7.5	10.0
Sr----- Stilson-Urban land	---	---	---	---	---	---	---	---	---	---	---	---
StD2----- Sunsweet	---	---	---	---	---	---	---	---	4.5	6.0	4.5	6.0
SuB----- Susquehanna	---	---	20	---	---	---	---	---	---	---	6.5	7.5
SuD----- Susquehanna	---	---	---	---	---	---	---	---	---	---	5.5	6.5
TfA----- Tifton	115	185	46	55	3,800	5,100	950	1,150	10.5	13.5	8.5	10.5
TfB----- Tifton	115	185	46	55	3,800	5,100	950	1,150	10.5	13.5	8.5	10.5
TfC----- Tifton	90	145	38	45	3,600	4,850	750	900	10.0	13.0	8.0	10.0
TuB----- Tifton-Urban land	---	---	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn		Soybeans		Peanuts		Cotton lint		Improved bermudagrass		Bahagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Lb	Lb	Lb	Lb	AUM*	AUM*	AUM*	AUM*
TuC----- Tifton-Urban land	---	---	---	---	---	---	---	---	---	---	---	---
Wa----- Wahee	90	145	40	50	---	---	---	---	---	---	8.0	10.0

\* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Dashes indicate no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I:				
Crisp County-----	13,126	---	---	---
Turner County-----	2,831	---	---	---
II:				
Crisp County-----	102,841	68,983	12,108	21,750
Turner County-----	105,656	69,031	18,212	18,413
III:				
Crisp County-----	10,724	9,310	820	594
Turner County-----	16,100	14,000	2,100	---
IV:				
Crisp County-----	20,102	14,648	352	5,102
Turner County-----	23,180	19,027	35	4,118
V:				
Crisp County-----	34,056	---	34,056	---
Turner County-----	35,616	---	35,616	---
VI:				
Crisp County-----	2,558	2,558	---	---
Turner County-----	3,138	3,138	---	---
VII:				
Crisp County-----	---	---	---	---
Turner County-----	807	---	---	807
VIII:				
Crisp County-----	---	---	---	---
Turner County-----	---	---	---	---

TABLE 7.--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	Common trees	Site index	
Ah----- Alapaha	2w	Slight	Moderate	Slight	Slash pine----- Loblolly pine----- Longleaf pine-----	87 87 70	Slash pine, loblolly pine.
AoA----- Albany	3w	Slight	Moderate	Moderate	Loblolly pine----- Slash pine----- Longleaf pine-----	80 80 67	Loblolly pine, slash pine.
ArA----- Ardilla	2w	Slight	Moderate	Slight	Longleaf pine----- Slash pine----- Sweetgum----- Water oak-----	78 89 90 90	Longleaf pine, slash pine, yellow-poplar.
Cn----- Clarendon	2w	Slight	Moderate	Slight	Loblolly pine----- Slash pine----- Sweetgum-----	90 90 85	Loblolly pine, slash pine, American sycamore, yellow-poplar, sweetgum.
CoB, CoB2, CoC, CoC2, CoD----- Cowarts	2o	Slight	Slight	Slight	Loblolly pine----- Slash pine----- Longleaf pine-----	86 86 67	Loblolly pine, slash pine.
DoA, DoB----- Dothan	2o	Slight	Slight	Slight	Slash pine----- Longleaf pine----- Loblolly pine-----	89 70 ---	Slash pine, loblolly pine, longleaf pine.
EuB, EuC, EuD----- Esto	3o	Slight	Slight	Slight	Loblolly pine----- Longleaf pine----- Slash pine-----	80 65 80	Loblolly pine, slash pine.
FaB, FcC2----- Faceville	3o	Slight	Slight	Slight	Loblolly pine----- Slash pine----- Longleaf pine-----	82 80 65	Loblolly pine, slash pine.
FsB----- Fuquay	3s	Slight	Moderate	Moderate	Loblolly pine----- Slash pine----- Longleaf pine-----	83 83 67	Slash pine, longleaf pine.
Gr----- Grady	2w	Slight	Severe	Severe	Loblolly pine----- Slash pine----- Sweetgum-----	90 88 90	Loblolly pine, slash pine, American sycamore, water tupelo.
He----- Herod	1w	Slight	Severe	Severe	Loblolly pine----- Sweetgum----- Water oak----- Eastern cottonwood--	100 95 90 100	Loblolly pine, slash pine, sweetgum, eastern cottonwood.
KeC----- Kershaw	5s	Slight	Moderate	Severe	Slash pine----- Longleaf pine-----	65 55	Sand pine, slash pine, longleaf pine.
KO*: Kinston-----	1w	Slight	Severe	Severe	Loblolly pine----- Sweetgum----- White oak----- Eastern cottonwood-- Cherrybark oak-----	100 95 90 100 95	Loblolly pine, slash pine, American sycamore, yellow-poplar, eastern cottonwood, cherrybark oak, green ash, sweetgum.

See footnote at end of table.

TABLE 7.--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	Common trees	Site index	
KO*: Osier-----	3w	Slight	Severe	Severe	Slash pine----- Loblolly pine----- Longleaf pine-----	80 80 68	Slash pine, loblolly pine.
LaB----- Lakeland	4s	Slight	Moderate	Moderate	Slash pine----- Loblolly pine----- Longleaf pine-----	75 75 60	Slash pine, loblolly pine.
Le----- Leeffield	3w	Slight	Moderate	Moderate	Loblolly pine----- Slash pine----- Longleaf pine-----	84 84 70	Loblolly pine, slash pine.
LmB, LmC----- Lucy	3s	Slight	Moderate	Moderate	Slash pine----- Longleaf pine----- Loblolly pine-----	80 70 80	Slash pine, longleaf pine, loblolly pine.
Oc----- Ocilla	3w	Slight	Moderate	Moderate	Loblolly pine----- Slash pine----- Longleaf pine-----	79 80 68	Loblolly pine, slash pine.
Oe----- Olustee	3w	Slight	Moderate	Moderate	Slash pine----- Loblolly pine----- Longleaf pine-----	80 80 70	Slash pine, loblolly pine.
OrA, OrB, OrC, OsD2----- Orangeburg	2o	Slight	Slight	Slight	Loblolly pine----- Slash pine----- Longleaf pine-----	80 86 77	Slash pine, loblolly pine.
Pe----- Pelham	2w	Slight	Severe	Severe	Slash pine----- Loblolly pine----- Longleaf pine----- Sweetgum----- Blackgum----- Water oak-----	90 90 74 80 80 80	Slash pine, loblolly pine.
Ra----- Rains	2w	Slight	Severe	Severe	Loblolly pine----- Slash pine----- Sweetgum-----	94 91 90	Loblolly pine, slash pine, sweetgum, American sycamore.
Se----- Stilson	3s	Slight	Moderate	Slight	Loblolly pine----- Slash pine----- Longleaf pine----- Sweetgum-----	83 83 70 ---	Slash pine, loblolly pine, longleaf pine.
StD2----- Sunsweet	3c	Slight	Moderate	Slight	Loblolly pine----- Slash pine----- Longleaf pine-----	85 85 78	Loblolly pine, slash pine.
SuB, SuD----- Susquehanna	3c	Slight	Moderate	Slight	Loblolly pine----- Shortleaf pine-----	78 68	Loblolly pine, shortleaf pine.
TfA, TfB, TfC----- Tifton	2o	Slight	Slight	Slight	Loblolly pine----- Slash pine----- Longleaf pine-----	86 86 72	Loblolly pine, slash pine.
Wa----- Wahee	2w	Slight	Moderate	Moderate	Loblolly pine----- Slash pine----- Sweetgum-----	86 86 90	Loblolly pine, slash pine, sweetgum, American sycamore, water oak.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--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
Ah----- Alapaha	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
An*: Alapaha-----	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Urban land.				
AoA----- Albany	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
ArA----- Ardilla	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
Cn----- Clarendon	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight.
CoB, CoB2----- Cowarts	Slight-----	Slight-----	Moderate: slope.	Slight.
CoC, CoC2----- Cowarts	Slight-----	Slight-----	Severe: slope.	Slight.
CoD----- Cowarts	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
DoA----- Dothan	Slight-----	Slight-----	Slight-----	Slight.
DoB----- Dothan	Slight-----	Slight-----	Moderate: slope.	Slight.
EuB----- Esto	Moderate: percs slowly.	Slight-----	Moderate: percs slowly, slope.	Slight.
EuC----- Esto	Moderate: percs slowly.	Slight-----	Severe: slope.	Slight.
EuD----- Esto	Moderate: percs slowly, slope.	Moderate: slope.	Severe: slope.	Slight.
FaB----- Faceville	Slight-----	Slight-----	Moderate: slope.	Slight.
FcC2----- Faceville	Moderate: too clayey.	Moderate: too clayey.	Severe: slope.	Moderate: too clayey.
FsB----- Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
Gr----- Grady	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
He----- Herod	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
KeC----- Kershaw	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.
KO*: Kinston-----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.	Severe: wetness, floods.
Osier-----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
LaB----- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
Le----- Leeffield	Moderate: wetness, too sandy, percs slowly.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: too sandy.
Lf*: Leeffield-----	Moderate: wetness, too sandy, percs slowly.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: too sandy.
Urban land.				
LmB----- Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
LmC----- Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
Oc----- Ocilla	Severe: floods.	Moderate: wetness.	Moderate: wetness, too sandy.	Moderate: wetness.
Oe----- Olustee	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.
OrA----- Orangeburg	Slight-----	Slight-----	Slight-----	Slight.
OrB----- Orangeburg	Slight-----	Slight-----	Moderate: slope.	Slight.
OrC----- Orangeburg	Slight-----	Slight-----	Severe: slope.	Slight.
OsD2----- Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pe----- Pelham	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.	Moderate: too sandy, floods.
Ra----- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Se----- Stilson	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: too sandy.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Sr*: Stilson-----  Urban land.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: too sandy.
StD2----- Sunsweet	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Slight.
SuB----- Susquehanna	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Moderate: wetness.
SuD----- Susquehanna	Moderate: percs slowly, wetness.	Moderate: wetness.	Severe: slope.	Moderate: wetness.
TfA----- Tifton	Slight-----	Slight-----	Moderate: small stones.	Slight.
TfB----- Tifton	Slight-----	Slight-----	Moderate: slope, small stones.	Slight.
TfC----- Tifton	Slight-----	Slight-----	Severe: slope.	Slight.
TuB*: Tifton-----  Urban land.	Slight-----	Slight-----	Moderate: slope, small stones.	Slight.
TuC*: Tifton-----  Urban land.	Slight-----	Slight-----	Severe: slope.	Slight.
Wa----- Wahee	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ah----- Alapaha	Very poor.	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
An*: Alapaha-----	Very poor.	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Urban land.										
AoA----- Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
ArA----- Ardilla	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
Cn----- Clarendon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CoB, CoC, CoD----- Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CoB2----- Cowarts	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CoC2----- Cowarts	Fair	Good	Good	Good	Good	Very	Very	Good	Good	Very
DoA, DoB----- Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EuB----- Esto	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EuC, EuD----- Esto	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaB----- Faceville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FcC2----- Faceville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FsB----- Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Gr----- Grady	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
He----- Herod	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
KeC----- Kershaw	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
KO*: Kinston-----	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Osier-----	Very poor.	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
LaB----- Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Le----- Leefield	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Lf*: Leefield-----	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land.										
LmB, LmC----- Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Oc----- Ocilla	Poor	Fair	Fair	Fair	Good	Fair	Fair	Fair	Good	Fair.
Oe----- Olustee	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
OrA, OrB----- Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OrC, OsD2----- Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pe----- Pelham	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Ra----- Rains	Very poor.	Very poor.	Very poor.	Fair	Fair	Good	Good	Very poor.	Poor	Good.
Se----- Stilson	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
Sr*: Stilson-----	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
Urban land.										
StD2----- Sunsweet	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
SuB, SuD----- Susquehanna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TfA----- Tifton	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TfB----- Tifton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TfC----- Tifton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TuB*: Tifton-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
TuB*: Urban land.										
TuC*: Tifton----- Urban land.	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Wa----- Wahee	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ah----- Alapaha	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
An*: Alapaha-----  Urban land.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
AoA----- Albany	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
ArA----- Ardilla	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Cn----- Clarendon	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, corrosive.	Slight.
CoB, CoB2----- Cowarts	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
CoC, CoC2----- Cowarts	Slight-----	Slight-----	Slight-----	Moderate: slope.	Slight.
CoD----- Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
DoA, DoB----- Dothan	Slight-----	Slight-----	Moderate: wetness.	Slight-----	Slight.
EuB, EuC----- Esto	Moderate: too clayey.	Slight-----	Slight-----	Slight-----	Slight.
EuD----- Esto	Moderate: too clayey.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: slope.
FaB----- Faceville	Moderate: too clayey.	Slight-----	Slight-----	Slight-----	Slight.
FcC2----- Faceville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Slight.
FsB----- Fuquay	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
Gr----- Grady	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
He----- Herod	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
KeC----- Kershaw	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
KO*: Kinston-----	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: low strength, wetness, floods.
Osier-----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
LaB----- Lakeland	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
Le----- Leeffield	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Lf*: Leeffield-----	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Urban land.					
LmB----- Lucy	Moderate: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
LmC----- Lucy	Moderate: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.
Oc----- Ocilla	Severe: floods.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Oe----- Olustee	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Severe: wetness.
OrA, OrB----- Orangeburg	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
OrC----- Orangeburg	Slight-----	Slight-----	Slight-----	Moderate: slope.	Slight.
OsD2----- Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Pe----- Pelham	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Ra----- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Se----- Stilson	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight-----	Slight.
Sr*: Stilson-----	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight-----	Slight.
Urban land.					
StD2----- Sunsweet	Moderate: too clayey.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
SuB, SuD----- Susquehanna	Severe: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, corrosive, shrink-swell.	Severe: low strength, shrink-swell.
TfA, TfB----- Tifton	Slight-----	Slight-----	Moderate: wetness.	Slight-----	Slight.
TfC----- Tifton	Slight-----	Slight-----	Moderate: wetness.	Moderate:	Slight.
TuB*: Tifton-----  Urban land.	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
TuC*: Tifton-----  Urban land.	Slight-----	Slight-----	Slight-----	Moderate: slope.	Slight.
Wa----- Wahee	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness, low strength.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ah----- Alapaha	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
An*: Alapaha-----  Urban land.	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
AoA----- Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Poor: too sandy, wetness.
ArA----- Ardilla	Severe: wetness.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Good.
Cn----- Clarendon	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
CoB, CoB2, CoC, CoC2----- Cowarts	Severe: percs slowly.	Moderate: slope.	Slight-----	Slight-----	Fair: thin layer.
CoD----- Cowarts	Severe: percs slowly.	Severe: slope.	Slight-----	Slight-----	Fair: thin layer, slope.
DoA----- Dothan	Moderate: wetness, percs slowly.	Moderate: seepage.	Slight-----	Slight-----	Good.
DoB----- Dothan	Moderate: wetness, percs slowly.	Moderate: slope, seepage.	Slight-----	Slight-----	Good.
EuB, EuC----- Esto	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
EuD----- Esto	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.
FaB, FcC2----- Faceville	Slight-----	Moderate: slope, seepage.	Moderate: too clayey.	Slight-----	Fair: too clayey.
FsB----- Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight-----	Slight-----	Good.
Gr----- Grady	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too clayey.
He----- Herod	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
KeC----- Kershaw	Slight-----	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.

See footnote at end of table.

TABLE 11.--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
KO*: Kinston-----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: wetness.
Osier-----	Severe: floods, wetness.	Severe: floods, seepage.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too sandy.
LaB----- Lakeland	Slight-----	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
Le----- Leefield	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Good.
Lf*: Leefield-----	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Good.
Urban land.					
LmB, LmC----- Lucy	Slight-----	Severe: seepage.	Slight-----	Slight-----	Good.
Oc----- Ocilla	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.	Severe: floods.	Good.
Oe----- Olustee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: too sandy, seepage, wetness.
OrA----- Orangeburg	Slight-----	Moderate: seepage.	Slight-----	Slight-----	Good.
OrB, OrC----- Orangeburg	Slight-----	Moderate: slope, seepage.	Slight-----	Slight-----	Good.
OsD2----- Orangeburg	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.	Fair: slope.
Pe----- Pelham	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Ra----- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Se----- Stilson	Severe: wetness.	Moderate: seepage.	Moderate: wetness.	Slight-----	Good.
Sr*: Stilson-----	Severe: wetness.	Moderate: seepage.	Moderate: wetness.	Slight-----	Good.
Urban land.					
StD2----- Sunsweet	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.

See footnote at end of table.

TABLE 11.--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
SuB----- Susquehanna	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, wetness.	Moderate: wetness.	Poor: too clayey.
SuD----- Susquehanna	Severe: percs slowly.	Severe: slope.	Severe: too clayey, wetness.	Moderate: wetness.	Poor: too clayey.
TfA----- Tifton	Moderate: percs slowly.	Moderate: seepage.	Slight-----	Slight-----	Good.
TfB, TfC----- Tifton	Moderate: percs slowly.	Moderate: slope, seepage.	Slight-----	Slight-----	Good.
TuB*, TuC*: Tifton-----	Moderate: percs slowly.	Moderate: slope, seepage.	Slight-----	Slight-----	Good.
Urban land.					
Wa----- Wahee	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: wetness, thin layer.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ah----- Alapaha	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
An*: Alapaha-----  Urban land.	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
AoA----- Albany	Fair: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
ArA----- Ardilla	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Cn----- Clarendon	Good-----	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too sandy.
CoB, CoC----- Cowarts	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too sandy.
CoB2, CoC2----- Cowarts	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
CoD----- Cowarts	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too sandy, slope.
DoA, DoB----- Dothan	Good-----	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer, too sandy.
EuB, EuC, EuD----- Esto	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
FaB, FcC2----- Faceville	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
FsB----- Fuquay	Good-----	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Gr----- Grady	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
He----- Herod	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
KeC----- Kershaw	Good-----	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
KO*: Kinston-----  Osler-----	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
	Poor: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LaB----- Lakeland	Good-----	Good-----	Unsuited: excess fines.	Poor: too sandy.
Le----- Leefield	Fair: wetness, low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Lf*: Leefield-----	Fair: wetness, low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Urban land.				
LmB, LmC----- Lucy	Fair: low strength.	Fair: excess fines, thin layer.	Unsuited: excess fines.	Fair: too sandy.
Oc----- Ocilla	Fair: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Oe----- Olustee	Good-----	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
OrA, OrB, OrC, OsD2--- Orangeburg	Good-----	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Pe----- Pelham	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
Ra----- Rains	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Se----- Stilson	Good-----	Poor: excess fines.	Poor: excess fines.	Poor: too sandy.
Sr*: Stilson-----	Good-----	Poor: excess fines.	Poor: excess fines.	Poor: too sandy.
Urban land.				
StD2----- Sunsweet	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
SuB, SuD----- Susquehanna	Poor: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
TfA, TfB, TfC----- Tifton	Poor: low strength.	Poor: thin layer.	Unsuited: excess fines.	Poor: small stones.
TuB*, TuC*: Tifton-----	Poor: low strength.	Poor: thin layer.	Unsuited: excess fines.	Poor: small stones.
Urban land.				
Wa----- Wahee	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--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]

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ah----- Alapaha	Slight-----	Moderate: piping, hard to pack.	Poor outlets---	Wetness, fast intake.	Not needed-----	Not needed.
An*: Alapaha-----  Urban land.	Slight-----	Moderate: piping, hard to pack.	Poor outlets---	Wetness, fast intake.	Not needed-----	Not needed.
AoA----- Albany	Severe: seepage.	Moderate: seepage, wetness.	Favorable-----	Fast intake, wetness.	Wetness, too sandy.	Wetness.
ArA----- Ardilla	Moderate: seepage.	Slight-----	Favorable-----	Favorable-----	Not needed-----	Not needed.
Cn----- Clarendon	Moderate: seepage.	Moderate: compressible, piping.	Favorable-----	Favorable-----	Not needed-----	Favorable.
CoB, CoB2----- Cowarts	Slight-----	Slight-----	Not needed-----	Percs slowly---	Percs slowly---	Percs slowly.
CoC, CoC2----- Cowarts	Slight-----	Slight-----	Not needed-----	Slope, percs slowly.	Percs slowly---	Percs slowly.
CoD----- Cowarts	Slight-----	Slight-----	Not needed-----	Slope, percs slowly.	Percs slowly---	Slope, percs slowly.
DoA----- Dothan	Slight-----	Slight-----	Not needed-----	Fast intake---	Not needed-----	Favorable.
DoB----- Dothan	Slight-----	Slight-----	Not needed-----	Fast intake---	Too sandy-----	Favorable.
EuB, EuC----- Esto	Slight-----	Severe: hard to pack.	Not needed-----	Slow intake, percs slowly.	Percs slowly---	Percs slowly.
EuD----- Esto	Slight-----	Severe: hard to pack.	Not needed-----	Percs slowly, slope.	Slope-----	Percs slowly, slope.
FaB----- Faceville	Moderate: seepage.	Slight-----	Not needed-----	Favorable-----	Favorable-----	Favorable.
FcC2----- Faceville	Moderate: seepage.	Slight-----	Not needed-----	Slope-----	Favorable-----	Favorable.
FsB----- Fuquay	Slight-----	Moderate: piping.	Not needed-----	Fast intake---	Favorable-----	Favorable.
Gr----- Grady	Moderate: seepage.	Slight-----	Floods, wetness, poor outlets.	Wetness, percs slowly, floods.	Not needed-----	Not needed.
He----- Herod	Seepage-----	Piping-----	Floods-----	Floods-----	Wetness-----	Wetness.
KeC----- Kershaw	Severe: seepage.	Severe: seepage.	Not needed-----	Droughty, fast intake.	Too sandy-----	Droughty.
KO*: Kinston-----	Moderate: seepage.	Severe: wetness.	Floods-----	Floods, wetness.	Not needed-----	Wetness.

See footnote at end of table.

TABLE 13.--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
KO#: Osier-----	Severe: seepage.	Severe: seepage, unstable fill.	Floods, cutbanks cave.	Floods, seepage.	Not needed-----	Not needed.
LaB----- Lakeland	Severe: seepage.	Severe: seepage, piping.	Not needed-----	Droughty, seepage, fast intake.	Not needed-----	Not needed.
Le----- Leefield	Moderate: seepage.	Moderate: wetness.	Favorable-----	Fast intake, wetness, droughty.	Not needed-----	Favorable.
Lf#: Leefield-----	Moderate: seepage.	Moderate: wetness.	Favorable-----	Fast intake, wetness, droughty.	Not needed-----	Favorable.
Urban land.						
LmB, LmC----- Lucy	Severe: seepage.	Moderate: thin layer.	Not needed-----	Slope, fast intake.	Too sandy, slope.	Droughty, slope.
Oc----- Ocilla	Moderate: seepage.	Moderate: seepage.	Floods-----	Floods, fast intake.	Not needed-----	Not needed.
Oe----- Olustee	Moderate: seepage.	Moderate: seepage, unstable fill.	Wetness, cutbanks cave.	Wetness, fast intake.	Not needed-----	Not needed.
OrA----- Orangeburg	Moderate: seepage.	Slight-----	Not needed-----	Fast intake-----	Not needed-----	Favorable.
OrB----- Orangeburg	Moderate: seepage.	Slight-----	Not needed-----	Fast intake-----	Favorable-----	Favorable.
OrC----- Orangeburg	Moderate: seepage.	Slight-----	Not needed-----	Slope-----	Favorable-----	Favorable.
OsD2----- Orangeburg	Moderate: seepage.	Slight-----	Not needed-----	Slope-----	Slope-----	Slope.
Pe----- Pelham	Moderate: seepage.	Severe: piping, wetness.	Floods, wetness.	Floods, wetness.	Not needed-----	Not needed.
Ra----- Rains	Moderate: seepage.	Severe: wetness.	Favorable-----	Wetness, fast intake.	Not needed-----	Wetness.
Se----- Stilson	Moderate: seepage.	Moderate: seepage.	Favorable-----	Fast intake-----	Not needed-----	Not needed.
Sr#: Stilson-----	Moderate: seepage.	Moderate: seepage.	Favorable-----	Fast intake-----	Not needed-----	Not needed.
Urban land.						
StD2----- Sunsweet	Slight-----	Moderate: piping.	Not needed-----	Slope, slow intake.	Complex slope	Slope, erodes easily.
SuB, SuD----- Susquehanna	Slight-----	Moderate: hard to pack, shrink-swell.	Percs slowly, slope.	Percs slowly, slope.	Percs slowly, slope.	Percs slowly, slope.
TfA, TfB----- Tifton	Moderate: seepage.	Slight-----	Not needed-----	Fast intake-----	Too sandy-----	Favorable.
TfC----- Tifton	Moderate: seepage.	Slight-----	Not needed-----	Slope, fast intake.	Too sandy-----	Favorable.

See footnote at end of table.

TABLE 13.--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
TuB*: Tifton-----  Urban land.	Moderate: seepage.	Slight-----	Not needed-----	Fast intake----	Too sandy-----	Favorable.
TuC*: Tifton-----  Urban land.	Moderate: seepage.	Slight-----	Not needed-----	Slope, fast intake.	Too sandy-----	Favorable.
Wa----- Wahee	Slight-----	Severe: wetness.	Floods, percs slowly.	Percs slowly, wetness, slow intake.	Not needed-----	Wetness, percs slowly.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol &lt; means less than; &gt; means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Ah----- Alapaha	0-28	Loamy sand-----	SM	A-2	0	100	99-100	70-95	15-31	---	NP
	28-46	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-4	0	99-100	98-100	70-95	30-45	19-30	5-10
	46-70	Sandy clay loam	SC	A-2, A-4, A-6	0	93-100	88-100	66-90	29-40	22-30	7-22
An*: Alapaha-----	0-28	Loamy sand-----	SM	A-2	0	100	99-100	70-95	15-31	---	NP
	28-46	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-4	0	99-100	98-100	70-95	30-45	19-30	5-10
	46-70	Sandy clay loam	SC	A-2, A-4, A-6	0	93-100	88-100	66-90	29-40	22-30	7-22
Urban land.											
AoA----- Albany	0-46	Sand-----	SM	A-2	0	100	100	75-90	12-23	---	NP
	46-54	Sandy loam-----	SM	A-2	0	100	100	75-92	22-30	---	NP
	54-65	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	97-100	95-100	70-100	25-50	<40	NP-17
ArA----- Ardilla	0-10	Loamy sand-----	SM	A-2	0	98-100	95-100	80-90	20-35	---	NP
	10-26	Sandy clay loam	SM, SM-SC, SC	A-2, A-4	0	98-100	95-100	75-90	30-45	<30	NP-8
	26-72	Sandy clay loam	SM, SM-SC, SC	A-2, A-4	0	95-100	90-100	70-90	35-50	<35	NP-10
Cn----- Clarendon	0-9	Loamy sand-----	SM, SP-SM	A-2	0	98-100	95-100	65-90	10-30	<20	NP-3
	9-45	Sandy clay loam	SC, CL, SM-SC, CL-ML	A-4, A-6	0	98-100	95-100	75-95	36-55	20-40	5-15
	45-62	Sandy clay loam	SC, CL, SM-SC, CL-ML	A-2, A-4, A-6	0	99-100	98-100	80-95	30-55	20-40	5-15
CoB, CoC, CoD----- Cowarts	0-5	Loamy sand-----	SM	A-2	0	90-100	85-100	50-80	13-30	---	NP
	5-10	Fine sandy loam, sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	90-100	60-90	23-45	20-40	NP-15
	10-37	Sandy clay loam, sandy clay.	SM-SC, SM, SC	A-6, A-7	0	95-100	90-100	60-90	25-50	30-54	11-23
	37-65	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	30-58	25-53	5-20
CoB2, CoC2----- Cowarts	0-4	Sandy loam-----	SM, SM-SC	A-2, A-4	0	95-100	90-100	75-90	20-40	<20	NP-5
	4-31	Sandy clay loam, sandy clay.	SM-SC, SM, SC	A-6, A-7	0	95-100	90-100	60-90	25-50	30-54	11-23
	31-65	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	30-58	25-53	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
DoA, DoB----- Dothan	0-14	Loamy sand-----	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	14-42	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	42-60	Sandy clay loam, sandy clay.	SM-SC, SC, SM	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-50	25-45	4-18
EuB, EuC, EuD----- Esto	0-6	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-96	40-55	<20	NP-4
	6-12	Clay loam, sandy clay, sandy clay loam.	CL, SC	A-6, A-7	0	95-100	95-100	90-100	45-90	35-50	12-25
	12-60	Clay loam, clay, sandy clay.	CL, CH, MH	A-6, A-7	0	95-100	95-100	90-100	51-90	35-55	18-30
FaB----- Faceville	0-5	Sandy loam-----	SM, SM-SC	A-2, A-4	0	90-100	85-100	72-97	17-38	<25	NP-5
	5-9	Sandy clay loam, sandy clay.	SC, ML, CL, SM	A-4, A-6	0	98-100	90-100	85-98	46-66	<35	NP-13
	9-66	Sandy clay, clay, clay loam.	CL, SC	A-6, A-7	0	98-100	95-100	75-99	45-72	25-43	11-23
FcC2----- Faceville	0-4	Sandy clay loam	SM, CL-ML, ML, SM-SC	A-4	0	90-100	90-100	63-97	40-58	<25	NP-7
	4-65	Sandy clay, clay, clay loam.	CL, SC	A-6, A-7	0	98-100	95-100	75-99	45-72	25-43	11-23
FsB----- Fuquay	0-26	Loamy sand-----	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
	26-31	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	85-100	85-100	60-80	23-45	<25	NP-13
	31-65	Sandy clay loam	SC, CL	A-2, A-4, A-6	0	95-100	90-100	60-93	28-55	20-39	8-25
Gr----- Grady	0-5	Sandy loam-----	SM, ML, CL-ML, SM-SC	A-4, A-6	0	100	99-100	85-100	40-75	<30	NP-15
	5-9	Clay loam, sandy clay loam, loam.	CL, CH	A-6	0	100	100	90-100	51-80	25-40	11-20
	9-65	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	30-50	12-25
He----- Herod	0-11	Sandy loam-----	SM, SC, CL, ML	A-2, A-4	0	100	95-100	50-90	30-75	<30	NP-10
	11-48	Clay loam, sandy clay loam, loam.	CL	A-6	0	100	95-100	80-100	55-85	25-40	11-20
	48-62	Sandy loam, sandy clay loam.	CL, SM, ML, SC	A-4, A-6	0	100	95-100	70-90	36-60	<30	NP-15
KeC----- Kershaw	0-90	Coarse sand-----	SP, SP-SM	A-2, A-3	0	98-100	98-100	50-80	1-7	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
KO#: Kinston-----	0-6	Fine sandy loam	SM, SC, SM-SC	A-2, A-4	0	100	98-100	55-80	25-50	<25	NP-8
	6-44	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
	44-62	Variable.									
Osier-----	0-6	Fine sandy loam	SM	A-2	0	100	98-100	70-90	13-25	---	NP
	6-12	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	95-100	65-90	5-20	---	NP
	12-65	Coarse sand, sand, fine sand.	SP, SP-SM	A-1, A-3	0	100	90-100	40-60	2-10	---	NP
LaB----- Lakeland	0-46	Sand-----	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	46-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
Le----- Leeffield	0-31	Loamy sand-----	SM, SW-SM, SP-SM	A-2	0	98-100	95-100	65-95	10-20	---	NP
	31-37	Sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	95-100	93-100	65-95	20-40	<40	NP-16
	37-65	Sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	95-100	95-100	65-90	20-40	<40	NP-20
Lf#: Leeffield-----	0-31	Loamy sand-----	SM, SW-SM, SP-SM	A-2	0	98-100	95-100	65-95	10-20	---	NP
	31-37	Sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	95-100	93-100	65-95	20-40	<40	NP-16
	37-65	Sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	95-100	95-100	65-90	20-40	<40	NP-20
Lf#: Urban land.											
LmB, LmC----- Lucy	0-28	Loamy sand-----	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	28-36	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	10-30	NP-15
	36-65	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20
Oc----- Ocilla	0-24	Loamy sand-----	SM, SP-SM	A-2, A-3	0	100	95-100	75-100	8-35	---	NP
	24-72	Sandy loam, sandy clay loam.	SM, CL, SC	A-2, A-4, A-6	0	100	95-100	80-100	30-55	<40	NP-18
Oe----- Olustee	0-9	Sand-----	SP-SM, SM	A-3, A-2-4	0	100	100	75-100	5-15	---	NP
	9-22	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	75-100	8-15	---	NP
	22-37	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	75-100	5-15	---	NP
	37-65	Sandy clay loam, sandy loam.	SC	A-2, A-4, A-6	0	100	100	85-100	30-45	25-38	8-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
OrA, OrB, OrC----- Orangeburg	0-10	Loamy sand-----	SM	A-2	0	98-100	95-100	60-75	14-27	---	NP
	10-15	Sandy loam-----	SM	A-2	0	98-100	95-100	70-84	25-35	<30	NP-4
	15-65	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
OsD2----- Orangeburg	0-7	Sandy loam-----	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
	7-12	Sandy loam-----	SM	A-2	0	98-100	95-100	70-84	25-35	<30	NP-4
	12-54	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
	54-64	Sandy clay loam, sandy clay.	SC, CL	A-6, A-4	0	98-100	95-100	70-97	40-65	25-40	8-21
Pe----- Pelham	0-33	Loamy sand-----	SM	A-2	0	100	95-100	75-90	15-30	---	NP
	33-62	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	65-90	30-50	15-30	2-12
Ra----- Rains	0-11	Loamy fine sand	SM	A-2	0	100	95-100	60-98	15-35	<30	NP-4
	11-65	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
Se----- Stilson	0-27	Loamy sand-----	SM	A-2	---	94-100	94-100	74-92	15-24	---	NP
	27-44	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-6, A-4	---	89-100	86-100	77-94	28-41	<29	NP-13
	44-65	Sandy loam, sandy clay loam.	SM, SC	A-2, A-6	---	96-100	95-100	70-99	30-50	<40	NP-20
Sr*: Stilson-----	0-27	Loamy sand-----	SM	A-2	---	94-100	94-100	74-92	15-24	---	NP
	27-44	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-6, A-4	---	89-100	86-100	77-94	28-41	<29	NP-13
	44-65	Sandy loam, sandy clay loam.	SM, SC	A-2, A-6	---	96-100	95-100	70-99	30-50	<40	NP-20
Urban land.											
StD2----- Sunsweet	0-4	Sandy loam-----	SM	A-2	0	80-100	55-92	45-90	17-30	---	NP
	4-14	Clay, sandy clay, sandy clay loam.	CL, SC	A-6, A-7, A-4	0	95-100	90-100	80-97	40-70	30-40	8-16
	14-65	Clay, sandy clay	CL	A-6, A-7	0	95-100	92-100	90-99	55-80	36-47	13-25
SuB, SuD----- Susquehanna	0-6	Sandy loam-----	ML, SM	A-4	0	100	100	65-90	40-55	---	NP
	6-80	Clay, silty clay loam, silty clay.	CH, MH	A-7	0	100	100	88-100	80-98	50-90	28-56
TfA, TfB, TfC----- Tifton	0-10	Loamy sand-----	SM, SP-SM, SM-SC	A-2	0	70-95	62-89	53-85	11-27	<25	NP-5
	10-15	Sandy loam, sandy clay loam.	SM, SM-SC	A-2	0	70-95	56-89	55-89	20-35	<25	NP-7
	15-38	Sandy clay loam	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	70-95	65-89	60-81	33-53	22-40	5-20
	38-65	Sandy clay loam	SC, CL	A-2, A-6, A-7	0	87-100	80-99	70-94	34-55	24-45	11-21

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TuB*, TuC*: Tifton-----	0-10	Loamy sand-----	SM, SP-SM, SM-SC	A-2	0	70-95	62-89	53-85	11-27	<25	NP-5
	10-15	Sandy loam, sandy clay loam.	SM, SM-SC	A-2	0	70-95	56-89	55-89	20-35	<25	NP-7
	15-38	Sandy clay loam	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	70-95	65-89	60-81	33-53	22-40	5-20
	38-65	Sandy clay loam	SC, CL	A-2, A-6, A-7	0	87-100	80-99	70-94	34-55	24-45	11-21
Urban land.											
Wa----- Wahee	0-14	Fine sandy loam	SM, SM-SC	A-2, A-4	0	100	95-100	50-85	30-50	<28	NP-7
	14-53	Clay, clay loam, silty clay.	CL, CH	A-7	0	100	100	95-100	70-90	41-60	18-32
	53-70	Variable.									

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
Ah----- Alapaha	0-28	6.0-20	0.05-0.08	4.5-5.5	Low-----	0.15	---
	28-46	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
	46-70	0.2-0.6	0.08-0.10	4.5-5.5	Low-----	0.28	
An*: Alapaha-----	0-28	6.0-20	0.05-0.08	4.5-5.5	Low-----	0.15	---
	28-46	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
	46-70	0.2-0.6	0.08-0.10	4.5-5.5	Low-----	0.28	
Urban land.							
AoA----- Albany	0-46	6.0-20	0.02-0.04	4.5-6.5	Low-----	0.17	5
	46-54	2.0-6.0	0.08-0.10	4.5-6.0	Low-----	0.20	
	54-65	0.6-2.0	0.10-0.16	4.5-6.0	Low-----	0.24	
ArA----- Ardilla	0-10	2.0-6.0	0.08-0.11	4.5-5.5	Low-----	0.24	5
	10-26	0.6-2.0	0.10-0.14	4.5-5.5	Low-----	0.28	
	26-72	0.2-0.6	0.10-0.15	4.5-5.5	Low-----	0.28	
Cn----- Clarendon	0-9	2.0-6.0	0.08-0.12	4.5-6.5	Low-----	0.15	5
	9-45	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.20	
	45-62	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.15	
CoB, CoC, CoD---- Cowarts	0-5	2.0-6.0	0.06-0.10	4.5-5.5	Low-----	0.20	3
	5-10	0.6-2.0	0.10-0.14	4.5-5.5	Low-----	0.28	
	10-37	0.2-0.6	0.10-0.16	4.5-5.5	Low-----	0.28	
	37-65	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.24	
CoB2, CoC2----- Cowarts	0-4	2.0-6.0	0.08-0.13	4.5-5.5	Low-----	0.24	3
	4-31	0.2-2.0	0.10-0.16	4.5-5.5	Low-----	0.28	
	31-65	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.24	
DoA, DoB----- Dothan	0-14	2.0-6.0	0.06-0.10	4.5-5.5	Very low-----	0.20	4
	14-42	0.6-2.0	0.10-0.14	4.5-5.5	Low-----	0.28	
	42-60	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.28	
EuB, EuC, EuD---- Esto	0-6	2.0-6.0	0.11-0.15	4.5-5.5	Low-----	0.28	3
	6-12	0.6-2.0	0.12-0.17	4.5-5.5	Moderate-----	0.32	
	12-60	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.32	
FaB----- Faceville	0-5	6.0-20	0.06-0.09	4.5-5.5	Low-----	0.28	5
	5-9	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.37	
	9-66	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.37	
FcC2----- Faceville	0-4	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.32	3
	4-65	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.37	
FsB----- Fuquay	0-26	>6.0	0.04-0.09	4.5-5.5	Low-----	0.20	5
	26-31	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.20	
	31-65	0.06-0.2	0.10-0.13	4.5-5.5	Low-----	0.20	
Gr----- Grady	0-5	0.6-2.0	0.10-0.18	3.6-5.5	Low-----	0.10	---
	5-9	0.2-0.6	0.10-0.15	3.6-5.5	Low-----	0.10	
	9-65	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	0.10	
He----- Herod	0-11	0.6-2.0	0.12-0.20	5.1-6.0	Low-----	---	---
	11-48	0.6-2.0	0.14-0.20	5.6-7.3	Low-----	---	
	48-62	0.6-2.0	0.12-0.16	5.6-7.3	Low-----	---	
KeC----- Kershaw	0-90	>20	0.02-0.05	4.5-6.0	Very low-----	0.15	5

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
KO#:							
Kinston-----	0-6	2.0-6.0	0.13-0.19	4.5-6.0	Low-----	0.24	5
	6-44	0.6-2.0	0.14-0.18	4.5-5.5	Low-----	0.32	
	44-62	---	---	---	-----	---	
Osier-----	0-6	6.0-20	0.10-0.15	4.5-6.0	Low-----	---	---
	6-12	6.0-20	0.03-0.10	4.5-6.0	Low-----	---	
	12-65	>20	0.02-0.05	4.5-6.0	Low-----	---	
LaB-----	0-46	>20	0.05-0.08	4.5-6.0	Very low-----	0.17	5
Lakeland	46-80	>20	0.03-0.08	4.5-6.0	Very low-----	---	
Le-----	0-31	6.0-20	0.04-0.07	4.5-6.0	Low-----	0.10	5
Leeffield	31-37	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.15	
	37-65	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.10	
Lf#:							
Leeffield-----	0-31	6.0-20	0.04-0.07	4.5-6.0	Low-----	0.10	5
	31-37	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.15	
	37-65	0.2-0.6	0.08-0.12	4.5-5.5	Low-----	0.10	
Urban land.							
LmB, LmC-----	0-28	6.0-20	0.06-0.10	5.1-5.5	Low-----	0.20	5
Lucy	28-36	2.0-6.0	0.10-0.12	4.5-5.5	Low-----	0.24	
	36-65	0.6-2.0	0.12-0.14	4.5-5.5	Low-----	0.28	
Oc-----	0-24	2.0-20	0.05-0.08	4.5-5.5	Low-----	0.17	5
Ocilla	24-72	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24	
Oe-----	0-9	6.0-20	0.05-0.10	4.5-5.5	Very low-----	0.20	5
Olustee	9-22	0.6-2.0	0.10-0.15	4.5-5.5	Very low-----	0.20	
	22-37	6.0-20	0.03-0.08	4.5-5.5	Very low-----	0.20	
	37-65	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.32	
OrA, OrB, OrC----	0-10	2.0-6.0	0.06-0.08	4.5-6.0	Low-----	0.10	5
Orangeburg	10-15	2.0-6.0	0.07-0.10	4.5-5.5	Low-----	0.20	
	15-65	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
OsD2-----	0-7	2.0-6.0	0.07-0.10	4.5-6.0	Low-----	0.17	5
Orangeburg	7-12	2.0-6.0	0.07-0.10	4.5-5.5	Low-----	0.20	
	12-54	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
	54-64	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
Pe-----	0-33	6.0-20	0.05-0.08	4.5-5.5	Very low-----	0.10	5
Pelham	33-62	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.24	
Ra-----	0-11	6.0-20	0.07-0.10	4.5-6.5	Low-----	0.17	5
Rains	11-65	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.24	
Se-----	0-27	6.0-20	0.06-0.09	4.5-5.5	Low-----	0.17	5
Stilson	27-44	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24	
	44-65	0.6-2.0	0.08-0.10	4.5-5.5	Low-----	0.17	
Sr#:							
Stilson-----	0-27	6.0-20	0.06-0.09	4.5-5.5	Low-----	0.17	5
	27-44	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24	
	44-65	0.6-2.0	0.08-0.10	4.5-5.5	Low-----	0.17	
Urban land.							
StD2-----	0-4	2.0-6.0	0.09-0.12	4.5-5.5	Low-----	0.32	2
Sunsweet	4-14	0.2-0.6	0.07-0.10	4.5-5.5	Moderate-----	0.37	
	14-65	0.2-0.6	0.07-0.10	4.5-5.5	Moderate-----	0.28	
SuB, SuD-----	0-6	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.43	3
Susquehanna	6-80	<0.06	0.15-0.20	4.5-5.5	High-----	0.32	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
TfA, TfB, TfC----- Tifton	0-10	6.0-20	0.03-0.08	4.5-5.5	Low-----	0.05	4
	10-15	6.0-20	0.08-0.12	4.5-5.5	Low-----	0.24	
	15-38	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.24	
	38-65	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.17	
TuB*, TuC*: Tifton-----	0-10	6.0-20	0.03-0.08	4.5-5.5	Low-----	0.05	4
	10-15	6.0-20	0.08-0.12	4.5-5.5	Low-----	0.24	
	15-38	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.24	
	38-65	0.6-2.0	0.10-0.13	4.5-5.5	Low-----	0.17	
Urban land.							
Wa----- Wahee	0-14	0.6-2.0	0.10-0.15	4.5-6.0	Low-----	0.28	5
	14-53	0.06-0.2	0.12-0.20	4.5-5.5	Moderate-----	0.28	
	53-70	0.2-0.6	0.12-0.20	4.5-5.5	Moderate-----	0.28	

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the text explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
Ah----- Alapaha	D	Occasional	Brief-----	Jan-Apr	1.0-2.0	Apparent	Dec-May	High-----	High.
An*: Alapaha----- Urban land.	D	Occasional	Brief-----	Jan-Apr	1.0-2.0	Apparent	Dec-May	High-----	High.
AoA----- Albany	C	Rare-----	---	---	1.0-2.5	Apparent	Dec-Mar	High-----	High.
ArA----- Ardilla	C	None-----	---	---	1.0-2.0	Apparent	Nov-Apr	High-----	High.
Cn----- Clarendon	C	None-----	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
CoB, CoB2, CoC, CoC2, CoD----- Cowarts	C	None-----	---	---	>6.0	---	---	Moderate	Moderate.
DoA, DoB----- Dothan	B	None-----	---	---	3.5-4.0	Perched	Jan-Apr	Moderate	Moderate.
EuB, EuC, EuD----- Esto	B	None-----	---	---	>6.0	---	---	High-----	High.
FaB, FcC2----- Faceville	B	None-----	---	---	>6.0	---	---	Low-----	Moderate.
FsB----- Fuquay	B	None-----	---	---	2.5-4.0	Perched	Jan-Mar	Low-----	High.
Gr----- Grady	D	Frequent----	Very long	Dec-Jun	+2-1.0	Swamp	Dec-Jun	High-----	High.
He----- Herod	D	Frequent----	Brief-----	Nov-Apr	0.5-1.5	Apparent	Dec-Mar	High-----	Moderate.
KeC----- Kershaw	A	None-----	---	---	>6.0	---	---	Low-----	High.
KO*: Kinston-----	D	Frequent----	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-Jun	High-----	High.
Osier-----	D	Common-----	Brief-----	Dec-Apr	0.0-1.0	Apparent	Nov-Mar	High-----	High.
LaB----- Lakeland	A	None-----	---	---	>6.0	---	---	Low-----	Moderate.
Le----- Leefield	C	None-----	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
Lf*: Leefield----- Urban land.	C	None-----	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
LmB, LmC----- Lucy	A	None-----	---	---	>6.0	---	---	Low-----	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
Oc----- Ocilla	C	Rare-----	Brief-----	Dec-Apr	1.0-2.5	Apparent	Dec-Apr	High-----	Moderate.
Oe----- Olustee	B/D	None-----	---	---	0-1.0	Apparent	Dec-Apr	High-----	High.
OrA, OrB, OrC, OsD2----- Orangeburg	B	None-----	---	---	>6.0	---	---	Moderate	Moderate.
Pe----- Pelham	B/D	Frequent---	Brief-----	Dec-Mar	0.5-1.5	Apparent	Jan-Apr	High-----	High.
Ra----- Rains	B/D	None-----	---	---	0-1.0	Apparent	Nov-Apr	High-----	High.
Se----- Stilson	B	None-----	---	---	2.5-3.0	Perched	Dec-Apr	Moderate	High.
Sr*: Stilson----- Urban land.	B	None-----	---	---	2.5-3.0	Perched	Dec-Apr	Moderate	High.
StD2----- Sunsweet	C	None-----	---	---	>6.0	---	---	Moderate	Moderate.
SuB, SuD----- Susquehanna	D	None-----	---	---	>6.0	---	---	High-----	High.
TfA, TfB, TfC----- Tifton	B	None-----	---	---	>6.0	---	---	Low-----	Moderate.
TuB*, TuC*: Tifton----- Urban land.	B	None-----	---	---	>6.0	---	---	Low-----	Moderate.
Wa----- Wahee	D	Occasional	Brief-----	Dec-Apr	0.5-1.5	Apparent	Dec-Mar	High-----	High.

\* See description of the map unit for composition and behavior characteristics of the map unit.



TABLE 17.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution										Liquid limit	Plasticity index	Moisture density		Percentage volume change			
			Percentage passing sieve--							Percentage smaller than--					Max. dry density	Optimum moisture	Total	Swell	Shrink	
	AASHTO	Unified	2	3/4	3/8	No.	No.	No.	No.	.02	.005	.002								
			inch	inch	inch	4	10	40	200	mm	mm	mm								
													Pct		Lb/ Ft <sup>3</sup>	Pct	Pct	Pct	Pct	
Tifton loamy sand: <sup>6</sup> (S68GA-142-001)																				
Apcn----- 0 to 12	A-2-4(00)	SM	100	100	98	95	89	66	18	12	8	6	--	NP	122	9	1.2	0.6	0.6	
B21tcn---16 to 42	A-6 (02)	SC	100	100	99	95	88	73	41	38	33	30	32	14	119	12	4.5	2.3	2.2	
Tifton loamy sand: <sup>7</sup> (S68GA-142-002)																				
Apcn----- 0 to 10	A-2-4(00)	SW-SM	100	100	91	70	63	53	11	8	6	5	--	NP	129	7	1.1	0.9	0.2	
B21tcn---14 to 26	A-6 (01)	SC	100	100	99	91	86	78	37	34	29	28	27	12	119	13	5.5	2.0	3.5	
Tifton loamy sand: <sup>8</sup> (S68GA-142-003)																				
Apcn----- 0 to 12	A-2-4(00)	SW-SM	100	100	91	84	80	56	12	9	7	5	--	NP	123	9	2.4	1.0	1.4	
B21tcn---18 to 36	A-2-4(00)	SM	100	100	97	90	84	70	28	24	21	19	--	NP	122	11	3.4	1.6	1.8	
B23t-----46 to 72	A-6 (01)	SC	100	100	100	99	97	80	39	38	37	35	33	13	112	14	6.0	2.9	3.1	

<sup>1</sup> Alapaha loamy sand: 1.2 miles northeast of Oak Grove Church on county road, 1.1 miles east on Warwick Road, 0.4 mile south on farm road, 0.2 mile east into wooded area; Turner County.

<sup>2</sup> Alapaha loamy sand: 1.4 miles northeast of Prospect Church on county road, 150 feet northwest of road in pasture; Turner County.

<sup>3</sup> Alapaha loamy sand: 3.3 miles west of Ashburn courthouse on county road, 100 feet south of road in wooded area; Turner County.

<sup>4</sup> Dothan sand: 0.7 mile northwest of Raines Station along county road, 300 yards south on Highway 257, 40 feet east of road; Crisp County.

<sup>5</sup> Lucy sand: 2.3 miles north of Daphne Station along county road, 1.4 miles east on county road, 0.6 mile south in pasture; Crisp County.

<sup>6</sup> Tifton loamy sand: 0.3 mile south of Ashburn radio station on Highway 41, 0.3 mile west on county road, 100 feet south of road in field; Turner County.

<sup>7</sup> Tifton loamy sand: 0.7 mile north of Oak Grove Church on county road, 75 feet east of road in field; Turner County.

<sup>8</sup> Tifton loamy sand: 0.9 mile north of Oak Grove Church, 0.2 mile east on Warwick Road, 75 feet south of road; Turner County. This pedon is taxadjunct to the Tifton series because the B21tcn horizon contains too little clay and is nonplastic.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alapaha-----	Loamy, siliceous, thermic Arenic Plinthic Paleaquults
Albany-----	Loamy, siliceous, thermic Grossarenic Paleudults
Ardilla-----	Fine-loamy, siliceous, thermic Fragiaquic Paleudults
Clarendon-----	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
*Cowarts-----	Fine-loamy, siliceous, thermic Typic Hapludults
Dothan-----	Fine-loamy, siliceous, thermic Plinthic Paleudults
Esto-----	Clayey, kaolinitic, thermic Typic Paleudults
Faceville-----	Clayey, kaolinitic, thermic Typic Paleudults
Fuquay-----	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Grady-----	Clayey, kaolinitic, thermic Typic Paleaquults
Herod-----	Fine-loamy, siliceous, nonacid, thermic Typic Fluvaquents
Kershaw-----	Thermic, uncoated Typic Quartzipsamments
Kinston-----	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Lakeland-----	Thermic, coated Typic Quartzipsamments
Leefield-----	Loamy, siliceous, thermic Arenic Plinthaquic Paleudults
Lucy-----	Loamy, siliceous, thermic Arenic Paleudults
Ocilla-----	Loamy, siliceous, thermic Aquic Arenic Paleudults
Olustee-----	Sandy, siliceous, thermic Ultic Haplaquods
**Orangeburg-----	Fine-loamy, siliceous, thermic Typic Paleudults
Osier-----	Siliceous, thermic Typic Psammaquents
Pelham-----	Loamy, siliceous, thermic Arenic Paleaquults
Rains-----	Fine-loamy, siliceous, thermic Typic Paleaquults
Stilson-----	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Sunsweet-----	Clayey, kaolinitic, thermic Plinthic Paleudults
Susquehanna-----	Fine, montmorillonitic, thermic Vertic Paleudalfs
Tifton-----	Fine-loamy, siliceous, thermic Plinthic Paleudults
Wahee-----	Clayey, mixed, thermic Aeric Ochraqults

\* The soils in map units CoB2 and CoC2 have more than 5 percent nodules of ironstone on the surface and in the A horizon; these soils are taxadjuncts to the Cowarts series.

\*\* Soils in map unit OsD2 have a decrease in clay content in the upper 60 inches of more than 20 percent; these soils are taxadjuncts to the Orangeburg series.

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