United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Tennessee Agricultural
Experiment Station

Soil Survey of Chester County, Tennessee

How To Use This Soil Survey

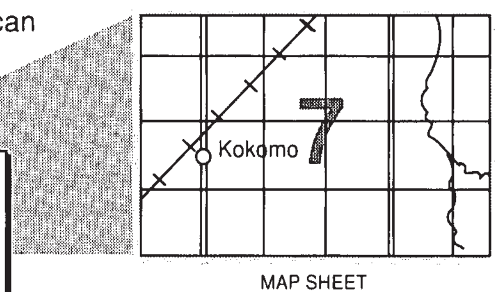
General Soil Map

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

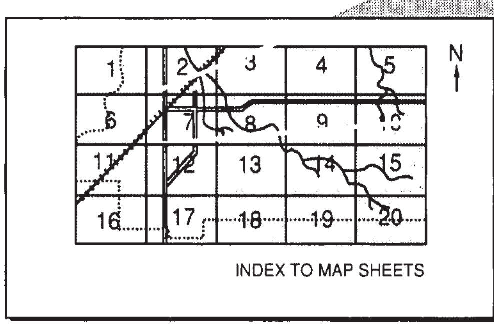
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

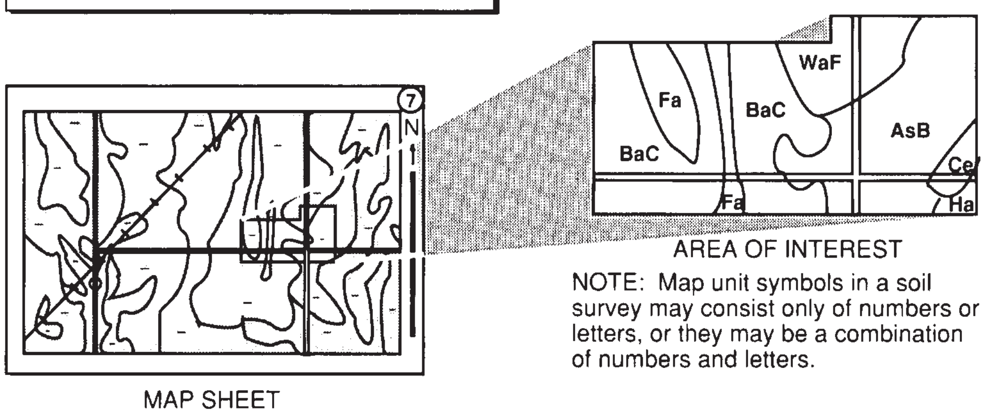
The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



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



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



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

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

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1986. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Soil Conservation Service and the Tennessee Agricultural Experiment Station. Assistance for the survey was provided by the Chester County Board of Commissioners, the Tennessee Valley Authority, and the Tennessee Department of Agriculture. The survey is part of the technical assistance furnished to the Chester County Soil Conservation District.

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

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

Cover: Well managed fescue and white clover in an area of Enville silt loam, occasionally flooded. This area is used for hay and grazing.

Contents

Issued March 1994

Index to Map Units

Summary of Tables

Foreword

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are 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.

Jerry S. Lee
State Conservationist
Soil Conservation Service

Soil Survey of Chester County, Tennessee

By Craig A. Ditzler and David W. Thomas, Soil Conservation Service, and
Richard M. Cody, Hugh C. Monger, and Jeff D. Nanny, Chester County

United States Department of Agriculture, Soil Conservation Service,
in cooperation with
Tennessee Agricultural Experiment Station

CHESTER COUNTY is in the southwestern part of Tennessee (fig. 1). It has a land area of 184,700 acres, or about 288.6 square miles. Henderson, the county seat, is the largest town in the county. According to census data, the county had a population of 12,727 in 1980.

The economy of the county is based mainly on the sale of farm products. Agriculture and related sales and services provide most of the employment in the county. Some county residents are employed by industry and government in Jackson, Tennessee.

Figure 1.—Location of Chester County in Tennessee.

General Nature of the County

This section gives general information about Chester County. It describes climate; history and development; physiography, relief, and drainage; land use; and geology and underlying material.

Climate

Chester County has long, hot summers and rather cool winters. An occasional cold wave brings near-freezing or subfreezing temperatures but seldom much snow. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation, which falls mainly during afternoon thunderstorms, is adequate for all of the crops commonly grown in the county.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Jackson Experiment Station in the period 1951 to 1981. 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 39 degrees F and the average daily minimum temperature is 30 degrees. The lowest temperature on record, which occurred at Jackson Experiment Station on February 2, 1951, is -21 degrees. In summer, the average temperature is 78 degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Jackson Experiment Station on July 28, 1952, is 106 degrees.

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

The total annual precipitation is about 50 inches. About 50 percent of this precipitation usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 5.5 inches at Jackson Experiment Station on May 10, 1974. Thunderstorms occur on about 53 days each year. Severe local storms, including tornadoes, may occasionally strike in the county. They are of short duration and cause damage in scattered small areas.

The average seasonal snowfall is about 5 inches. The greatest snow depth at any one time during the period of record was 11 inches. On an average of 3 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in spring.

History and Development

The first settlers arrived in what is now Chester County in 1820-24. Mostly from Virginia, North Carolina, and South Carolina, they first settled in the vicinity of Mifflin in about 1821. Colonel J. Purdy named the settlement Mifflin after his hometown in Pennsylvania. He was a surveyor, businessman, and member of the Constitutional Convention of 1834. Other early settlers were James Thomas, Jere Hendrick, and Micajah Jones.

Robert McRea, an early resident of Mifflin, built one of the first mills along the Forked Deer River. James Glass, a neighbor, taught in the first school in the area around 1828. Thomas Garland, the first circuit rider west of the Tennessee River, also was an early resident of what is now north Chester County.

The first road built through the county began at Lexington in Henderson County. It passed through Mifflin, Jacks Creek, and Montezuma in Chester County and then extended to Bolivar in Hardeman County.

Chester County was formed in 1882 from parts of what was then McNairy, Hardeman, Madison, and Henderson Counties. Its name was changed from Wisdom County to Chester County in honor of Colonel Robert J. Chester, a veteran of the War of 1812 *(3)*.

Physiography, Relief, and Drainage

Most of Chester County consists of sloping to very steep, highly dissected uplands and nearly level, narrow flood plains along the numerous small creeks. The west-central part of the county consists of a nearly level, broad flood plain and a nearly level to sloping terrace along the Forked Deer River.

The elevation ranges from 390 feet on the bottom of the Forked Deer River to a maximum of 740 feet at Sand Mountain in the uplands near Cabo in the eastern part of the county.

The Forked Deer River drains about 132,400 acres in the county. Surface water on about 24,000 acres in the eastern part of the county, including the watersheds of Melton, Little White Oak, and Middleton Creeks, drains into the Tennessee River. Surface water on about 25,000 acres in the western part of the county, including the watersheds of Clover, Little Piney, Kise, Woodville, and Hamstring Creeks, drains into the Hatchie River.

Land Use

Most of Chester County is used as farmland. In 1979, about 160 acres of the total land area was used for industrial development, 6,340 acres was used for residential development, 1,400 acres was water areas less than 40 acres in size, and 13,400 acres was public recreation land. Most of the public recreation land is within the Chickasaw State Park and Forest. Opportunities for camping, fishing, swimming, boating, tennis, and horseback riding are available in the State park, and opportunities for hiking and hunting are available in the State forest.

Geology and Underlying Material

Ronald L. Graner, geologist, Soil Conservation Service, helped prepare this section.

All of what is now Chester County was once the ocean floor, where marine, or Coastal Plain, deposits were laid down, layer upon layer, over a span of millions of years. Each layer is different from the one above or below it, and each reflects a type of ocean environment, such as deep or shallow waters and lagoons, and the source of the material being deposited. The county has eight identifiable Coastal Plain formations, or layers, and a layer of more recently deposited fluvial material (table 4). The youngest of these formations are in the western part of the county, and the oldest are in the eastern part. The formations range from the Tertiary-age Claiborne formation in the northwestern part of the county to the Upper Cretaceous-age Sardis formation in the far southeast corner. The formations vary considerably in color and texture. They range from the brown clays of the Porters Creek Clay and Demopolis formations to the red sands of the Claiborne and McNairy formations.

The many different soil types in Chester County are related to the underlying Coastal Plain formations. In the northwestern part of the county, Ruston, Savannah, and Smithdale soils formed dominantly in the Claiborne and Wilcox formations. The southwestern part of the county, known locally as "The Nation," is a complex pattern of the Claiborne, Wilcox, Porters Creek Clay, Clayton, and McNairy formations. Ruston, Savannah, and Smithdale soils formed dominantly in the Claiborne formation and in the upper part of the Wilcox formation.

Ruston, Savannah, and Smithdale soils formed dominantly in the Clayton and McNairy formations. Luverne soils formed dominantly in the lower Wilcox formation. Chickasaw soils formed dominantly in the Porters Creek Clay formation and in the upper Clayton formation. In much of the eastern part of the county, near Roby and Enville, Luverne and Brantley soils formed dominantly in the Coon Creek formation. In the southeastern part of the county, Oktibbeha and Susquehanna soils formed dominantly in the Demopolis formation and in a few small outcrops of the Sardis formation. In much of the northern and central parts of the county, which consist of old stream terraces, Tertiary- and Quaternary-age fluvial deposits cap the Clayton and McNairy formations. These deposits have been mixed with loess. Freeland, Hatchie, and Guyton soils formed dominantly on the lower, Quaternary-age terraces, mainly along the Forked Deer River, Sugar Creek, and Turkey Creek. Providence and Lexington soils formed dominantly on the higher, Tertiary-aged terraces *(5)*.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of underlying material. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material generally is devoid of roots and other living organisms and has been little changed by other biological activity.

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

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

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

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

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

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

Map Unit Composition

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

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

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

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it 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 another but in a different pattern.

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

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

In some areas the soils at the boundaries of the general soil map of this county do not match those of adjacent counties. Differences result from variations in soil patterns and in the scale of mapping and from recent advances in soil classification.

Soil Descriptions

Dominantly Nearly Level Soils on Flood Plains and Low Terraces

These soils make up about 19 percent of the survey area. They are along the Forked Deer River and other major streams throughout the county. They are loamy and are poorly drained to well drained. They formed in alluvium.

1. Kinston-Bibb

Loamy, poorly drained soils formed in alluvium; subject to frequent flooding

This map unit consists of soils on broad flood plains along the larger streams, including the Forked Deer River. Some areas of the unit are as much as 1 mile wide. The soils are frequently flooded for long periods. A natural levee extending along the waterway keeps floodwater from returning to the channel. The flood plains have numerous small depressions, which remain ponded throughout nearly all of the year. Beaver dams and accumulations of debris and silt in the channel increase the hazard of flooding. Slopes generally are less than 1 percent.

This map unit makes up about 6 percent of the survey area. It is about 60 percent Kinston soils, 20 percent Bibb soils, and 20 percent minor soils.

Kinston and Bibb soils are on the lower parts of the flood plains. Kinston soils have a loamy surface layer and a loamy subsoil. Bibb soils have a loamy surface layer and stratified, loamy and sandy material in the lower part.

Of minor extent are Enville and Tooterville soils along natural levees and along the edges of the unit in some areas and luka soils in some of the higher areas.

About 90 percent of the acreage in this unit is wooded. About 10 percent is used for pasture, grain sorghum, or soybeans.

The major soils are not suited to pasture or cultivated crops because they are frequently flooded for long periods and have a seasonal high water table. Most cultivated crops grow only fairly well.

These soils are suited to water-tolerant trees, such as water oak, water tupelo, and baldcypress. Other species, such as sweetgum and white oak, have been markedly affected as the hazard of flooding has become more severe. In many areas the trees are under stress or have died. Planting and harvesting are restricted to periods when the floodwater has receded. Unless the hazard of flooding is reduced, timber stand improvement is difficult in many areas.

These soils are not suited to building site development or sanitary facilities. The frequent flooding and the seasonal high water table are the main limitations.

2. Enville-luka-Ochlockonee

Loamy, well drained to somewhat poorly drained soils formed in alluvium; subject to occasional flooding

This map unit consists of soils on relatively narrow flood plains along streams that drain areas underlain mainly by loamy Coastal Plain deposits. The flood plains are rarely more than one-quarter of a mile wide. Steep soils on uplands from which numerous intermittent drainageways enter the flood plains border most areas of the unit. Springs and seepy areas are common at the base of the uplands. Drainage ditches and waterways are used in many areas to direct surface water into the channel. The soils on flood plains are occasionally flooded for brief periods. Slopes range from 0 to 2 percent.

This map unit makes up about 4 percent of the survey area. It is about 40 percent Enville soils, 30 percent Iuka soils, 10 percent Ochlockonee soils, and 20 percent minor soils.

Enville soils are somewhat poorly drained and generally are along the middle of lower reaches of the drainageways. They have a loamy surface layer and a substratum of stratified, loamy material. In most areas the substratum is underlain by a loamy buried soil at a depth of about 20 to 40 inches.

Iuka soils are moderately well drained and generally are along the upper reaches of the drainageways or on second bottoms. They have a loamy surface layer and alternating layers of loamy material in the substratum. In most areas the substratum is underlain by a loamy buried soil at a depth of about 30 to 40 inches.

Ochlockonee soils are well drained and are on natural levees along the creeks and along the upper reaches of the drainageways. They have a loamy surface layer and alternating layers of loamy and sandy material in the substratum. In most areas the substratum is underlain by a loamy buried soil.

Of minor extent are the poorly drained, frequently flooded Bibb soils in low spots and the moderately well drained Freeland and Savannah and somewhat poorly drained Hatchie soils on terraces.

About 75 percent of the acreage in this unit has been cleared and is used for cultivated crops or pasture. The rest of the acreage is wooded.

The well drained soils are suited to corn, soybeans, and grain sorghum, and the moderately well drained soils are suited to small grain. The seasonal high water table and the flooding are the main management concerns. A drainage system and protection from flooding are needed.

These soils are suited to pasture. Grazing when the soils are wet, however, compacts the surface layer. Flooding is a hazard if the pasture does not include higher ground.

These soils are suited to trees. Productivity is high. Most of the woodland is in areas of the wetter soils. Some of these areas are frequently flooded. The most common trees in these areas are yellow poplar, sweetgum, and willow oak. The timber stands generally produce below their capacity and could be improved by woodland management.

These soils are not suited to building site development or sanitary facilities. The flooding and the seasonal high water table are the main limitations.

3. Steens-Tooterville-Iuka

Loamy, moderately well drained to poorly drained soils formed in alluvium; subject to rare, occasional, or frequent flooding

This map unit consists mainly of soils on flood plains and on broad, low terraces. Intermittent or perennial streams flow through the unit. Generally, narrow flood plains are on each side of the streams, are slightly lower than the terraces, and are occasionally flooded. In many areas accelerated erosion on the nearby uplands has deposited sediments on the slightly lower flood plains, raising their elevation to about the same height as the terraces. As a result, floodwater now flows over some areas on the terraces.

This map unit makes up about 9 percent of the survey area. It is about 40 percent Steens soils, 30 percent Tooterville soils, 15 percent Iuka soils, and 15 percent minor soils.

Steens soils are somewhat poorly drained and are on broad, nearly level parts of the terraces. Typically, they have about 14 inches of recently deposited, loamy overwash and have a loamy subsoil. In some areas they are in the slightly higher positions and are rarely flooded. In these areas they do not have a layer of overwash.

Tooterville soils are poorly drained and are in nearly level or slightly concave areas. Typically, they have about 14 inches of recently deposited, loamy overwash and have a loamy subsoil. In some areas they are in the higher positions and are not flooded. In these areas they do not have a layer of overwash.

Iuka soils are moderately well drained and are mainly in narrow bands along the creeks. Typically, they have a loamy surface layer and alternating layers of loamy material in the substratum.

Of minor extent are Ochlockonee and Savannah soils. The well drained Ochlockonee soils are in landscape positions similar to those of the Iuka soils. The moderately well drained Savannah soils are on the higher, gently sloping or sloping terraces.

About 95 percent of the acreage in this unit is used for row crops or pasture. About 5 percent of the acreage, which consists mainly of wet, frequently flooded soils in narrow bands along creeks, is wooded.

The major soils are suited to most of the row crops commonly grown in the county. Because of wetness and the flooding in most areas, a drainage system and protection from flooding are needed.

These soils are suited to pasture. Grazing when the soils are wet causes compaction of the surface layer and poor tilth and increases the hazard of erosion. The flooding also is a management concern.

These soils are suited to trees. Productivity is moderately high. Few areas are used for trees, but water-tolerant species, such as sweetgum, willow oak, and cottonwood, can be successfully grown.

These soils are not suited to building site development or sanitary facilities. The flooding and the wetness are the main limitations.

Dominantly Nearly Level to Moderately Sloping Soils on Terraces

These soils make up about 4 percent of the survey area. They are on broad terraces that are not subject to flooding. They are loamy and are moderately well drained to poorly drained. They formed in loess and old alluvial deposits.

4. Freeland-Hatchie-Guyton

Loamy, moderately well drained to poorly drained soils formed in loess and old alluvial deposits

This map unit consists of soils on broad terraces along the Forked Deer River, Turkey Creek, and Sugar Creek. Most areas have a distinct break consisting of a short, steep slope extending from the terraces to the bottom land. The terraces are about 5 to 10 feet above the flood plains at this break. In areas adjacent to the uplands, the terraces are about 10 to 30 feet above the flood plains. The transition to the uplands is not distinct in all areas. Surface water tends to move slowly across the terraces until it enters one of the few natural drainageways on the terraces or accumulates in depressions. Slopes range from less than 1 percent to 8 percent. They generally are convex. They are slightly concave, however, in areas of the Guyton soils. Relief is more than 20 feet only in a few areas.

This map unit makes up about 4 percent of the survey area. It is about 50 percent Freeland soils, 30 percent Hatchie soils, 10 percent Guyton soils, and 10 percent minor soils.

Freeland soils are moderately well drained and are on the higher, gently sloping or moderately sloping parts of the terraces. They have a loamy surface layer and a loamy subsoil. They have a fragipan in the lower part of the subsoil.

Hatchie soils are somewhat poorly drained and are in broad, nearly level areas on the terraces. They have a loamy surface layer and a loamy subsoil. They have a fragipan in the lower part of the subsoil.

Guyton soils are poorly drained and are in nearly level, shallow depressions on the terraces. They have a loamy surface layer and a loamy subsoil.

Of minor extent are the moderately well drained Iuka and somewhat poorly drained Enville soils in drainageways and the moderately well drained Savannah soils on some convex slopes.

About 80 percent of the acreage in this unit is used for row crops or pasture. About 20 percent of the acreage, which consists mainly of Guyton and Hatchie soils, is wooded.

All of the major soils are suited to corn, soybeans, and grain sorghum. The moderately well drained Freeland soils are suited to small grain. Erosion is a management concern on the gently sloping and sloping soils. Where erosion has been severe, the fragipan is close to the surface and significantly restricts rooting. Also, it tends to slow the downward movement of water. As a result, a longer period is needed for the soils to dry out and warm up in the spring. Draining excessively wet areas is difficult because suitable outlets generally are not readily available.

These soils are suited to pasture. Grazing when the soils are wet causes compaction of the surface layer and poor tilth and increases the hazard of erosion.

These soils are suited to trees. Productivity is moderately high. Most of the woodland is in areas of the wetter soils. The most common trees in these areas are sweetgum, willow oak, and yellow poplar. The timber stands generally produce below their capacity and could be improved by woodland management.

The moderately well drained Freeland soils are suited to building site development. All of the major soils are poorly suited to sanitary facilities. Slow permeability in the fragipan and water perched above the fragipan are the major limitations.

Dominantly Gently Sloping to Steep, Loamy Soils That Have a Loamy Subsoil; on Uplands and Terraces

These soils make up about 54 percent of the survey area. They are well drained or moderately well drained. They formed in loamy Coastal Plain deposits, in loess and loamy Coastal Plain deposits, or in old alluvial deposits and loess.

5. Smithdale-Ruston-Savannah

Well drained and moderately well drained soils formed in loamy Coastal Plain deposits

This map unit consists of soils on highly dissected, hilly uplands characterized by narrow, winding ridgetops, long hillsides, and narrow, winding stream terraces and bottom land (fig. 2). Local relief generally

Figure 2.—A typical area of the Smithdale-Ruston-Savannah general soil map unit.

is 60 to 140 feet. Small streams flow through many of the areas on bottom land. Many of the streams are spring fed. Slopes range mainly from 2 to 45 percent but are 0 to 2 percent in areas of narrow bottom land. They generally are convex. They are concave, however, in the natural drainageways coming off the uplands.

This map unit makes up about 29 percent of the survey area. It is about 60 percent Smithdale soils, 10 percent Ruston soils, 10 percent Savannah soils, and 20 percent minor soils.

Smithdale soils are well drained and are on side slopes. Ruston soils are well drained and are on ridgetops. Savannah soils are moderately well drained and are on ridgetops and some side slopes. They have a fragipan in the lower part of the subsoil.

Of minor extent are the well drained Lexington and moderately well drained Providence soils on some ridgetops and the well drained Ochlockonee, moderately well drained Iuka, somewhat poorly drained Enville, and poorly drained Bibb soils on narrow bottom land.

About 85 percent of the acreage in this unit is wooded. About 15 percent is used for pasture or row crops.

The major soils generally are poorly suited to row crops because of the slope and a severe hazard of erosion. The more gently sloping areas on ridgetops and bottom land generally are too narrow to be farmed in an economic manner. Many areas of the unit have been cultivated in the past but have since been planted to pine or have reverted to hardwood forest. Erosion has been severe in these areas. Large gullies are common in some areas.

These soils are suited to pasture. The main management concern is the hazard of erosion. A dense plant cover is needed in the steeper areas. Depletion of the plant cover increases the runoff rate and the hazard of erosion.

These soils are suited to trees. Productivity is moderately high. The most common trees are white oak, red oak, black oak, yellow poplar, shagbark hickory, shortleaf pine, and loblolly pine. The timber stands generally produce below their capacity and could be improved by woodland management.

In most areas these soils are poorly suited to building site development and onsite septic systems because of the slope. The soils on ridgetops generally are suited to building site development. In areas of the Savannah soils, special design may be needed on sites for septic tank absorption fields because of the fragipan. Where municipal sewage facilities are available, the hillsides can be reshaped into attractive building sites.

6. Smithdale-Providence-Lexington

Well drained and moderately well drained soils formed in loamy Coastal Plain deposits or in loess and loamy Coastal Plain deposits

This map unit consists of soils on highly dissected, hilly uplands characterized by wide ridgetops, long side slopes, and narrow bottoms. Some areas are remnants of old river terraces. Local relief is mainly 40 to 80 feet. Small, mainly intermittent, streams flow through the bottoms. Many are spring fed. Slopes range from 2 to 25 percent in the uplands and from 0 to 2 percent on the narrow bottoms. They generally are convex. They are slightly concave, however, in the natural drainageways coming off the uplands.

This map unit makes up about 24 percent of the survey area. It is about 40 percent Smithdale soils, 25 percent Providence soils, 25 percent Lexington soils, and 10 percent minor soils.

Smithdale soils are well drained and are on side slopes. They are loamy throughout.

Providence soils are moderately well drained and are on ridgetops. They are loamy throughout and have a fragipan in the lower part of the subsoil.

Lexington soils are well drained and are dominantly on ridgetops but also are on some side slopes. They are loamy throughout.

Of minor extent are the well drained Ruston and moderately well drained Savannah soils on some ridgetops and the well drained Ochlockonee soils, moderately well drained Iuka soils, somewhat poorly drained Enville soils, and poorly drained Bibb soils in drainageways.

About 60 percent of the acreage in this unit is used for row crops or pasture. About 40 percent of the acreage, which consists mainly of soils on steep side slopes and narrow ridgetops, is wooded.

The gently sloping to sloping soils on ridgetops and the nearly level soils on narrow bottom land are well suited to row crops. The hazard of erosion is the main management concern on the ridgetops. Many cultivated areas are severely eroded. On the narrow bottom land, flooding and wetness are the main management concerns.

These soils are well suited to pasture. The main management concerns are the hazard of erosion on the steep side slopes and the flooding and wetness on the narrow bottom land. A dense plant cover is needed in the steeper areas. Depletion of the plant cover increases the runoff rate and the hazard of erosion. Growing grasses and legumes for hay and pasture is effective in controlling erosion.

These soils are well suited to trees. Productivity is moderately high. Most of the steeper soils are wooded. The most common trees are white oak, red oak, black oak, yellow poplar, shagbark hickory, shortleaf pine, and loblolly pine. The timber stands generally produce below their capacity and could be improved by woodland management.

The soils on ridgetops generally are suited to building site development. In areas of the Providence soils, special design may be needed on sites for septic tank absorption fields. In the steeper areas, the slope severely limits onsite waste disposal and building site development. Where municipal sewage facilities are available, the hillsides can be reshaped into attractive building sites.

7. Deanburg

Well drained soils formed in old alluvial deposits and loess

This map unit consists of soils on first and second broad terraces along the east side of Huggins Creek and the Forked Deer River. Slopes range mainly from 2 to 12 percent and are convex. Local relief is 20 to 80 feet.

This map unit makes up about 1 percent of the survey area. It is about 90 percent Deanburg soils and 10 percent minor soils.

Deanburg soils are on broad, gently sloping to strongly sloping parts of the terraces. They have a loamy surface layer and a loamy subsoil. The subsoil is underlain by loamy and sandy layers.

Of minor extent are the well drained Smithdale soils on some side slopes, the moderately well drained Iuka soils in some narrow drainageways, and the somewhat poorly drained Steens soils in low, nearly level areas on the terraces.

About 90 percent of the acreage in this unit is used for row crops. About 10 percent of the acreage, which consists mainly of moderately sloping or strongly sloping, droughty soils, is wooded.

The gently sloping soils are well suited to all of the row crops commonly grown in the county, but the moderately sloping and strongly sloping soils are poorly suited because of droughtiness.

These soils generally are suited to pasture, but the moderately sloping and strongly sloping soils are droughty. Careful management is needed to maintain good stands of grasses and legumes. Depletion of the plant cover increases the runoff rate and the hazard of erosion.

Figure 3.—Typical area of the Dulac-Chickasaw general soil map unit. The moderately steep Chickasaw soils are in the foreground, and the gently sloping Dulac soils are in the background.

These soils are suited to trees. Productivity is moderately high. The main management concern is droughtiness in the moderately sloping and strongly sloping soils. Shortleaf pine and loblolly pine generally grow well on these soils.

The major soils generally are suited to building site development. If the soils are used as sites for septic systems and wells, the rapid permeability in the lower part of the subsoil can result in pollution of the water supply. Properly designing and locating the septic systems help to prevent this pollution.

Dominantly Gently Sloping to Steep, Loamy and Clayey Soils That Have a Clayey Subsoil; on Uplands

These soils make up about 12 percent of the survey area. They are well drained or moderately well drained. They formed in clayey Coastal Plain deposits, in loess and clayey Coastal Plain deposits, or in stratified, loamy and clayey Coastal Plain deposits.

8. Dulac-Chickasaw

Well drained and moderately well drained soils that have a low to high shrink-swell potential; formed in loess and clayey Coastal Plain deposits or in clayey Coastal Plain deposits

This map unit consists of soils on broad, low uplands that have some steep side slopes and narrow bottoms (fig. 3). Local relief is 40 to 60 feet. Small, intermittent streams flow through the bottoms. There are very few springs. Slopes range from 2 to about 45 percent in the uplands and from 0 to 2 percent on the narrow bottoms. They generally are convex. They are concave, however, in the natural drainageways coming off the uplands.

This map unit makes up about 5 percent of the survey area. It is about 50 percent Dulac soils, 20 percent Chickasaw soils, and 30 percent minor soils.

Dulac soils are moderately well drained and are on broad uplands. They have a loamy surface layer. The upper part of the subsoil is loamy, the next part is a loamy fragipan, and the lower part is clayey. The surface layer, the upper part of the subsoil, and the fragipan have a low shrink-swell potential. The lower part of the subsoil has a high shrink-swell potential.

Chickasaw soils are well drained and are on side slopes in the uplands. They have a loamy surface layer and a clayey subsoil that has a high shrink-swell potential. These soils are underlain by weakly cemented, highly fractured claystone (fig. 4).

Of minor extent are the somewhat poorly drained Falkner soils, mainly in nearly level areas and in some gently sloping areas; the well drained Luverne and moderately well drained Savannah soils on side slopes in the uplands; and the moderately well drained Steens and Iuka and somewhat poorly drained Enville and Tooterville soils in drainageways.

About 60 percent of the acreage in this unit is used for row crops or pasture. About 40 percent of the acreage, which consists mainly of steep soils on side slopes and narrow ridgetops, is wooded.

The gently sloping to sloping soils on the broad uplands and the nearly level soils in the narrow valleys are suited to row crops. The hazard of erosion is the main management concern in the uplands. In most of the soils in the uplands, the subsoil is clayey or has a fragipan. Loss of significant amounts of soil from the layers above the subsoil results in considerably poorer tilth and lower yields. Many cultivated areas are severely eroded. In the narrow valleys the main management concerns are flooding and wetness.

These soils are suited to pasture. The main management concerns are the hazard of erosion on the steep side slopes and the flooding and wetness in the narrow valleys. A dense plant cover is needed in the steeper areas. Depletion of the plant cover increases the runoff rate and the hazard of erosion. Growing grasses and legumes for hay and pasture is effective in controlling erosion and improves tilth in many of the soils.

These soils are suited to trees. Productivity is moderately high or moderate. Most of the steeper areas are wooded. The most common trees are white oak, red oak, black oak, yellow poplar, shagbark hickory, shortleaf pine, and loblolly pine. The timber stands generally produce below their capacity and can be improved by woodland management.

These soils generally are poorly suited to building site development and onsite septic systems because of slow permeability. The high shrink-swell potential severely limits building site development. Soil movement has damaged many houses built on these soils.

Figure 4.—Profile of Chickasaw soils, which are underlain by fractured, weakly cemented claystone. The claystone severely restricts the penetration of roots.

9. Luverne-Brantley-Oktibbeha

Well drained soils that have a moderate or high shrink-swell potential; formed in clayey Coastal Plain deposits or in stratified, loamy and clayey Coastal Plain deposits

This map unit consists of soils on highly dissected, hilly uplands characterized by narrow, winding ridgetops, moderately long, steep side slopes, moderately long, sloping and moderately steep foot slopes, and narrow, winding bottoms. Local relief generally is 60 to 120 feet. Slopes range from 5 to 45 percent in the uplands and from 0 to 2 percent on the narrow bottoms. They generally are convex. They are concave, however, in the natural drainageways coming off the uplands.

This map unit makes up about 7 percent of the survey area. It is about 40 percent Luverne soils, 15 percent Brantley soils, 15 percent Oktibbeha soils, and 30 percent minor soils.

Luverne soils are on high ridgetops and the upper side slopes. They have a loamy surface layer and a clayey subsoil that has a moderate shrink-swell potential.

Brantley soils generally are on middle or lower side slopes and on foot slopes, but they also are on some of the lower ridgetops. They have a loamy surface layer and a clayey subsoil that has a moderate shrink-swell potential.

Oktibbeha soils are on ridgetops and side slopes in the southern part of the unit. In the northern part they are only on the lower side slopes. They have a loamy surface layer and a clayey subsoil that has a high shrink-swell potential.

Of minor extent are the well drained Smithdale soils on some ridgetops, the moderately well drained Savannah soils on terraces, and the moderately well drained Iuka and somewhat poorly drained Enville soils in drainageways.

The major soils generally are poorly suited to row crops because of the slope and a severe hazard of erosion. The areas on bottom land generally are too narrow to be farmed economically, although a few have been planted to corn or soybeans. Many foot slopes, which are a little less steep than the side slopes, are used for cultivated crops. In many areas, however, severe erosion has exposed the clayey subsoil. In these areas, tilth is poor and yields are lowered.

These soils are moderately suited to pasture. Much of the farmland is used as pasture. The main management concern is the hazard of erosion. A dense plant cover is needed in the steep areas. Depletion of the plant cover increases the runoff rate and the hazard of erosion.

These soils are well suited to trees. The most common trees are white oak, black oak, shagbark hickory, shortleaf pine, and loblolly pine. The timber stands generally produce below their capacity and could be improved by woodland management.

These soils are poorly suited to building site development and onsite sewage facilities because of the slope and moderately slow permeability. Where municipal sewage facilities are available, the hillsides can be reshaped into attractive building sites.

Dominantly Sloping to Steep, Loamy Soils That Have a Loamy or Clayey Subsoil; on Uplands

These soils make up about 11 percent of the survey area. They are well drained. They formed in Coastal Plain deposits.

10. Smithdale-Luverne-Chickasaw

Well drained soils formed in loamy Coastal Plain deposits, in stratified, loamy and clayey Coastal Plain deposits, or in clayey Coastal Plain deposits

This map unit consists of soils on highly dissected, hilly uplands characterized by narrow, winding ridgetops, long, steep side slopes, and narrow, winding bottoms. Local relief generally is 80 to 180 feet. Small streams flow through the bottoms. Most of the streams in the northwestern part of the unit are spring fed. Small, intermittent streams that have few springs flow through the southern and eastern parts of the unit. Slopes range from 5 to 45 percent in the uplands and from 0 to 2 percent on the narrow bottoms. They generally are convex. They are concave, however, in the natural drainageways coming off the uplands.

This map unit makes up about 11 percent of the survey area. It is about 40 percent Smithdale soils, 18 percent Luverne soils, 12 percent Chickasaw soils, and 30 percent minor soils.

Smithdale soils generally are on the upper half of the side slopes. In some areas they are on the entire side slope. They have a loamy surface layer and a loamy subsoil.

Luverne soils are mainly on the lower half of the side slopes. In some areas they are on the entire side slope and on some ridgetops. They have a loamy surface layer and a clayey subsoil.

Chickasaw soils are on the lower side slopes and foot slopes and on some low ridgetops. They have a loamy surface layer and a clayey subsoil. These soils are underlain by weakly cemented, highly fractured claystone.

Of minor extent are the well drained Ruston soils on ridgetops; the moderately well drained Savannah soils on ridgetops and terraces; and the well drained Ochlockonee, moderately well drained Iuka and Steens, and somewhat poorly drained Enville and Tooterville soils on narrow bottoms.

The soils on uplands generally are poorly suited to row crops because of the slope and a severe hazard of erosion. Some areas are covered with small ironstone fragments. Seedbed preparation is difficult in these areas. A few areas, mainly on high ridgetops, have large ironstone boulders on the surface. The soils in the wider areas of bottom land are well suited to row crops.

The major soils are moderately suited to pasture.

The main management concern is the hazard of erosion. A dense plant cover is needed in the steeper areas. Depletion of the plant cover increases the runoff rate and the hazard of erosion.

Most of the acreage in this unit is wooded. These soils are well suited to trees. Planting may be difficult in areas where ironstone fragments or boulders are concentrated on the surface. The most common trees are black oak, red oak, white oak, shagbark hickory, mockernut hickory, yellow poplar, loblolly pine, and shortleaf pine. The timber stands generally produce below their capacity and could be improved by woodland management.

The soils on ridgetops generally are suited to building site development and onsite waste disposal, but the soils on steep side slopes and foot slopes are poorly suited because of the slope and moderately slow or slow permeability. Where municipal sewage facilities are available, the ridgetops can be reshaped into attractive building sites.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability 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 the heading "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 substratum, 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 substratum. 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, Lexington silt loam, 5 to 8 percent slopes, is a phase of the Lexington series.

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Ruston-Savannah complex, 5 to 8 percent slopes, 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. Luverne and Chickasaw fine sandy loams, steep, is an undifferentiated group in this survey area.

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

On many farms in Chester County, earlier soil maps were prepared for use in developing conservation plans. The present survey updates these earlier soil maps and gives additional data. The descriptions, names, and delineations of the soils in this soil survey do not fully agree with some of these older soil maps and with some soil maps of adjacent counties. Differences are the result of a better knowledge of soils, modifications in series concepts, and variations in the intensity of mapping or in the extent of the soils in the survey areas.

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

Soil Descriptions

BB—Bibb silt loam, frequently flooded. This nearly level, poorly drained soil is on flood plains. Slopes range from 0 to 2 percent. Individual areas generally are long and narrow and range from 2 to 100 acres in size.

Typically, the surface layer is dark brown silt loam about 4 inches thick. The subsurface layer, to a depth of 15 inches, is light brownish gray silt loam that has strong brown mottles. The substratum to a depth of 60 inches is stratified light brownish gray loamy sand, grayish brown silt loam and sandy loam, and grayish brown loamy sand that has strata of sandy loam.

Included with this soil in mapping are a few small areas of the somewhat poorly drained Enville and moderately well drained Iuka soils on high spots consisting of natural levees along streams.

The Bibb soil has a seasonal high water table. In most areas it is flooded two or three times each year during the growing season. Permeability is moderate. Available water capacity is high. The shrink-swell potential is low. Reaction is strongly acid or very strongly acid throughout the profile.

Most areas of this soil are wooded. Some areas are used as pasture.

This soil is not suited to row crops because it is frequently flooded and has a seasonal high water table at or near the surface.

This soil is poorly suited to pasture because it is frequently flooded and is often saturated for long periods. Flash flooding can be a hazard to livestock if higher ground is not included in the pasture. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Restricted grazing may be needed for long periods.

This soil is moderately suited to trees. The trees that can be planted for commercial production include yellow poplar, sweetgum, and eastern cottonwood. Because of the wetness and the frequent flooding, they should be planted by hand or machine on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a high seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of ground equipment to dry periods minimizes rutting and puddling.

The frequent flooding and the seasonal high water table limit the use of this soil as a site for septic tank absorption fields, dwellings with or without basements, and local roads and streets. On sites for roads and streets, the wetness can be overcome by adding enough fill to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material. The flooding can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is Vw.

BrC—Brantley fine sandy loam, 5 to 12 percent slopes. This sloping, well drained soil is on short, convex ridgetops on uplands. Individual areas are long and narrow, generally following the contour of the ridgetops. They range from 3 to 50 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 2 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The subsoil extends to a depth of 60 inches. It is red clay in the upper part, mottled yellowish red and brownish yellow clay loam in the next part, and mottled strong brown, red, and light gray clay loam in the lower part.

Included with this soil in mapping are a few small areas of the well drained Luverne soils at the higher elevations and some areas of the well drained Oktibbeha soils along the lower edges of the unit. Also included are some small areas of the somewhat poorly drained Susquehanna soils in landscape positions similar to those of the Brantley soil.

Permeability is slow in the Brantley soil. Available water capacity is high. The shrink-swell potential is moderate in the subsoil. Reaction is strongly acid or very strongly acid throughout the profile. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as hayland or pasture.

This soil is moderately suited to soybeans, small grain, grain sorghum, corn, and cotton. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. Crops respond well to applications of lime and fertilizer. If cultivated crops are grown, erosion is a severe hazard. Soil conservation practices are essential in maintaining the tilth and productivity of the soil. Erosion can expose the clayey subsoil material in a relatively short period. It can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. A dense plant cover should be maintained. Overgrazing results in depletion of the plant cover, erosion, and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods causes compaction.

The slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field. Installing the absorption system in the lower part of the subsoil, which is not so clayey as the upper part and is not so slowly permeable, also helps to overcome this limitation.

The moderate shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Keeping the area around the dwelling moist during dry periods in summer can help to prevent shrinking of the soil.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured subbase material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

BrD3—Brantley clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil is on convex side slopes and foot slopes on uplands. Most areas are irregular in shape, generally following the contour of the side slopes. They range from 5 to 200 acres in size.

Typically, the surface layer is red clay loam about 5 inches thick. In most cultivated areas plowing has mixed the surface layer with some red clay from the subsoil. The subsoil is about 50 inches thick. In sequence downward, it is red clay; yellowish red clay; mottled light reddish brown, reddish yellow, red clay; and mottled light reddish brown and reddish yellow sandy clay. The substratum to a depth of 60 inches is mottled light reddish brown and reddish yellow sandy clay loam.

Included with this soil in mapping are a few small areas of the well drained Luverne soils, generally on the steeper slopes at the higher elevations, and some areas of the moderately well drained Oktibbeha soils on the lower parts of the landscape. Also included are some small areas of the well drained Ochlockonee soils in drainageways and the moderately well drained Savannah soils on small terraces directly above bottom land.

Permeability is slow in the Brantley soil. Available water capacity is high. The shrink-swell potential is moderate in the subsoil and low in the substratum. Reaction is strongly acid or very strongly acid in the subsoil. It varies in the surface layer, depending on past liming practices. The surface layer is friable, but the soil should be tilled when at the proper moisture content. If cultivated when too moist, the soil can become cloddy. Also, the surface layer tends to crust and become hard when dry.

Most areas of this soil are used for row crops or pasture. Some areas have been abandoned and are now old fields or are wooded.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. The productivity of the soil has been significantly reduced by past erosion. If the soil is tilled, further erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The plants respond well to applications of lime and fertilizer. Overgrazing depletes the plant cover and results in further erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in compaction.

The slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field. Installing the absorption system in the lower part of the subsoil, which is not so clayey as the upper part and is not so slowly permeable, also helps to overcome this limitation.

The slope and the moderate shrink-swell potential limit the use of this soil as a site for dwellings with or without basements. The slope can be overcome by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if one side of the dwelling fronts on the lower part of the slope. The shrink-swell potential can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Keeping the area around the dwelling moist during dry periods in summer can help to prevent shrinking of the soil.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIe.

BrE—Brantley fine sandy loam, 12 to 20 percent slopes. This moderately steep, well drained soil is on side slopes in the uplands. Individual areas are irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is light yellowish brown and strong brown fine sandy loam about 11 inches thick. The subsoil is about 42 inches thick. It is yellowish red clay in the upper part and mottled brownish yellow, light brown, and red clay loam in the lower part. The substratum to a depth of 60 inches is mottled brownish yellow, light brown, and yellowish red fine sandy loam.

Included with this soil in mapping are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways. Also included are some small areas of the moderately well drained Oktibbeha soils, mainly on the lower parts of the landscape; some small areas of the well drained Luverne soils on the higher parts of the landscape; and some areas where the soil has been cultivated in the past and is severely eroded.

Permeability is slow in the Brantley soil. Available water capacity is high. The shrink-swell potential is moderate in the subsoil and low in the substratum. Reaction is strongly acid or very strongly acid throughout the profile.

Most areas of this soil are wooded. Some areas have been cleared and are used as pasture.

This soil is not suited to row crops. Even if soil conservation practices are used when the soil is tilled, erosion is a severe hazard.

This soil is poorly suited to pasture. Because of the slope and the slow permeability, surface runoff is rapid and little moisture is stored in the subsoil. Consequently, the soil is droughty during hot, dry periods. Careful management is needed to maintain good stands of grasses and legumes. Erosion is a severe hazard. Overgrazing results in depletion of the plant cover and erosion.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Preserving the protective duff layer helps to control erosion. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Operating wheeled equipment across the moderately steep slopes is hazardous. Tree planting may be difficult in areas where ironstone fragments are common. The soil is subject to compaction during wet periods.

The slope and the slow permeability limit the use of this soil as a site for septic tank absorption fields. The slope can be overcome by cutting and filling or by installing a trench absorption system on the contour. The slow permeability can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The slope limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope and low strength limit the use of this soil as a site for local roads and streets. The slope can be overcome by cutting and filling to shape the roadway. Low strength can be overcome by excavating the soil material and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIIe.

ChD—Chickasaw loam, 8 to 12 percent slopes. This strongly sloping, well drained soil is on side slopes in the uplands. Individual areas are irregular in shape and range from 5 to 45 acres in size.

Typically, the surface layer is very dark grayish brown loam about 3 inches thick. The subsurface layer, from a depth of 3 to 7 inches, is light yellowish brown loam. The upper part of the subsoil, from a depth of 7 to 20 inches, is yellowish red clay. The next part, from a depth of 20 to 30 inches, is light reddish brown, mottled clay. The lower part, from a depth of 30 to 45 inches, is brown clay that has many small platy fragments of claystone. Below this, from a depth of 45 to 60 inches, is brown, weakly cemented, fractured claystone.

Included with this soil in mapping are a few small areas of the moderately well drained Dulac soils and some small areas of the somewhat poorly drained Steens soils along drainageways.

Permeability is very slow in the Chickasaw soil. Available water capacity is low. The shrink-swell potential is high. Reaction is strongly acid or very strongly acid throughout the profile. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period.

This soil is poorly suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. Pasture plants respond well to regular additions of lime and fertilizer. A dense plant cover should be maintained. Overgrazing depletes the plant cover and results in erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, shortleaf pine, and loblolly pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. Special design and reinforcement of concrete walls and slabs are necessary. Excavating the soil and replacing it with coarse textured base material, such as sand and gravel, and keeping the area around the dwelling moist during dry periods in summer can help to prevent drying and shrinking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

The high shrink-swell potential limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by adding lime to the soil.

The capability subclass is IVe.

ChD3—Chickasaw clay loam, 5 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil is on convex side slopes in the uplands and on some foot slopes. Most areas are long and narrow, generally following the contour of the side slopes. They range from 2 to 20 acres in size.

Typically, the surface layer is strong brown clay loam about 5 inches thick. In most cultivated areas plowing has mixed the surface layer with some yellowish red clay from the subsoil. The upper part of the subsoil, from a depth of 5 to 20 inches, is yellowish red clay. The next part, from a depth of 20 to 30 inches, is light reddish brown, mottled clay. The lower part, from a depth of 30 to 45 inches, is brown clay that has many small platy fragments of claystone. Below this, from a depth of 45 to 60 inches, is brown, weakly cemented, fractured claystone.

Included with this soil in mapping are a few small areas of the moderately well drained Dulac soils. These soils are in landscape positions similar to the Chickasaw soil. Also included are some small areas of the somewhat poorly drained Steens soils along narrow drainageways.

Permeability is very slow in the Chickasaw soil. Available water capacity is low. The shrink-swell potential is high. Reaction is strongly acid to extremely acid throughout the profile unless the surface layer has been limed. The surface layer can be tilled only within a relatively narrow range in moisture content. If cultivated when too moist, the soil can become cloddy. Also, the surface layer tends to crust and become hard when dry. In areas where erosion has removed all of the original surface layer, exposing the clay in the subsoil, tilth is very poor.

Most areas of this soil are used for row crops or pasture. Some areas have been abandoned and are now old fields or are wooded.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. The tilth and productivity of the soil have been significantly reduced by past erosion. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The plants respond well to regular additions of lime and fertilizer. Overgrazing depletes the plant cover and results in further erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, shortleaf pine, and loblolly pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements.

Special design and reinforcement of concrete walls and slabs are necessary. Excavating the soil and replacing it with coarse textured base material, such as sand and gravel, and keeping the area around the dwelling moist during dry periods in summer can help to prevent shrinking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

The high shrink-swell potential limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by adding lime to the soil.

The capability subclass is VIe.

ChE—Chickasaw loam, 12 to 25 percent slopes. This moderately steep, well drained soil is on side slopes in the uplands. Some areas have been cultivated in the past and are severely eroded. Individual areas are irregular in shape and range from 5 to 100 acres in size.

Typically, the surface layer is very dark grayish brown loam about 2 inches thick. The subsurface layer, from a depth of 2 to 5 inches, is light yellowish brown loam. The upper part of the subsoil, from a depth of 5 to 20 inches, is yellowish red clay. The next part, from a depth of 20 to 30 inches, is light reddish brown, mottled clay. The lower part, from a depth of 30 to 45 inches, is brown clay that has many small platy fragments of claystone. Below this, from a depth of 45 to 60 inches, is brown, weakly cemented, fractured claystone.

Included with this soil in mapping are a few small areas of the moderately well drained Iuka, poorly drained Tooterville, and somewhat poorly drained Enville soils in narrow drainageways.

Permeability is very slow in the Chickasaw soil. Available water capacity is low. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The shrink-swell potential is high.

Most areas of this soil are wooded (fig. 5). Some areas have been cleared and are used as pasture or hayland.

This soil is not suited to cultivated crops because of the slope and a severe hazard of erosion.

This soil is moderately suited to pasture. Pasture plants respond well to regular additions of lime and fertilizer. A dense plant cover should be maintained. Overgrazing depletes the plant cover and results in erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, shortleaf pine, and loblolly pine. Minimizing disturbance of the protective layer of litter reduces the hazard of erosion. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Operating wheeled equipment across the moderately steep slopes is hazardous. Compaction and rutting result from the use of heavy equipment during wet periods.

The very slow permeability and the slope limit the use of this soil as a site for septic tank absorption fields. The very slow permeability can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field. The slope can be overcome by cutting and filling or by installing a trench absorption system on the contour.

The high shrink-swell potential and the slope limit the use of this soil as a site for dwellings with or without basements. The shrink-swell potential can be overcome by excavating the clayey subsoil and replacing it with coarse textured base material, such as sand and gravel, and by keeping the area around the dwelling moist during dry periods. Trees and shrubs that have extensive root systems should not be grown near the dwelling. Special design and reinforcement of concrete walls and slabs are necessary. The slope can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope and the high shrink-swell potential limit the use of this soil as a site for local roads and streets. The slope can be overcome by cutting and filling to shape the roadway. The shrink-swell potential can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by adding lime to the soil.

The capability subclass is VIIe.

DeB2—Deanburg loam, 2 to 5 percent slopes, eroded. This gently sloping, well drained soil is on slightly convex slopes on broad terraces. Individual areas are irregular in shape and range from 5 to 30 acres in size.

Typically, the surface layer is dark yellowish brown loam about 9 inches thick. The upper part of the subsoil, to a depth of about 45 inches, is strong brown clay loam, dark brown sandy clay loam, and strong brown sandy loam. The lower part to a depth of 60 inches is reddish yellow sand that has thin strata of dark brown loamy sand.

Figure 5.—A wooded area of Chickasaw loam, 12 to 25 percent slopes.

Included with this soil in mapping are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways. Also included are some small areas of Deanburg soils that have slopes of more than 5 percent and are severely eroded.

Permeability is moderate in the upper part of the subsoil in the Deanburg soil and moderately rapid in the lower part. Available water capacity is high. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas are used for row crops. This soil is well suited to soybeans, small grain, grain sorghum, corn, and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Excessive erosion will necessitate increasing management costs to maintain yields as depth to the sandier material in the lower part of the subsoil decreases. Erosion can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include cherrybark oak, loblolly pine, eastern cottonwood, and sweetgum. The main management concerns are competing plants and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. The soil is subject to rutting and compaction if equipment is used during wet periods.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. The moderately rapid permeability in the lower part of the subsoil can result in the poor filtration of sewage effluent. The poorly filtered effluent can pollute shallow wells.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIe.

DeB3—Deanburg clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, well drained soil is on slightly convex slopes on terraces. Individual areas are irregular in shape and range from 2 to 50 acres in size.

Typically, the surface layer is brown clay loam about 7 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper part of the subsoil, to a depth of about 40 inches, is strong brown clay loam, sandy clay loam, and sandy loam. The lower part to a depth of 60 inches is reddish yellow sand that has thin strata of strong brown loamy sand.

Included with this soil in mapping are a few small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways. Also included are a few small areas of the well drained Deanburg soils that have slopes of more than 5 percent and are moderately eroded.

Permeability is moderate in the upper part of the subsoil in the Deanburg soil and moderately rapid in the lower part. Available water capacity is high. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas are used for row crops. This soil is moderately suited to soybeans, small grain, grain sorghum, corn, and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs to maintain yields as depth to the sandier material in the lower part of the subsoil decreases. Erosion can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, seedling mortality, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Planting vigorous nursery stock can increase the seedling survival rate. The use of heavy equipment during wet periods results in rutting and compaction.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. The moderately rapid permeability in the lower part of the subsoil can result in the poor filtration of sewage effluent. The poorly filtered effluent can pollute shallow wells.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

DrC3—Deanburg clay loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, well drained soil is on short, convex slopes on terraces. Erosion has been severe. Individual areas are irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown clay loam from the subsoil. The upper part of the subsoil, to a depth of about 26 inches, is strong brown clay loam, sandy clay loam, and sandy loam. The lower part to a depth of 60 inches is reddish yellow loamy sand that has thin strata of strong brown sandy loam.

Included with this soil in mapping are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways.

Permeability is moderate in the upper part of the subsoil in the Deanburg soil and rapid in the lower part. Available water capacity is moderate or low. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas are used for row crops. This soil is moderately suited to grasses and legumes for hay or pasture and poorly suited to soybeans, small grain, grain sorghum, and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops is limited. Measures that help to control erosion and conserve moisture are essential. Erosion can be controlled and moisture conserved by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, seedling mortality, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Planting vigorous nursery stock can increase the seedling survival rate. The use of heavy equipment when the soil is wet results in rutting and compaction.

Few limitations affect the use of this soil as a site for septic tank absorption fields, dwellings with or without basements, and local roads and streets. The moderately rapid permeability in the lower part of the subsoil can result in the poor filtration of sewage effluent. The poorly filtered effluent can pollute shallow wells.

The capability subclass is IVe.

DrD3—Deanburg sandy clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil is on convex side slopes on terraces. Erosion has been severe. Most areas are long and narrow, generally following the contour of the side slopes. They range from 2 to 25 acres in size.

Typically, the surface layer is brown sandy clay loam about 4 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper part of the subsoil, to a depth of about 20 inches, is brown sandy clay loam and sandy loam. The lower part to a depth of 60 inches is strong brown sand that has thin strata of dark brown loamy sand.

Included with this soil in mapping are a few small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways.

Permeability is moderate in the upper part of the subsoil in the Deanburg soil and rapid in the lower part. Available water capacity is low. The shrink-swell potential also is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled.

Most areas of this soil are used for row crops. Some areas have been abandoned and are now old fields or are wooded.

This soil is not suited to row crops. Past erosion has significantly reduced the productivity of the soil. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops during the growing season is limited. Consequently, moisture stress is common during dry periods in summer.

This soil is poorly suited to pasture. Past erosion has significantly reduced the available water capacity and productivity of the soil. Careful management is necessary to maintain good stands of grasses and legumes. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The low available water capacity can result in some seedling mortality during dry periods. The seedling survival rate can be increased by careful planting of vigorous nursery stock. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The slope limits the use of this soil as a site for septic tank absorption fields and for dwellings with or without basements. On sites for septic tank absorption fields, the slope can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour. The rapid permeability in the subsoil can result in the poor filtration of sewage effluent. The poorly filtered effluent can pollute shallow wells. On sites for dwellings, the slope can be overcome by cutting or by cutting and filling. Dwellings with basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

Few limitations affect the use of this soil as a site for local roads and streets.

The capability subclass is VIe.

DuB3—Dulac silty clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, moderately well drained soil is on slightly convex slopes on broad uplands. It has a fragipan. Individual areas are irregular in shape and range from 3 to 50 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some yellowish brown silty clay loam from the subsoil. The upper 10 inches of the subsoil is yellowish brown, friable silty clay loam that has light yellowish brown and strong brown mottles in the lower part. The next 32 inches is a compact and brittle fragipan of silty clay loam that has vertical light gray seams. The upper part of the fragipan is dark yellowish brown and has light brownish gray and yellowish brown mottles, and the lower part is yellowish brown and has light brownish gray mottles. The lower part of the subsoil to a depth of 60 inches is dark yellowish brown clay that has gray and yellowish brown mottles. In some areas the fragipan extends to a depth of more than 60 inches. In other areas it is weakly expressed. In places the part of the subsoil above the fragipan is less than 10 inches thick.

Included with this soil in mapping are some small areas of the somewhat poorly drained Steens and poorly drained Tooterville soils along drainageways. Also included are some small areas of the somewhat poorly drained Falkner soils in nearly level, slightly concave depressions or at the head of drainageways and some small areas of moderately well drained soils that do not have a fragipan and are in landscape positions similar to those of the Dulac soil.

The seasonal high water table is perched above the fragipan in the Dulac soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is slow. Available water capacity is moderate. Root penetration is limited to the vertical gray seams in the fragipan. The shrink-swell potential is high in the lower part of the subsoil. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is very friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas are used for row crops or pasture. This soil is moderately suited to soybeans, small grain (fig. 6), and grain sorghum and poorly suited to corn and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Past erosion has reduced the tilth and productivity of the soil. Measures that help to control erosion and conserve moisture are essential. Erosion can eventually expose the fragipan. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. When the soil is wet, livestock cause surface compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include shortleaf pine, sweetgum, and longleaf pine. The main management concerns are the equipment limitation, the hazard of windthrow, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. When wet, the soil can be easily rutted and puddled. The fragipan causes a restricted rooting depth, which results in a hazard of windthrow. Care in thinning helps to prevent windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The wetness and the high shrink-swell potential in the lower part of the subsoil limit the use of this soil as a site for dwellings with basements. These limitations can be overcome by installing a subsurface drainage system at or below the elevation of the basement. Also, the basement can be constructed above the level of wetness, and the shrink-swell potential can be overcome by strengthening basement walls or by

Figure 6.—Winter cover of wheat in an area of Dulac silty clay loam, 2 to 5 percent slopes, severely eroded. This area will be planted to soybeans in the spring.

excavating the clayey material and replacing it with coarse textured material, such as sand and gravel.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

DuC—Dulac silt loam, 5 to 8 percent slopes. This moderately sloping, moderately well drained soil is on narrow ridgetops. It has a fragipan. Individual areas are long and narrow, generally following the contour of the ridgetops. They range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 2 inches thick. The subsurface layer is light yellowish brown silt loam about 4 inches thick. The upper 18 inches of the subsoil is yellowish brown, friable silt loam and strong brown, friable silty clay loam that has a few pale brown and light yellowish brown mottles. The next 21 inches is a compact and brittle fragipan of strong brown silty clay loam that has common vertical light gray seams and has pale brown and light brownish gray mottles. The lower part of the subsoil to a depth of 60 inches is red clay that has strong brown and light gray mottles. In some places the fragipan extends to a depth of more than 60 inches. In other places it is weakly expressed.

Included with this soil in mapping are some small areas of severely eroded Dulac soils that have been cleared and are cultivated and that have a fragipan 12 to 16 inches below the surface. Also included, generally along the edges of the unit, are some small areas of the well drained Chickasaw soils that have slopes of slightly more than 8 percent.

The seasonal high water table is perched above the fragipan in the Dulac soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is slow. Available water capacity is moderate. Root penetration is limited to the vertical gray seams in the fragipan. The shrink-swell potential is high in the lower part of the subsoil. Reaction is strongly acid or very strongly acid in the surface layer and subsurface layer and strongly acid in the subsoil. The surface layer is very friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as pasture or hayland.

This soil is moderately suited to soybeans, small grain, and grain sorghum and poorly suited to corn and cotton. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs to maintain yields as depth to the fragipan decreases. Crops respond well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, terraces, grassed waterways, crop rotations that include grasses and legumes for hay or pasture, sediment basins, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. When the soil is wet, livestock cause surface compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, and sweetgum. The main management concerns are the hazard of erosion, the equipment limitation, the hazard of windthrow, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Restricting the use of heavy equipment to dry periods minimizes rutting and puddling. Thinning carefully or not thinning at all helps to prevent windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The high shrink-swell potential and the wetness limit the use of this soil as a site for dwellings with basements. These limitations can be overcome by installing a subsurface drainage system at or below the level of the basement. Also, the basement can be constructed above the level of wetness, and the shrink-swell potential can be overcome by strengthening basement walls or by excavating the clayey material and replacing it with coarse textured material, such as sand and gravel.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

DuC3—Dulac silty clay loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, moderately well drained soil is on convex side slopes on rolling uplands. It has a fragipan. Individual areas are irregular in shape and range from 3 to 200 acres in size.

Typically, the surface layer is yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper 10 inches of the subsoil is yellowish brown and dark yellowish brown, friable silty clay loam that has pale brown mottles. The next 30 inches is a compact and brittle fragipan of dark yellowish brown silty clay loam that has common vertical light gray seams and has a few light brownish gray mottles. The lower part of the subsoil to a depth of 60 inches is red clay that has strong brown and light gray mottles. In some areas the fragipan extends to a depth of more than 60 inches. In other areas it is weakly expressed. In places the part of the subsoil above the fragipan is less than 10 inches thick.

Included with this soil in mapping are some small areas of the moderately well drained luka and somewhat poorly drained Falkner soils in drainageways. Also included are many small areas where the fragipan is exposed or is directly below the plow layer and some small areas of soils that do not have a fragipan.

The seasonal high water table is perched above the fragipan in the Dulac soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is slow. Available water capacity is moderate. Root penetration is limited to the vertical gray seams in the fragipan. The shrink-swell potential is high in the lower part of the subsoil. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are used for row crops or pasture. A few small areas on narrow ridgetops are wooded.

This soil is moderately suited to soybeans, small grain, and grain sorghum grown in rotation with hay or pasture. It is poorly suited to corn and cotton. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops is limited. Measures that help to control erosion and conserve moisture are essential. Erosion can eventually expose the fragipan. It can be controlled by crop rotations that include grasses and legumes for hay or pasture, crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. When the soil is wet, livestock cause surface compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, and sweetgum. The main management concerns are the hazard of erosion, the equipment limitation, the hazard of windthrow, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Restricting the use of heavy equipment to dry periods minimizes rutting and puddling. Thinning carefully or not thinning at all minimizes windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The high shrink-swell potential in the lower part of the subsoil and the wetness limit the use of this soil as a site for dwellings with basements. Installing a subsurface drainage system at or below the level of the basement can help to overcome these limitations. Also, the basement can be constructed above the level of wetness, and the shrink-swell potential can be overcome by strengthening basement walls or by excavating the clayey material and replacing it with coarse textured material, such as sand and gravel.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

DuD3—Dulac silty clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, moderately well drained soil is on convex side slopes on hilly uplands. It has a fragipan. Individual areas are irregular in shape and range from 3 to 150 acres in size.

Typically, the surface layer is strong brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper 10 inches of the subsoil is strong brown, friable silty clay loam. The next 30 inches is a compact and brittle fragipan of dark yellowish brown silty clay loam that has common vertical light gray seams and has a few light brownish gray mottles. The lower part of the subsoil to a depth of 60 inches is red clay that has strong brown and light gray mottles. In places the fragipan extends to a depth of more than 60 inches or is weakly expressed.

Included with this soil in mapping are some small areas of the moderately well drained luka and somewhat poorly drained Falkner and Steens soils in drainageways and many small areas where the fragipan is exposed. Also included are some small areas of soils that do not have a fragipan and some small areas of the well drained Chickasaw soils that generally have slopes of slightly more than 12 percent.

The seasonal high water table is perched above the fragipan in the Dulac soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is slow. Available water capacity is moderate. Root penetration is limited to the vertical light gray seams in the fragipan. The shrink-swell potential is high in the lower part of the subsoil. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil have been cultivated in the past but are now planted to pine or have been allowed to revegetate naturally. Some areas are used as pasture or hayland. A few areas are used for row crops.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. The productivity of the soil has been significantly reduced by past erosion. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, and sweetgum. The main management concerns are the hazard of erosion, the equipment limitation, the hazard of windthrow, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Restricting the use of heavy equipment to dry periods minimizes rutting and puddling. Thinning carefully or not thinning at all minimizes windthrow.

The slope, the slow permeability, and the wetness limit the use of this soil as a site for septic tank absorption fields. The slope can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The slope, the wetness, and the high shrink-swell potential limit the use of this soil as a site for dwellings with basements. The slope can be overcome by cutting or by cutting and filling. The dwellings can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope. Installing a subsurface drainage system at or below the level of the basement can help to overcome the shrink-swell potential and the wetness. Also, the basement can be constructed above the level of wetness, and the shrink-swell potential can be overcome by strengthening basement walls or by excavating the clayey material and replacing it with coarse textured material, such as sand and gravel.

The slope and low strength limit the use of this soil as a site for local roads and streets. The slope can be overcome by cutting and filling to shape the roadway. Low strength can be overcome by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIe.

En—Enville silt loam, occasionally flooded. This nearly level, somewhat poorly drained soil is on flood plains. Most areas are subject to stream overflow during the growing season about once every 2 to 5 years. Slopes range from less than 1 percent to 2 percent. Individual areas are long and narrow and range from 3 to 100 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The substratum, to a depth of about 36 inches, is stratified, mottled brown and grayish brown loam and sandy loam. Below this to a depth of 60 inches is a buried subsoil of light brownish gray, mottled sandy loam. In places the surface layer is loam or fine sandy loam.

Included with this soil in mapping are some small areas of the moderately well drained Iuka and well drained Ochlockonee soils in the higher positions on natural levees along streams. Also included are some small areas of the poorly drained Bibb soils in depressions and in seepy spots at the base of uplands that have small springs and some areas that are rarely flooded, if ever, but regularly receive deposits of soil material because of runoff from the adjacent uplands.

The Enville soil has a seasonal high water table. Permeability is moderate. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops or pasture. Many areas are wooded, particularly narrow areas bordered by soils that are too steep for farming.

Some undrained areas are used for cultivated crops, but the wetness frequently delays tillage. In areas that are drained and protected from flooding, this soil is well suited to soybeans, grain sorghum, and corn and moderately suited to small grain and cotton. Crops respond well to applications of lime and fertilizer. Diversions, subsurface tile lines, and shallow ditches are needed. Clearing drainageways of debris helps to protect the soil against stream overflow.

If drained and protected from flooding, this soil is well suited to pasture. Unless the soil is drained, restricted grazing is needed during extended wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system, protection from flooding, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include eastern cottonwood, shortleaf pine, and yellow poplar. Because of the wetness and the occasional stream overflow, seedlings should be planted by hand or machine on prepared ridges if natural regeneration is unreliable. Restricting the use of heavy equipment to dry periods helps to prevent excessive rutting. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal.

The seasonal high water table and the flooding limit the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. Other sites should be considered for these uses.

The flooding limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is IIw.

FaB3—Falkner silty clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, somewhat poorly drained soil is on slightly concave slopes on broad uplands. Individual areas are irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is dark brown silty clay loam about 8 inches thick. In most cultivated areas plowing has mixed the surface layer with some yellowish brown silty clay loam from the subsoil. The subsoil extends to a depth of 60 inches. The upper part is yellowish brown and light brownish gray, mottled silty clay loam. The lower part is light brownish gray, mottled silty clay and grayish brown, mottled clay.

Included with this soil in mapping are some small areas of the moderately well drained Dulac soils. These soils are slightly higher or more sloping than the Falkner soil. Also included, along drainageways, are small areas of the poorly drained Tooterville soils.

The Falkner soil has a perched seasonal high water table. Permeability is slow. Available water capacity is high. The shrink-swell potential is high in the lower part of the subsoil. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer can be tilled only within a relatively narrow range in moisture content. Tillage is more difficult in areas where erosion has removed most of the original surface layer and exposed the underlying subsoil. If the soil is tilled when wet, clods can form.

Most areas are used for row crops or pasture. Unless drained, this soil is moderately suited to soybeans, corn, and grain sorghum. If drained, it is well suited to soybeans, corn, and grain sorghum and moderately suited to small grain and cotton. Tillage is frequently delayed because of wetness. In most areas the slope, the slow permeability, and the lack of adequate outlets make tile drainage difficult on this soil. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion can result in exposure of the part of the subsoil that has a higher content of clay. Erosion can be controlled by diversions, conservation tillage, proper management of crop residue, grassed waterways, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. Unless the soil is drained, restricted grazing is needed during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include cherrybark oak, sweetgum, shortleaf pine, and loblolly pine. Because of the wetness, seedlings generally should be planted by hand or machine on prepared ridges if natural regeneration is unreliable. The use of heavy equipment during wet periods results in rutting, puddling, and compaction. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The high shrink-swell potential limits the use of this soil as a site for dwellings without basements. This limitation can be overcome by excavating the clayey material and replacing it with coarse textured material, such as sand and gravel, or by building the dwelling on pilings.

The high shrink-swell potential and the wetness limit the use of this soil as a site for dwellings with basements. Installing a subsurface drainage system at or below the level of the basement can help to overcome these limitations. Also, the basement can be constructed above the level of wetness, and the shrink-swell potential can be overcome by strengthening basement walls or by excavating the clayey material and replacing it with coarse textured material, such as sand and gravel.

Low strength and the high shrink-swell potential limit the use of this soil as a site for local roads and streets. These limitations can be overcome by excavating the clayey material and replacing it with coarse textured base material, such as sand and gravel. Also, increasing the thickness of the pavement or of the base or subbase material can help to overcome low strength.

The capability subclass is IVe.

FrB2—Freeland silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on short, convex slopes on stream terraces. It has a fragipan. Individual areas are irregular in shape and range from 5 to 75 acres in size.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The upper 18 inches of the subsoil is dark yellowish brown and yellowish brown, friable silt loam and pale brown, mottled, friable silt loam. The lower part to a depth of 60 inches is a compact and brittle fragipan of yellowish brown, mottled silt loam that has common vertical tongues and seams of light gray silt loam. In some areas the fragipan extends to a depth of about 55 inches and overlies an alluvial substratum of friable sandy loam. In other areas the fragipan is weakly expressed.

Included with this soil in mapping are some small areas of the somewhat poorly drained Hatchie soils along drainageways and in depressions. Also included are some areas that have short slopes of more than 5 percent, mainly along the breaks between the terraces and the adjacent flood plains. These steeper areas can be severely eroded.

The seasonal high water table is perched above the fragipan in the Freeland soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical gray seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas are used for row crops (fig. 7) or pasture. This soil is well suited to soybeans, small grain, and grain sorghum and moderately suited to corn and cotton. If cultivated crops are grown, erosion is a moderate hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs to maintain yields as depth to the fragipan decreases. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Drill or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, cherrybark oak, and yellow poplar. The main management concerns are competing plants, the equipment limitation, and the hazard of windthrow. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Harvesting by a strip-selection method helps to prevent windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness.

Low strength and the wetness limit the use of this soil as a site for local roads and streets. Low strength can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material. The wetness can be overcome by installing a subsurface drainage system to lower the water table or by increasing the thickness of the subbase material.

The capability subclass is IIe.

FrB3—Freeland silt loam, 2 to 5 percent slopes, severely eroded. This gently sloping, moderately well drained soil is on short, convex slopes on stream terraces. It has a fragipan. Individual areas are irregular in shape and range from 5 to 200 acres in size.

Figure 7.—Soybeans on Freeland silt loam, 2 to 5 percent slopes, eroded, in the foreground and on Hatchie silt loam in the background.

Typically, the surface layer is yellowish brown silt loam about 7 inches thick. In most cultivated areas plowing has mixed the surface layer with some yellowish brown silt loam from the subsoil. The upper 16 inches of the subsoil is yellowish brown, mottled, friable silt loam and light gray and dark yellowish brown, friable silt loam. The lower part to a depth of 60 inches is a compact and brittle fragipan of dark yellowish brown and yellowish brown, mottled silt loam and loam having common vertical tongues and seams of light gray silt loam. In some areas the fragipan extends to a depth of about 55 inches and overlies an alluvial substratum of friable sandy loam. In other areas the fragipan is weakly expressed or is within a depth of 18 inches.

Included with this soil in mapping are a few small areas of the somewhat poorly drained Hatchie soils along drainageways and in depressions. Also included are some areas that have short slopes of more than 5 percent, mainly along the breaks between the terraces and the adjacent flood plains, and some small areas of moderately eroded Freeland soils, which generally are used as pasture.

The seasonal high water table is perched above the fragipan in the Freeland soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical gray tongues and seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and in most areas can be easily tilled throughout a fairly wide range in moisture content. In areas where erosion has removed all of the original surface layer and the upper part of the subsoil, the fragipan is exposed and tilth is poor.

Most areas are used for row crops or pasture. This soil is moderately suited to soybeans, small grain, and grain sorghum and poorly suited to corn and cotton. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Erosion can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, cherrybark oak, and yellow poplar. The main management concerns are competing plants, the equipment limitation, and the hazard of windthrow. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Harvesting by a strip-selection method helps to prevent windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness.

Low strength and the wetness limit the use of this soil as a site for local roads and streets. Low strength can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material. The wetness can be overcome by installing a subsurface drainage system to lower the water table or by increasing the thickness of the subbase material.

The capability subclass is IIIe.

FrC3—Freeland silt loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, moderately well drained soil is on short, convex slopes on terraces. It has a fragipan. Individual areas are irregular in shape and range from 5 to 20 acres in size.

Typically, the surface layer is yellowish brown silt loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper 12 inches of the subsoil is yellowish brown, friable silt loam. The lower part to a depth of 60 inches is a compact and brittle fragipan of dark yellowish brown and yellowish brown, mottled silt loam and loam having common vertical tongues and seams of light gray silt loam. In some areas the fragipan extends to a depth of about 55 inches and overlies friable alluvium of sandy loam. In other areas the fragipan is weakly expressed or is within a depth of 18 inches.

Included with this soil in mapping are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways. Also included are small areas of Freeland soils that have slopes of less than 5 percent or more than 8 percent and some more severely eroded, steeper areas where the fragipan is exposed.

The seasonal high water table is perched above the fragipan in the Freeland soil. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical light gray tongues and seams in the fragipan. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. In most areas the surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content. In areas where erosion has removed all of the original surface layer and the upper part of the subsoil, the fragipan is exposed and tilth is poor.

Most areas are used for row crops or pasture. This soil is moderately suited to soybeans, small grain, and grain sorghum grown in rotation with hay or pasture. It is poorly suited to corn and cotton. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops is limited. Measures that help to control erosion and conserve moisture are essential to maintain the tilth and productivity of the soil. Erosion can expose the fragipan. It can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods during summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include cherrybark oak, yellow poplar, loblolly pine, and shortleaf pine. The main management concerns are competing plants, the equipment limitation, and the hazard of windthrow. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Harvesting by a strip-selection method helps to prevent windthrow.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. The slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the slow permeability.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by elevating the site with fill material, by installing a subsurface drainage system that includes a dependable outlet, or by constructing basements above the level of wetness.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

Gu—Guyton silt loam. This poorly drained soil is on slightly concave slopes in depressions on terraces. Slopes are 0 to 1 percent. The soil can be ponded at times during the winter or for brief periods after heavy rains during the growing season. Individual areas are irregular in shape and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The subsurface layer is gray, mottled silt loam about 15 inches thick. The subsoil extends to a depth of 60 inches. The upper part is gray, mottled silty clay loam that has tongues of gray silt loam from the subsurface layer. The next part is gray silty clay loam. The lower part is gray clay loam.

Included with this soil in mapping are some small areas of the somewhat poorly drained Hatchie soils on high spots, generally along the edge of the unit.

The Guyton soil has a seasonal high water table. Permeability is slow. Available water capacity is high. The shrink-swell potential is low. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily worked, but cultivating when the soil is too moist causes crusting and hardening.

Most areas of this soil are wooded. Some areas are used for row crops or pasture.

This soil is poorly suited to such crops as small grain and cotton because it is wet during winter and spring. Suitable outlets for subsurface tile or surface ditches generally are not available. The soil is moderately suited to crops that are planted later in the growing season or that are more tolerant of wetness, such as corn, grain sorghum, or soybeans. Diversions, conservation tillage, and proper management of crop residue are needed. Where adequate outlets are available, shallow ditches or tile drainage can reduce the wetness.

This soil is moderately suited to pasture. Unless the soil is drained, restricted grazing is needed during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system where one is feasible, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include cherrybark oak and sweetgum. Because of the wetness, seedlings should be planted by hand or machine on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a high seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods helps to prevent excessive rutting and puddling.

The wetness limits the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. Other sites should be considered for these uses.

Low strength and the wetness limit the use of this soil as a site for local roads and streets. Low strength can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the base or subbase material. The wetness can be overcome by adding fill material to raise the roadbed above the level of wetness, increasing the thickness of the subbase, or, if suitable outlets are available, installing a subsurface drainage system.

The capability subclass is IIIw.

Ha—Hatchie silt loam. This nearly level, somewhat poorly drained soil is on smooth or slightly concave slopes in broad areas and in drainageways on stream terraces. It has a fragipan. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 5 to 100 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The upper 23 inches of the subsoil is yellowish brown and light yellowish brown, mottled, friable silt loam. The lower part to a depth of 60 inches is a firm and brittle fragipan of light brownish gray and pale brown, mottled silt loam that has common vertical tongues and seams of silt loam.

Included with this soil in mapping are some small areas of the moderately well drained Freeland soils on rises, where generally slopes are more than 2 percent, and the poorly drained Guyton soils in drainageways and depressions. Also included are some small areas of the moderately well drained Iuka soils in narrow drainageways and areas where the fragipan extends to a depth of about 55 inches and overlies alluvium of friable sandy loam.

The seasonal high water table is perched above the fragipan in the Hatchie soil. The water tends to move laterally through the soil. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. The shrink-swell potential is low. Available water capacity is high. Root penetration is limited to the vertical gray tongues and seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas are used for row crops or pasture. If drained, this soil is well suited to soybeans, grain sorghum (fig. 8), and corn and moderately suited to small grain and cotton. If undrained areas are cultivated, the wetness frequently delays tillage. Crops respond well to applications of lime and fertilizer. Diversions, shallow ditches, subsurface tile lines that have adequate outlets, conservation tillage, and proper management of crop residue are needed.

This soil is moderately suited to pasture. Unless the soil is drained, restricted grazing is needed during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include cherrybark oak and sweetgum. Because of the wetness, seedlings should be planted on prepared ridges if natural regeneration is unreliable. The use of heavy equipment when the soil is wet results in rutting and puddling. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal.

The slow permeability and the wetness limit the use of this soil as a site for septic tank absorption fields. These limitations can be overcome by constructing a mound of suitable filtering material.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet or by elevating the site with fill material.

Low strength and the wetness limit the use of this soil as a site for local roads and streets. Low strength can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material. The wetness can be overcome by installing a subsurface drainage system to lower the water table or by increasing the thickness of the subbase material.

The capability subclass is IIw.

Iu—Iuka silt loam, occasionally flooded. This nearly level, moderately well drained soil is on flood plains. Most areas are subject to stream overflow during the growing season about once every 2 to 5 years. Slopes range from 0 to 2 percent. Individual areas generally are long and narrow and range from 3 to 200 acres in size.

Typically, the surface layer is yellowish brown silt loam about 8 inches thick. The substratum, to a depth of about 34 inches, is stratified yellowish brown, light yellowish brown, and brown, mottled silt loam, loamy sand, and sandy loam. Below this, to a depth of 60

Figure 8.—Grain sorghum on Hatchie silt loam in the foreground and on Guyton silt loam in the background.

inches, is a buried soil of dark brown and pale brown, mottled silt loam. In places the surface layer is fine sandy loam or loam. In some areas the buried soil is clay loam.

Included with this soil in mapping are some small areas of the well drained Ochlockonee soils in the higher landscape positions, commonly on natural levees along streams and in intermittent drainageways coming off the uplands. Also included are some small areas of the somewhat poorly drained Enville and poorly drained Bibb soils in depressions and in seepy spots at the base of uplands that have small springs, some small areas of soils that are sand or loamy sand throughout most of the profile, and some areas that are rarely flooded but regularly receive deposits of soil material because of runoff from the adjacent uplands.

Permeability is moderate in the Iuka soil. Available water capacity also is moderate. The shrink-swell potential is low. The soil has a seasonal high water table. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops. Many areas are wooded, particularly narrow areas bordered by soils that are too steep for farming.

If protected from flooding, this soil is well suited to soybeans, corn, and grain sorghum and moderately suited to small grain and cotton. If the soil is tilled, erosion is a slight hazard. Crops respond well to applications of lime and fertilizer. Diversions, dikes, and shallow ditches are needed. Keeping waterways free of debris helps to prevent stream overflow.

If protected from flooding, this soil is well suited to pasture. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Applications of fertilizer, pasture renovation, protection from flooding, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include shortleaf pine, eastern cottonwood, and yellow poplar. Because of the wetness and the occasional stream overflow, seedlings should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous

Figure 9.—Flooding in an area of Kinston silt loam, frequently flooded.

nursery stock is needed because of a moderate seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment when the soil is wet results in rutting and puddling.

The flooding and the seasonal high water table limit the suitability of this soil for septic tank absorption fields and dwellings with or without basements. Other sites should be considered for these uses.

The flooding limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is IIw.

KN—Kinston silt loam, frequently flooded. This nearly level, poorly drained soil is on broad, concave flood plains along the larger streams. It is frequently flooded by as much as 5 or 6 feet of water for long periods (fig. 9). Slopes generally are less than 1 percent but range from 0 to 2 percent. Individual areas are irregular in shape and range from 5 to several hundred acres in size.

Typically, a layer of decomposing leaf litter about 1 inch thick covers the surface. The surface layer is brown silt loam about 5 inches thick. The upper part of the substratum is light brownish gray, mottled silt loam. The lower part to a depth of 60 inches is gray, mottled loam.

Included with this soil in mapping are some small areas of the somewhat poorly drained Enville soils in the higher landscape positions, commonly on natural levees along streams. Also included, in depressions, are some areas of very poorly drained soils that are similar in texture to the Kinston soil. These areas generally are ponded throughout the year. They support such water-tolerant species as baldcypress and water tupelo; however, most of the standing trees have died.

The Kinston soil has a seasonal high water table. Reaction is strongly acid throughout the profile. Permeability is moderate. Available water capacity is high. The shrink-swell potential is low.

This soil is not suited to row crops or to pasture because it is frequently flooded for long periods and has a seasonal high water table at or near the surface.

This soil is moderately suited to trees. The trees that can be planted for commercial production include sweetgum, water oak, and water tupelo. Some areas are old stream meanders and backwater sloughs where water stands throughout the year. These areas can support only baldcypress and water tupelo. Because of the seasonal high water table and the frequent flooding, planting and harvesting are restricted to periods when the floodwater has receded. Seedlings should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a high seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods helps to prevent excessive rutting and puddling.

The frequent flooding and the seasonal high water table limit the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. Other sites should be considered for these uses.

The frequent flooding and the seasonal high water table limit the use of this soil as a site for local roads and streets. The seasonal high water table can be overcome by adding fill material to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material. The flooding can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is VIw.

LeB2—Lexington silt loam, 2 to 5 percent slopes, eroded. This gently sloping, well drained soil is on slightly convex slopes on broad uplands. Individual areas are irregular in shape and range from 5 to 100 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The upper 32 inches of the subsoil is strong brown silty clay loam and silt loam. The lower part to a depth of 60 inches is strong brown loam and red, mottled sandy clay loam.

Included with this soil in mapping are some small areas of the moderately well drained Providence soils. These soils are in landscape positions similar to those of the Lexington soil. Also included are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways, some small areas of Lexington soils that have slopes of more than 5 percent, and some areas of the steeper Lexington soils that are severely eroded.

Permeability is moderate in the Lexington soil. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas are used for row crops or pasture. This soil is well suited to soybeans, small grain, grain sorghum, corn, and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs to maintain yields as depth to the sandier material in the lower part of the subsoil decreases. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, yellow poplar, and shortleaf pine. The main management concerns are competing plants and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment when the soil is wet results in rutting and puddling.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIe.

LeB3—Lexington silty clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, well drained soil is on slightly convex slopes on uplands. Individual areas are irregular in shape and range from 2 to 10 acres in size.

Typically, the surface layer is yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown silty clay loam from the subsoil. The upper 18 inches of the subsoil is strong brown silty clay loam and silt loam. The lower part to a depth of 60 inches is yellowish red loam and red sandy clay loam.

Included with this soil in mapping are a few small areas of the moderately well drained Providence soils. These soils are in landscape positions similar to those of the Lexington soil. Also included are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways, a few small areas of Lexington soils that have slopes of more than 5 percent, and some small areas of the well drained, severely eroded Ruston and Smithdale soils on some of the slightly steeper, more convex parts of the landscape.

Permeability is moderate in the Lexington soil. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are used for row crops or pasture. A few small areas on narrow ridgetops are wooded.

This soil is well suited to soybeans, small grain, grain sorghum, corn, and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion can expose the sandier material in the lower part of the subsoil. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops (fig. 10). Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, yellow poplar, and shortleaf pine. The main management concerns are competing plants and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and puddling.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

LeC—Lexington silt loam, 5 to 8 percent slopes. This moderately sloping, well drained soil is on the short, convex upper side slopes on narrow ridgetops. Individual areas are long and narrow, generally following the contour of the side slopes. They range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 2 inches thick. The subsurface layer is light yellowish brown silt loam about 4 inches thick. The upper 28 inches of the subsoil is strong brown silt loam, strong brown silty clay loam, and yellowish red silt loam. The lower part to a depth of 60 inches is yellowish red loam and red sandy loam.

Included with this soil in mapping are some small areas of the moderately well drained Providence soils. These soils are in landscape positions similar to those of the Lexington soils. Also included are severely eroded soils in some small areas that generally are used as pasture or cropland and small areas of Lexington soils that have slopes of less than 5 percent, generally at the crest of ridges, or that have slopes of more than 8 percent, generally along the edge of the unit.

Permeability is moderate in the Lexington soil. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile. The surface layer is

Figure 10.—Contour farming in an area of Lexington silty clay loam, 2 to 5 percent slopes, severely eroded.

friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as hayland or pasture.

This soil is moderately suited to soybeans, small grain, grain sorghum, corn, and cotton. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Crops respond well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, yellow poplar, and shortleaf pine. The main management concerns are the hazard of erosion, the equipment limitation, and competing plants, which interfere with natural regeneration after the trees are harvested. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. The use of heavy equipment during wet periods results in rutting and puddling.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

LeC3—Lexington silty clay loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, well drained soil is on the short, convex upper side slopes in the uplands and on some foot slopes. Individual areas are irregular in shape and range from 5 to 200 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown silty clay loam from the subsoil. The upper 16 inches of the subsoil is strong brown silty clay loam and silt loam. The lower part to a depth of 60 inches is yellowish red loam and red sandy clay loam.

Included with this soil in mapping are some small areas of the moderately well drained Providence soils. These soils are in landscape positions similar to those of the Lexington soil. Also included are some small areas of the well drained Ochlockonee and moderately well drained luka soils along narrow drainageways; small areas of Lexington soils that have slopes of less than 5 percent, generally at the crest of ridgetops; some small areas of Lexington soils that have slopes of more than 8 percent, generally along the edge of the unit; and some steeper areas that are gullied and generally are planted to pine.

Permeability is moderate in the Lexington soil. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are wooded. Areas on broad ridgetops are used mainly for row crops or pasture.

This soil is moderately suited to soybeans, small grain, grain sorghum, corn, and cotton grown in rotation with hay or pasture. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion can expose the sandier material in the lower part of the subsoil. Crops respond well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, yellow poplar, and shortleaf pine. The main management concerns are the hazard of erosion, the equipment limitation, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Restricting the use of heavy equipment to dry periods minimizes rutting and puddling.

Few limitations affect the use of this soil as a site for septic tank absorption fields and dwellings with or without basements.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

LeD3—Lexington silty clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil is on convex side slopes in the uplands. Most areas are long and narrow, generally following the contour of the side slopes. They range from 2 to 10 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown silty clay loam from the subsoil. The upper 16 inches of the subsoil is strong brown silty clay loam and silt loam. The lower part to a depth of 60 inches is yellowish red loam and red sandy clay loam.

Included with this soil in mapping are a few small areas of the well drained Smithdale soils on convex slopes and some small areas of Lexington soils that have slopes of more than 12 percent or less than 8 percent, generally at the crest of ridgetops. Also included are areas of the well drained Ochlockonee and moderately well drained luka soils along narrow drainageways and some small areas of the moderately well drained Providence soils in landscape positions similar to those of the Lexington soil.

Permeability is moderate in the Lexington soil. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are used for row crops or pasture. Some areas are old fields or are wooded.

Because erosion is a severe hazard, this soil is not suited to row crops. It is moderately suited to other crops, such as grasses and legumes for hay or pasture. Past erosion has significantly reduced the productivity of the soil.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The plants respond well to yearly applications of lime and fertilizer, which help to ensure vigorous growth and maintain a dense plant cover. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, shortleaf pine, and yellow poplar. The main management concerns are the hazard of erosion, the equipment limitation, and competing plants. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment when the soil is wet results in rutting and puddling. Preserving the protective layer of litter reduces the hazard of erosion.

The slope limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour.

The slope limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIe.

LuC—Luverne fine sandy loam, 5 to 8 percent slopes. This moderately sloping, well drained soil is on the short, convex upper side slopes on narrow ridgetops. Individual areas are long and narrow, generally following the contour of the side slopes. They range from 3 to 50 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 2 inches thick. The subsurface layer is pale brown fine sandy loam about 4 inches thick. The subsoil is about 42 inches thick. It is strong brown and yellowish red clay in the upper part and yellowish red clay loam in the lower part. The substratum to a depth of 60 inches is stratified light reddish brown and red sandy clay loam that has thin layers of pinkish gray silty clay. In places small ironstone fragments are throughout the soil.

Included with this soil in mapping are some small areas of the well drained Smithdale soils on some ridgetops and side slopes.

Permeability is moderately slow in the Luverne soil. Available water capacity is moderate. The shrink-swell potential is moderate in the upper part of the subsoil and low in the lower part. Reaction is strongly acid or very strongly acid throughout the profile. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have been cultivated for only a short period or were never cultivated. A few small areas have been cleared and are used mainly as hayland or pasture.

This soil is well suited to grasses and legumes for hay and moderately suited to soybeans, small grain, grain sorghum, corn, and cotton grown in rotation with hay or pasture. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Within a relatively short period, erosion can expose the clayey material in the subsoil and a concentration of ironstone fragments. Crops respond fairly well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Pasture plants respond fairly well to applications of lime and fertilizer. A dense plant cover should be maintained. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, and shortleaf pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Tree planting may be difficult in areas where ironstone fragments are common.

The moderately slow permeability limits the use of this soil as a site for septic tank absorption systems. Also, the effluent tends to perch above the strata of silty clay in the substratum and then moves laterally through the soil, eventually seeping to the surface in downslope areas. These limitations can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The moderate shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey subsoil material and replacing it with coarse textured base material, such as sand and gravel. Keeping the area around the dwelling moist during dry periods in summer can help to prevent shrinking of the soil.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

LuC3—Luverne clay loam, 5 to 12 percent slopes, severely eroded. This moderately sloping, well drained soil is on short, convex side slopes and ridgetops on uplands and on some foot slopes. Individual areas are irregular in shape and range from 5 to 200 acres in size.

Typically, the surface layer is strong brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some reddish brown subsoil material. The subsoil is about 38 inches thick. It is reddish brown and yellowish red clay in the upper part and yellowish red clay loam in the lower part. The substratum to a depth of 60 inches is mottled light reddish brown and red clay loam that has thin layers of pinkish gray clay. In places small ironstone fragments are throughout the soil.

Included with this soil in mapping are some small areas of the well drained Ruston and Smithdale soils. These soils are in landscape positions similar to those of the Luverne soil.

Permeability is moderately slow in the Luverne soil. Available water capacity is moderate. The shrink-swell potential is moderate in the upper part of the subsoil and low in the lower part. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form. In some areas small ironstone fragments are concentrated on the surface because of erosion of the finer soil particles. These fragments limit the suitability for seedbed preparation.

Most areas of this soil are wooded. Some areas are used for cultivated crops or pasture.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. Past erosion has significantly reduced the tilth and productivity of the soil. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The plants respond fairly well to applications of lime and fertilizer. A dense plant cover should be maintained. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, and shortleaf pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Tree planting may be difficult in areas where ironstone fragments are common.

The moderately slow permeability limits the use of this soil as a site for septic tank absorption systems. Also, the effluent tends to perch above the clayey layers in the substratum and then moves laterally through the soil, eventually seeping to the surface in downslope areas. These limitations can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The moderate shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey subsoil material and replacing it with coarse textured base material, such as sand and gravel. Keeping the area around the dwelling moist during dry periods in summer can help to prevent shrinking of the soil.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIe.

LuE—Luverne fine sandy loam, 12 to 25 percent slopes. This moderately steep, well drained soil is on side slopes in the uplands. In some areas it has been cultivated and is severely eroded. Individual areas are irregular in shape and range from 5 to 500 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 2 inches thick. The subsurface layer is pale brown fine sandy loam about 4 inches thick. The subsoil is about 34 inches thick. It is reddish brown and yellowish red clay in the upper part and yellowish red clay loam in the lower part. The substratum to a depth of 60 inches is stratified, light reddish brown sandy clay loam that has thin layers of pinkish gray clay. In places ironstone fragments are throughout the soil.

Included with this soil in mapping are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways and areas of the somewhat poorly drained Enville and poorly drained Bibb soils in narrow drainageways where springs are common. Also included are some areas of the well drained Smithdale soils in landscape positions similar to those of the Luverne soil and some areas, generally less than 2 acres in size, of severely eroded soils that have large gullies and that formerly were used as cropland but are now planted to pine. Some of the gullies are still active.

Permeability is moderately slow in the Luverne soil. Available water capacity is moderate. The shrink-swell potential is moderate in the upper part of the subsoil and low in the lower part. Reaction is strongly acid or very strongly acid throughout the profile.

Most areas of this soil are wooded. Some areas have been cleared and are used as pasture.

This soil is not suited to row crops. Even if soil conservation practices are used when the soil is tilled, erosion is a severe hazard.

This soil is poorly suited to pasture. Because of the slope and the slow permeability, surface runoff is rapid and little moisture is stored in the subsoil. Consequently, the soil is droughty during hot, dry periods. Careful management is necessary to maintain good stands of grasses and legumes. The hazard of erosion is severe. Overgrazing depletes the plant cover and results in erosion.

This soil is well suited to trees. The trees that can be planted for commercial production include shortleaf pine, southern red oak, and loblolly pine. Preserving the protective layer of litter reduces the hazard of erosion. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Tree planting may be difficult in areas where ironstone fragments are common. The use of heavy equipment during wet periods results in rutting and compaction. Operating wheeled equipment across the moderately steep slopes is hazardous.

The slope and the moderately slow permeability limit the use of this soil as a site for septic tank absorption fields. The slope can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour. The moderately slow permeability can be overcome by constructing a mound of suitable filtering material or by increasing the size of the absorption field.

The slope limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope and low strength limit the use of this soil as a site for local roads and streets. The slope can be overcome by cutting and filling to shape the roadway. Low strength can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIIe.

LVF—Luverne and Chickasaw fine sandy loams, steep. These well drained soils are on side slopes in the uplands. Some areas are entirely Luverne soil, some are entirely Chickasaw soil, and some consist of both soils. These steep soils were not separated in mapping because they are used and managed in similar ways. Slopes range from 25 to 45 percent. Individual areas are irregular in shape and range from 5 to 100 acres in size.

Typically, the surface layer of the Luverne soil is dark grayish brown fine sandy loam about 5 inches thick. The subsoil is about 30 inches thick. It is reddish brown and yellowish red clay in the upper part and yellowish red clay loam in the lower part. The substratum to a depth of 60 inches is stratified light reddish brown and red sandy clay loam that has thin layers of pinkish gray clay.

Typically, the surface layer of the Chickasaw soil is dark brown fine sandy loam about 2 inches thick. The subsurface layer is light yellowish brown fine sandy loam about 4 inches thick. The subsoil is about 36 inches thick. It is red clay in the upper part and red, mottled clay in the lower part. Below this to a depth of 60 inches is brown, weakly cemented, fractured claystone.

Included with these soils in mapping are a few small areas of the well drained Ochlockonee and moderately well drained Iuka soils in narrow drainageways, some small areas of the somewhat poorly drained Enville and poorly drained Bibb soils in some narrow drainageways that have small springs, and some small areas of the well drained Smithdale and Brantley soils. Also included are a few small areas of soils that have slopes of more than 45 percent and some areas where small ironstone fragments are throughout the Luverne soil.

Permeability is moderately slow in the Luverne soil and very slow in the Chickasaw soil. Available water capacity is moderate in the Luverne soil and low in the Chickasaw soil. The shrink-swell potential is moderate in the Luverne soil and high in the Chickasaw soil. Reaction is strongly acid or very strongly acid throughout both soils.

Most areas of these soils are wooded.

Because of the slope, these soils are not suited to row crops. They are poorly suited to pasture. The slope makes applications of fertilizer and pasture renovation impractical. Because of the slope, surface runoff is very rapid, the amount of moisture stored in the subsoil commonly is limited, and the soils are droughty in summer. The hazard of erosion is severe.

These soils are moderately suited to trees. The trees that can be planted for commercial production include southern red oak, loblolly pine, and shortleaf pine. Erosion is a severe hazard. Carefully designing logging roads and minimizing the removal of vegetation and forest litter when timber is harvested help to control erosion. The use of heavy equipment during wet periods results in rutting and compaction. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Operating wheeled equipment across the steep slopes is hazardous. Tree planting may be difficult in areas where ironstone fragments are common.

The slope limits the use of these soils as sites for septic tank absorption fields and dwellings with or without basements. Most areas of these soils are only a few acres in size. Better suited soils generally are in nearby areas.

The slope limits the use of these soils as sites for local roads and streets. This limitation can be overcome by cutting and filling to shape the roadway. Also, the roads can be easily routed around the small areas of these soils.

The capability subclass is VIIe.

Oc—Ochlockonee loam, occasionally flooded. This nearly level, well drained soil is on flood plains. Most areas are subject to flooding during the growing season about once every 2 to 5 years. Slopes range from 0 to 2 percent. Individual areas are long and narrow and range from 3 to 200 acres in size.

Typically, the surface layer is dark yellowish brown loam about 8 inches thick. The substratum is about 42 inches thick. The upper part is yellowish brown and dark yellowish brown, mottled silt loam that has thin layers of brownish yellow sand. The next part is yellowish brown sand. The lower part is brown, mottled silt loam. Below this to a depth of 60 inches is a buried soil of dark brown silt loam. Some areas are only rarely flooded but regularly receive deposits of soil material because of runoff from the adjacent uplands. In some areas the surface layer is fine sandy loam or silt loam. In other areas the buried soil is clay loam.

Included with this soil in mapping are small areas of the moderately well drained Iuka and somewhat poorly drained Steens soils.

The Ochlockonee soil has a seasonal high water table. Permeability is moderately rapid. Available water capacity is moderate. The shrink-swell potential is low. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is very friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops. Some areas are wooded, particularly narrow areas that are bordered by steep slopes.

If protected from flooding, this soil is well suited to soybeans, small grain, corn, grain sorghum, and cotton. Crops respond well to applications of lime and fertilizer. Diversions and dikes are needed. Keeping drainageways free of debris helps to protect the soil against stream overflow.

If protected from flooding, this soil is well suited to pasture. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, yellow poplar, and eastern cottonwood. The main management concerns are the equipment limitation and competing plants. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment when the soil is wet causes rutting and puddling.

The wetness and the occasional flooding limit the suitability of this soil for septic tank absorption fields and dwellings with or without basements. Other sites should be considered for these uses.

The occasional flooding limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is IIw.

OkC—Oktibbeha fine sandy loam, 5 to 8 percent slopes. This moderately sloping, moderately well drained soil is on convex slopes on ridgetops. Individual areas are mainly long and narrow, generally following the contour of the ridges. They range from 3 to 50 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The subsoil is about 41 inches thick. It is mottled yellowish red, red, and yellowish brown clay in the upper part; yellowish brown clay that has a few light brownish gray and red mottles in the next part; and mottled yellowish brown, light olive gray, and olive brown clay in the lower part. The substratum to a depth of 60 inches is mottled yellowish brown, light olive gray, and olive marly clay. It has a few seashells.

Included with this soil in mapping are some small areas of Oktibbeha soils that have slopes of less than 5 percent, generally at the crest of the ridges, or more than 8 percent, generally along the edge of the unit, and some small areas of the well drained Brantley soils. Brantley soils are in landscape positions similar to those of the Oktibbeha soil. Also included are some small severely eroded areas, mainly in fields used for row crops. These areas have a surface layer of clay or clay loam.

Permeability is very slow in the Oktibbeha soil. Available water capacity is moderate. The shrink-swell potential is high. Reaction is strongly acid or medium acid in the solum and neutral or mildly alkaline in the substratum. The surface layer is friable and can be tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few areas are used for pasture or row crops.

This soil is moderately suited to grasses and legumes for hay or pasture and to soybeans, small grain, and grain sorghum grown in rotation with hay or pasture. It is poorly suited to corn and cotton because the wetness is likely to delay tillage in the spring. Crops respond well to applications of lime and fertilizer. The amount of moisture that the soil can store and make available to crops is limited. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion can expose the clayey subsoil material. It can be controlled by crop rotations that include grasses and legumes for hay or pasture, crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion. In a few areas proper soil conservation practices were not used when the soil was tilled. In these areas the soil is severely eroded and is poorly suited to row crops.

This soil is moderately suited to pasture. It responds well to applications of lime and fertilizer. Maintaining a dense plant cover reduces the hazard of erosion. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during dry periods in summer. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Droughtiness increases the seedling mortality rate during dry periods. Careful planting of vigorous nursery stock can increase the seedling survival rate. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by increasing the size of the absorption field or by constructing a mound of suitable filtering material.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Special design and reinforcement of concrete slabs and foundations are necessary. Keeping the area around the dwelling moist during dry periods in summer can help to prevent drying and cracking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

Low strength and the shrink-swell potential limit the use of this soil as a site for local roads and streets. These limitations can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

OkD3—Oktibbeha clay, 8 to 12 percent slopes, severely eroded. This strongly sloping, moderately well drained soil is on side slopes and toe slopes on uplands. Individual areas are irregular in shape and range from 3 to 300 acres in size.

Typically, the surface layer is dark yellowish brown clay about 5 inches thick. The subsoil is clay about 42 inches thick. It is dark yellowish brown in the upper part; mottled yellowish brown, red, and light olive gray in the next part; and mottled light olive gray and brownish yellow in the lower part. The substratum to a depth of 60 inches is olive marly clay that has many light olive brown mottles and a few seashells. In places the surface layer is clay loam. In some areas ironstone fragments ½ inch to 3 inches in diameter cover as much as 20 percent of the surface.

Included with this soil in mapping are some small areas of Oktibbeha soils that have slopes of less than 8 percent or more than 12 percent, some small areas of the somewhat poorly drained Steens and poorly drained Tooterville soils in narrow drainageways, and some small areas of the somewhat poorly drained Susquehanna soils on the lower part of foot slopes. Also included are the slightly eroded Oktibbeha soils in some wooded areas and in a few pastured areas. The Oktibbeha soils in these areas have a surface layer and subsurface layer of fine sandy loam.

Permeability is very slow in the Oktibbeha soil. Available water capacity is moderate. The shrink-swell potential is high. Reaction is strongly acid or medium acid throughout the solum unless the surface layer has been limed. The substratum is neutral or mildly alkaline. The surface layer is sticky when wet and very firm and hard when dry. It can be tilled only within a narrow range in moisture content.

Most areas of this soil are used for row crops. Much of the acreage is abandoned farmland that has reverted to hardwoods or has been planted to pine. Some areas are used as pasture.

This soil is not suited to row crops. Past erosion has significantly reduced the tilth and productivity of the soil. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops during the growing season is limited. Consequently, moisture stress is common during dry periods in summer.

This soil is poorly suited to pasture. Past erosion has significantly reduced the tilth and productivity of the soil. Because of the slope and the slow permeability, surface runoff is rapid and little moisture is stored in the subsoil. Consequently, the soil is droughty during hot, dry periods. Careful management is necessary to maintain good stands of grasses and legumes. The hazard of erosion is severe.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Droughtiness increases the seedling mortality rate during dry periods. Careful planting of vigorous nursery stock can increase the seedling survival rate. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by increasing the size of the absorption field or by constructing a mound of suitable filtering material.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Special design and reinforcement of concrete slabs and foundations are necessary. Keeping the areas around the dwelling moist during dry periods in summer can help to prevent drying and cracking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

Low strength and the shrink-swell potential limit the use of this soil as a site for local roads and streets. Excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, and increasing the thickness of the pavement or of the base or subbase material can help to overcome these limitations. Adding lime to the soil before construction reduces the shrink-swell potential.

The capability subclass is VIe.

OkE—Oktibbeha fine sandy loam, 12 to 20 percent slopes. This moderately steep, moderately well drained soil is on convex side slopes in the uplands. Individual areas are irregular in shape and range from 3 to 400 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale brown fine sandy loam about 3 inches thick. The subsoil is clay about 41 inches thick. The upper part is strong brown, the next part is red and has common brown mottles, and the lower part is brown. The substratum to a depth of 60 inches is olive gray marly clay that has a few olive yellow mottles and a few seashells.

Included with this soil in mapping are a few small areas of Oktibbeha soils that have slopes of less than 12 percent or more than 20 percent and some small areas of the somewhat poorly drained Steens and poorly drained Tooterville soils in narrow drainageways. Also included are some small areas of the well drained Brantley soils at the higher elevations and some small areas of the somewhat poorly drained Susquehanna soils on the lower part of foot slopes.

Permeability is very slow in the Oktibbeha soil. Available water capacity is moderate. The shrink-swell potential is high. Reaction is strongly acid or medium acid throughout the solum unless the surface layer has been limed. The substratum is neutral or mildly alkaline.

Most areas of this soil are wooded. Some areas are used as pasture. A few areas are used for row crops.

This soil is not suited to row crops because of the slope and a very slow rate of water intake. If the soil is tilled, erosion is a severe hazard.

This soil is poorly suited to pasture. Because of the slope and the slow permeability, surface runoff is rapid and little moisture is stored in the subsoil. Consequently, the soil is droughty during hot, dry periods. Careful management is necessary to maintain good stands of grasses and legumes. The hazard of erosion is severe.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Droughtiness increases the seedling mortality rate during dry periods. Careful planting of vigorous nursery stock can increase the seedling survival rate. The use of heavy equipment during wet periods results in rutting and compaction. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Operating wheeled equipment across the moderately steep slopes is hazardous.

The very slow permeability and the slope limit the use of this soil as a site for septic tank absorption fields. The very slow permeability can be overcome by increasing the size of the absorption field or by constructing a mound of suitable filtering material. The slope can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour.

The high shrink-swell potential and the slope limit the use of this soil as a site for dwellings with or without basements. The shrink-swell potential can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Special design and reinforcement of concrete slabs and foundations are necessary. Keeping the area around the dwelling moist during dry periods in summer can help to prevent drying and cracking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling. The slope can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

Low strength, the shrink-swell potential, and the slope limit the use of this soil as a site for local roads and streets. Low strength and the shrink-swell potential can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material. The slope can be overcome by cutting and filling to shape the roadway.

The capability subclass is VIIe.

PrB2—Providence silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on slightly convex slopes on uplands. It has a fragipan. Individual areas are irregular in shape and range from 2 to 50 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The upper 10 inches of the subsoil is dark yellowish brown, friable silt loam and strong brown, friable silty clay loam. The next 33 inches is a compact and brittle fragipan of strong brown, mottled silt loam and loam having common vertical seams of light gray silt loam. The lower part of the subsoil to a depth of 60 inches is strong brown, mottled, friable sandy loam. In some areas the fragipan extends to a depth of 60 inches or more. In other areas it is weakly expressed.

Included with this soil in mapping are some small areas of the well drained Lexington soils. These soils are in landscape positions similar to those of the Providence soil. Also included are some areas where depth to the fragipan is less than 18 inches.

The Providence soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate above and below the fragipan and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical light gray seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas are used for row crops. This soil is well suited to soybeans, small grain, and grain sorghum and moderately suited to corn and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs to maintain yields as depth to the fragipan decreases. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, sweetgum, and yellow poplar. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and puddling.

The wetness and the moderately slow permeability in the fragipan limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability. These limitations also can be overcome by installing the absorption system in the friable sandy loam below the fragipan and by installing subsurface tile lines to intercept water moving laterally along the fragipan and divert it around the absorption field so that the field does not become saturated.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. Basements should be constructed above the level of wetness.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIe.

PrB3—Providence silty clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, moderately well drained soil is on slightly convex slopes on uplands. It has a fragipan. Individual areas are irregular in shape and range from 2 to 10 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some of the subsoil. The upper 12 inches of the subsoil is dark yellowish brown, friable silty clay loam and yellowish brown, friable silt loam. The next 37 inches is a compact and brittle fragipan of strong brown, mottled silt loam and loam having common vertical seams of light gray silt loam. The lower part of the subsoil to a depth of 60 inches is dark reddish brown, friable loam. In some areas the fragipan extends to a depth of 60 inches or more. In other areas it is weakly expressed.

Included with this soil in mapping are a few small areas of the well drained Lexington soils. These soils are in landscape positions similar to those of the Providence soil. Also included are a few small areas of Providence soils that have slopes of slightly more than 5 percent, generally along the edge of the unit; a few small areas that are only slightly or moderately eroded, generally where slopes are less than 2 percent; and some areas where depth to the fragipan is less than 18 inches.

The Providence soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate above and below the fragipan and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical light gray seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are used for row crops or pasture. A few small areas on narrow ridgetops are wooded.

This soil is moderately suited to soybeans, small grain, and grain sorghum and poorly suited to corn and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion will necessitate increasing management costs as depth to the fragipan decreases. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include shortleaf pine, loblolly pine, sweetgum, and yellow poplar. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Harvesting by the strip-selection method helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and puddling.

The moderately slow permeability in the fragipan and the wetness limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability. These limitations also can be overcome by installing the absorption system in the friable material below the fragipan. A diversion can intercept surface water moving downslope, and subsurface tile lines can intercept water moving laterally along the fragipan.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

PrC—Providence silt loam, 5 to 8 percent slopes. This moderately sloping, moderately well drained soil is on convex slopes on uplands. It has a fragipan. Individual areas are long and narrow, generally following the contour of the side slopes. They range from 3 to 50 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 2 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The upper 16 inches of the subsoil is strong brown, friable silty clay loam. The next 27 inches is a compact and brittle fragipan that has common vertical seams of light gray silt loam. The upper part of the fragipan is dark yellowish brown silt loam that has a few grayish brown mottles, and the lower part is strong brown loam. The lower part of the subsoil to a depth of 60 inches is dark brown, friable loam. In some places the fragipan extends to a depth of more than 60 inches. In other places it is weakly expressed.

Included with this soil in mapping are some small areas of the well drained Lexington soils. These soils are in landscape positions similar to those of the Providence soil. Also included are some small areas of Providence soils that have slopes of less than 5 percent, generally at the crest of ridgetops; some small areas that have slopes of more than 8 percent, generally along the edge of the unit; and a few small severely eroded areas that generally are used as pasture or cropland.

The Providence soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. The shrink-swell potential is low. Permeability is moderate above and below the fragipan and moderately slow in the fragipan. Available water capacity is moderate. Root penetration is limited to the vertical light gray seams in the fragipan. Reaction is strongly acid or very strongly acid throughout the profile. The surface layer is friable and can be tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as hayland or pasture.

This soil is moderately suited to soybeans, small grain, and grain sorghum and poorly suited to corn and cotton. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Crops respond well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, crop rotations that include grasses and legumes for hay or pasture, terraces, grassed waterways, sediment basins, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, shortleaf pine, sweetgum, and yellow poplar. The main management concerns are competing plants, the hazard of erosion, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and puddling.

The wetness and the moderately slow permeability in the fragipan limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability. These limitations also can be overcome by installing the absorption system in the friable loam below the fragipan. A diversion can intercept surface water moving downslope, and subsurface tile lines can intercept water moving laterally along the fragipan.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IIIe.

PrC3—Providence silty clay loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, moderately well drained soil is on the short, convex upper side slopes on rolling uplands. It has a fragipan. Individual areas are irregular in shape and range from 5 to 200 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 4 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown subsoil material. The upper 14 inches of the subsoil is strong brown, friable silty clay loam. The next 37 inches is a compact and brittle fragipan that has common vertical seams of light gray silt loam and has grayish brown mottles. The upper part of the fragipan is strong brown silt loam, and the lower part is red clay loam. The lower part of the subsoil to a depth of 60 inches is dark red, friable sandy clay loam. In some places the fragipan extends to a depth of more than 60 inches. In other places it is weakly expressed.

Included with this soil in mapping are some small areas of the well drained Lexington soils. These soils are in landscape positions similar to those of the Providence soil. Also included are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils along narrow drainageways; small areas of Providence soils that have slopes of less than 5 percent, generally at the crest of ridgetops, or more than 8 percent, generally along the edges of the unit; some steeper areas that are gullied and generally are planted to pine; and many small areas where depth to the fragipan is less than 18 inches.

The Providence soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate above and below the fragipan and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the gray seams in the fragipan. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is tilled when too moist, clods can form.

Most areas of this soil are used for row crops or pasture. Some areas that have been abandoned are now old fields or are wooded.

This soil is moderately suited to soybeans, small grain, and grain sorghum grown in rotation with hay or pasture. It is poorly suited to corn and cotton. Crops respond well to applications of lime and fertilizer. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops is limited. Measures that help to control erosion, maintain tilth and productivity, and conserve moisture

Figure 11.—A sediment basin and a winter cover crop of wheat help to control erosion on Providence silty clay loam, 5 to 8 percent slopes, severely eroded.

are essential. Erosion can expose the fragipan. It can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops (fig. 11). Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Crops respond well to applications of lime and fertilizer. Annual applications of lime and fertilizer help to ensure vigorous growth and a dense plant cover. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine, sweetgum, yellow poplar, and shortleaf pine. The main management concerns are competing plants, the hazard of erosion, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and puddling.

The moderately slow permeability in the fragipan and the wetness limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability. These limitations also can be overcome by installing the absorption system in the friable sandy clay loam below the fragipan. A diversion can intercept surface water moving downslope, and subsurface tile lines can intercept water moving laterally along the fragipan.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is IVe.

PrD3—Providence silty clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, moderately well drained soil is on convex side slopes in the uplands. Most areas are long and narrow, generally following the contour of the side slopes. They range from 2 to 10 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 4 inches thick. In most cultivated areas plowing has mixed the surface layer with some yellowish brown silty clay loam from the subsoil. The upper 14 inches of the subsoil is yellowish brown, friable silty clay loam. The next 37 inches is a compact and brittle fragipan that has common vertical seams of light gray silt loam and has a few light brownish gray mottles. The upper part of the fragipan is yellowish brown silt loam, the next part is dark yellowish brown silt loam, and the lower part is strong brown loam. The lower part of the subsoil to a depth of 60 inches is dark reddish brown, friable loam. In some places the fragipan extends to a depth of more than 60 inches. In other places it is weakly expressed.

Included with this soil in mapping are a few small areas of the well drained Smithdale soils and areas of the well drained Ochlockonee and moderately well drained luka soils along narrow drainageways. Also included are some small areas of the well drained Lexington soils in landscape positions similar to those of the Providence soil and some small areas where erosion has been so severe that depth to the fragipan is less than 18 inches.

The Providence soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate above and below the fragipan and moderately slow in the fragipan. Available water capacity is moderate. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. Root penetration is limited to the vertical light gray seams in the fragipan. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form. In areas where the fragipan is exposed, tilth is poor.

Most areas of this soil are used for row crops or pasture. Some areas that have been abandoned are now old fields or are wooded.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. Past erosion has significantly reduced the tilth and productivity of the soil. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is somewhat limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in the growth of undesirable plant species and further erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include sweetgum, loblolly pine, shortleaf pine, and yellow poplar. The main management concerns are competing plants, the hazard of erosion, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. The use of heavy equipment during wet periods results in rutting and puddling. Managing for uneven-aged stands helps to prevent windthrow.

The moderately slow permeability in the fragipan and the wetness limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability. These limitations also can be overcome by installing the absorption system in the friable material below the fragipan. A diversion can intercept surface water moving downslope, and subsurface tile lines can intercept water moving laterally along the fragipan.

The wetness and the slope limit the use of this soil as a site for dwellings with or without basements. The wetness can be overcome by elevating the site with fill material, by installing a subsurface drainage system that includes a dependable outlet, or by constructing basements above the level of wetness. The slope can be overcome by cutting or by cutting and filling. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used.

Low strength limits the use of this soil as a site for local roads and streets. This limitation can be overcome by excavating the soil and replacing it with coarse textured base material, such as sand and gravel, or by increasing the thickness of the pavement or of the base or subbase material.

The capability subclass is VIe.

RuC—Ruston-Savannah complex, 5 to 8 percent slopes. These soils are on short slopes on narrow ridgetops. The well drained Ruston soil is mainly on convex slopes, commonly at the crest of ridgetops. It makes up 50 to 80 percent of most areas. The moderately well drained Savannah soil is mainly in the less sloping areas or in slightly concave areas at the head of drainageways. It makes up 20 to 40 percent of most areas. The two soils occur as areas so intricately mixed that separating them in mapping was not practical. Individual areas are long and narrow, generally following the contour of the side slopes. They range from 3 to 100 acres in size.

Typically, the Ruston soil has a surface layer of dark brown fine sandy loam about 1 inch thick. The subsurface layer is light yellowish brown fine sandy loam about 5 inches thick. The subsoil extends to a depth of 60 inches. The upper part is strong brown clay loam and yellowish red sandy clay loam. The next part is strong brown sandy loam and yellowish brown loamy sand. The lower part is red sandy clay loam.

Typically, the Savannah soil has a surface layer of dark brown fine sandy loam about 1 inch thick. The subsurface layer is yellowish brown fine sandy loam about 7 inches thick. The upper 20 inches of the subsoil is strong brown, friable clay loam and sandy clay loam that has a few pale brown and yellowish brown mottles. The lower part to a depth of 60 inches is a compact and brittle fragipan of yellowish brown loam that has a few vertical pale brown seams. In places the fragipan extends to a depth of about 55 inches and overlies a buried soil of red sandy clay loam.

Included with these soils in mapping are a few small areas of the well drained Lexington and Luverne soils. Also included, in the southwestern part of the county, are a few small areas where large ironstone boulders are on the surface.

Permeability is moderate in the Ruston soil. It is moderate in the upper part of the Savannah soil and moderately slow in the fragipan. The Savannah soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Available water capacity is moderate in both soils. Roots can penetrate only the vertical seams in the fragipan in the Savannah soil and thus can extract only a significantly limited amount of moisture. The shrink-swell potential is low in both soils. Reaction is strongly acid throughout the profile. The surface layer is friable and can be tilled throughout a fairly wide range in moisture content.

Most areas of these soils are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as hayland or pasture.

These soils are moderately suited to soybeans, small grain, grain sorghum, corn, and cotton. Most areas are on narrow, inaccessible ridgetops that are not practical for row cropping. If the soils are tilled, erosion is a severe hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soils. Crops respond fairly well to applications of lime and fertilizer. Erosion can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

These soils are moderately suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

These soils are well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment when the soils are wet results in rutting. The hazard of windthrow is a management concern on the Savannah soil. It can be reduced by managing for uneven-aged stands.

The Ruston soil has few limitations as a site for septic tank absorption fields, dwellings with or without basements, and local roads and streets. In areas that are about an acre or more in size, onsite investigation can identify locations where this soil can be used as a site for both dwellings and septic tank systems.

The moderately slow permeability in the fragipan and the wetness limit the use of the Savannah soil as a site for septic tank absorption fields. Both limitations can be overcome by constructing a mound of suitable filtering material, by installing the absorption system below the fragipan, and by installing subsurface tile lines to intercept water moving laterally along the fragipan. The slow permeability also can be overcome by increasing the size of the absorption field.

The wetness limits the use of the Savannah soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet or by adding fill material to elevate the site.

The wetness limits the use of the Savannah soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness, by installing a subsurface drainage system, or by increasing the thickness of the subbase material.

The capability subclass is IIIe.

RuC3—Ruston-Savannah complex, 5 to 8 percent slopes, severely eroded. These soils are on short slopes in the uplands. The well drained Ruston soil is mainly on convex slopes, commonly at the crest of ridgetops. It makes up 50 to 80 percent of most areas. The moderately well drained Savannah soil is mainly in the less sloping areas or in slightly concave areas at the head of drainageways. It makes up 20 to 40 percent of most areas. The two soils occur as areas so intricately mixed that separating them in mapping was not practical. Individual areas are irregular in shape and range from 3 to 50 acres in size.

Typically, the Ruston soil has a surface layer of strong brown clay loam about 7 inches thick. The subsoil extends to a depth of 60 inches. The upper part is strong brown clay loam and yellowish red sandy clay loam. The next part is strong brown sandy loam and yellowish brown loamy sand. The lower part is red sandy clay loam.

Typically, the Savannah soil has a surface layer of yellowish brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown subsoil material. The upper 14 inches of the subsoil is strong brown, friable clay loam and sandy clay loam. The lower part to a depth of 60 inches is a compact and brittle fragipan of yellowish brown loam that has a few light brownish gray mottles and a few vertical seams of pale brown, friable clay loam.

Included with these soils in mapping are a few small areas of the well drained Deanburg soils, mainly along the east side of the Forked Deer River.

Permeability is moderate in the Ruston soil. It is moderate in the upper part of the Savannah soil and moderately slow in the fragipan. The Savannah soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, sometimes resulting in wet-weather seeps downslope. Available water capacity is moderate in both soils. Roots can penetrate only the vertical seams in the fragipan in the Savannah soil and thus can extract only a significantly limited amount of moisture. The shrink-swell potential is low in both soils. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be tilled throughout a fairly wide range in moisture content. If the soils are cultivated when too moist, clods can form.

Most areas of these soils are used for row crops or pasture. Some areas have been planted to pine or have reverted to hardwoods.

These soils are moderately suited to soybeans, small grain, grain sorghum, corn, and cotton grown in rotation with hay or pasture. Crops respond fairly well to applications of lime and fertilizer. If the soils are tilled, erosion is a severe hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soils. Erosion can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes for hay or pasture, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

These soils are moderately suited to pasture. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

These soils are well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Rutting and puddling result from the use of heavy equipment during wet periods. The hazard of windthrow is a management concern on the Savannah soil. It can be reduced by managing for uneven-aged stands.

The Ruston soil has few limitations as a site for septic tank absorption fields, dwellings with or without basements, and local roads and streets. In areas that are about an acre or more in size, onsite investigation can identify locations where this soil can be used as a site for both dwellings and septic tank systems.

The moderately slow permeability and the wetness limit the use of the Savannah soil as a site for septic tank absorption fields. Both limitations can be overcome by constructing a mound of suitable filtering material, by installing the absorption system below the fragipan, and by installing subsurface tile lines to intercept water moving laterally along the fragipan. The slow permeability also can be overcome by increasing the size of the absorption field.

The wetness limits the use of the Savannah soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet or by adding fill material to elevate the site.

The wetness limits the use of the Savannah soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness, by installing a subsurface drainage system, or by increasing the thickness of the subbase material.

The capability subclass is IVe.

SaB2—Savannah fine sandy loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on smooth or slightly convex slopes on terraces. It has a fragipan. Individual areas are irregular in shape and range from 2 to 50 acres in size.

Typically, the surface layer is yellowish brown fine sandy loam about 8 inches thick. The upper 26 inches of the subsoil is brown and yellowish brown, friable clay loam that has a few pale brown mottles below a depth of 20 inches. The lower part to a depth of 60 inches is a compact and brittle fragipan of light yellowish brown loam that has light brownish gray mottles and has a few vertical seams of gray clay loam.

Included with this soil in mapping are a few small areas of well drained soils that do not have a fragipan or that have a weakly expressed fragipan. These soils are in landscape positions similar to those of the Savannah soil. Also included are some areas where the fragipan does not extend to a depth of 60 inches and overlies friable alluvium; some areas of soils that are severely eroded, generally are on the steeper, more convex slopes, and have a surface layer of clay loam; and some areas of the well drained Ochlockonee and moderately well drained luka soils in narrow drainageways.

The Savannah soil has a perched seasonal high water table above the fragipan. Permeability is moderate in the upper part of the soil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the gray seams in the fragipan. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil have been cleared and used for row crops or pasture. A few areas are wooded.

This soil is well suited to soybeans, small grain, and grain sorghum and moderately suited to corn and cotton. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Erosion will necessitate increased management costs to maintain yields as depth to the fragipan decreases. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Drill or broadcast planting of soybeans also helps to control erosion.

This soil is well suited to pasture. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Managing for uneven-aged stands helps to prevent windthrow. Rutting and compaction result from the use of heavy equipment during wet periods.

The moderately slow permeability in the fragipan and the wetness limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. Basements should be constructed above the level of wetness. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material.

The wetness limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness, installing a subsurface drainage system, or increasing the thickness of the subbase material.

The capability subclass is IIe.

SaB3—Savannah clay loam, 2 to 5 percent slopes, severely eroded. This gently sloping, moderately well drained soil is on slightly convex slopes on terraces. It has a fragipan. Individual areas are irregular in shape and range from 2 to 20 acres in size.

Typically, the surface layer is yellowish brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some subsoil material. The upper 20 inches of the subsoil is yellowish brown, friable clay loam and yellowish brown, friable clay loam that has pale brown mottles. The lower part to a depth of 60 inches is a compact and brittle fragipan of strong brown loam that has light brownish gray mottles and has a few vertical seams of gray clay loam.

Included with this soil in mapping are a few small areas of well drained soils that do not have a fragipan. These soils are in landscape positions similar to those of the Savannah soil. Also included are some areas where the fragipan does not extend to a depth of 60 inches and overlies friable alluvium and some areas of the well drained Ochlockonee, moderately well drained luka, and somewhat poorly drained Steens soils in narrow drainageways.

The Savannah soil has a perched seasonal high water table above the fragipan. Permeability is moderate in the upper part of the soil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical gray seams in the fragipan. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas are used for row crops or pasture. This soil is moderately suited to soybeans, small grain, and grain sorghum and poorly suited to corn and cotton. Crops respond fairly well to applications of lime and fertilizer. If the soil is tilled, erosion is a moderate hazard. Soil conservation practices are essential to maintain the tilth and productivity of the soil. Erosion can eventually expose the fragipan. It can be controlled by crop residue management, sediment basins, terraces, grassed waterways, conservation tillage, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and increases the runoff rate and the hazard of erosion. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing plants can be controlled by suitable herbicides or mechanical removal. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and compaction.

The moderately slow permeability in the fragipan and the wetness limit the use of this soil as a site for septic tank absorption fields. The moderately slow permeability can be overcome by increasing the size of the absorption field. Constructing a mound of suitable filtering material helps to overcome both the wetness and the moderately slow permeability.

The wetness limits the use of this soil as a site for dwellings with or without basements and for local roads and streets. On sites for dwellings, this limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet. On sites for dwellings without basements, the wetness can be overcome by elevating the site with fill material. Basements should be constructed above the level of wetness. On sites for local roads and streets, fill material is needed to raise the roadbed above the level of wetness, a subsurface drainage system is needed, and the thickness of the subbase should be increased.

The capability subclass is IIIe.

SaC3—Savannah clay loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, moderately well drained soil is on convex slopes on terraces. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is yellowish brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some brown subsoil material. The upper 20 inches of the subsoil is brown, friable clay loam and yellowish brown, friable clay loam that has a few pale brown mottles. The lower part to a depth of 60 inches is a compact and brittle fragipan of yellowish brown loam that has a few light brownish gray mottles and a few vertical seams of gray clay loam.

Included with this soil in mapping are a few small areas of well drained soils that do not have a fragipan. These soils are in landscape positions similar to those of the Savannah soil. Also included are some areas where the fragipan does not extend to a depth of 60 inches and overlies friable alluvium and some areas of the well drained Ochlockonee and moderately well drained Iuka soils in narrow drainageways.

The Savannah soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate in the upper part of the soil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical gray seams in the fragipan. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas of this soil are used for cultivated crops or are abandoned fields that support shrubs and wild grasses. Some areas have been planted to pine.

This soil is moderately suited to soybeans, small grain, and grain sorghum grown in rotation with grasses and legumes for hay or pasture. It is poorly suited to corn and cotton. Crops respond fairly well to applications of lime and fertilizer. If the soil is tilled, erosion is a severe hazard. The amount of moisture that the soil can store and make available to crops is limited. Measures that help to control erosion and conserve moisture are essential. Erosion can eventually expose the fragipan. It can be controlled by crop residue management, terraces, grassed waterways, sediment basins, conservation tillage, crop rotations that include grasses and legumes, contour farming, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during dry periods in summer. Overgrazing depletes the plant cover and results in further erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and compaction.

The wetness and the moderately slow permeability in the fragipan limit the use of this soil as a site for septic tank absorption fields. Both limitations can be overcome by constructing a mound of suitable filtering material. The moderately slow permeability also can be overcome by increasing the size of the absorption field.

The wetness limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by installing a subsurface drainage system that includes a dependable outlet or by elevating the site with fill material.

The wetness limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness, by installing a subsurface drainage system, or by increasing the thickness of the subbase material.

The capability subclass is IVe.

SaD3—Savannah clay loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, moderately well drained soil is on convex side slopes in the uplands. It has a fragipan. Individual areas are irregular in shape and range from 5 to 75 acres in size.

Typically, the surface layer is yellowish brown clay loam about 6 inches thick. In most cultivated areas plowing has mixed the surface layer with some subsoil material. The upper 20 inches of the subsoil is yellowish brown, friable clay loam that has a few pale brown mottles. The lower part to a depth of 60 inches is a very firm, compact and brittle fragipan of yellowish brown loam that has a few light brownish gray mottles and a few vertical seams of gray clay loam.

Included with this soil in mapping are a few small areas of the well drained Smithdale soils. These soils are in landscape positions similar to those of the Savannah soil. Also included are some areas where the fragipan does not extend to depth of 60 inches and overlies friable alluvium and some areas of the well drained Ochlockonee and moderately well drained Iuka soils in narrow drainageways.

The Savannah soil has a perched seasonal high water table above the fragipan. The water tends to move laterally through the soil, resulting in wet-weather seeps downslope. Permeability is moderate in the upper part of the soil and moderately slow in the fragipan. Available water capacity is moderate. The shrink-swell potential is low. Root penetration is limited to the vertical gray seams in the fragipan. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled at the proper moisture content. If the soil is cultivated when too moist, clods can form.

Most areas are no longer cultivated and are old fields, have been planted to pine, or have reverted to hardwoods. A few areas are used as pasture.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. Past erosion has significantly reduced the productivity of the soil. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during hot, dry periods in summer. The plants respond fairly well to applications of lime and fertilizer. Maintaining a dense plant cover reduces the hazard of erosion. Overgrazing depletes the plant cover and results in further erosion. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are competing plants, the hazard of windthrow, and the equipment limitation. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Managing for uneven-aged stands helps to prevent windthrow. The use of heavy equipment during wet periods results in rutting and compaction.

The wetness and the moderately slow permeability in the fragipan limit the use of this soil as a site for septic tank absorption fields. Both limitations can be overcome by constructing a mound of suitable filtering material. The moderately slow permeability also can be overcome by increasing the size of the absorption field.

The slope and the wetness limit the use of this soil as a site for dwellings with or without basements. The slope can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope. The wetness can be overcome by installing a subsurface drainage system that includes a dependable outlet, by elevating the site with fill material, or by constructing basements above the level of wetness.

The wetness and the slope limit the use of this soil as a site for local roads and streets. The wetness can be overcome by adding fill material to raise the roadbed above the level of wetness, by installing a subsurface drainage system, or by increasing the thickness of the subbase material. The slope can be overcome by cutting and filling to shape the roadway. Also, the roads and streets can be built in the less sloping areas.

The capability subclass is VIe.

SmD—Smithdale fine sandy loam, 8 to 12 percent slopes. This strongly sloping, well drained soil is on the short, convex upper side slopes on narrow ridgetops and on some foot slopes in the uplands. Individual areas are long and narrow, generally following the contour of the side slopes. They range from 3 to 50 acres in size.

Typically, the surface layer is grayish brown fine sandy loam about 2 inches thick. The subsurface layer is yellowish brown fine sandy loam about 5 inches thick. The subsoil extends to a depth of 60 inches. It is yellowish red clay loam in the upper part, red sandy clay loam in the next part, and red sandy loam in the lower part.

Included with this soil in mapping are some small areas of the well drained Lexington and Luverne and moderately well drained Providence and Savannah soils. These soils are in landscape positions similar to those of the Smithdale soil. Also included are some small areas of the well drained Ochlockonee and moderately well drained luka soils in narrow drainageways; some small areas of the well drained Ruston soils, generally at the crest of ridges; and some small areas of the well drained Smithdale soils that have slopes of more than 12 percent, generally along the edge of the unit.

Permeability is moderate in the Smithdale soil. Available water capacity is moderate or high. The shrink-swell potential is low. Reaction is very strongly acid or strongly acid throughout the profile. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are wooded. They either have never been cultivated or were cultivated for only a short period. A few small areas have been cleared and are used mainly as hayland or pasture. These areas can be moderately eroded.

This soil is moderately suited to corn, cotton, grain sorghum, soybeans, and small grain grown in rotation with grasses and legumes for hay or pasture. Most areas are on narrow, inaccessible ridgetops and are not practical for row cropping. If the soil is tilled, erosion is a severe hazard. Soil conservation practices are necessary to maintain the tilth and productivity of the soil. Crops respond fairly well to applications of lime and fertilizer. Erosion can be controlled by conservation tillage, contour stripcropping, grassed waterways, crop rotations that include grasses and legumes for hay or pasture, crop residue management, and winter cover crops. Narrow-row, drill, or broadcast planting of soybeans also helps to control erosion.

This soil is moderately suited to pasture. Maintaining a dense plant cover reduces the hazard of erosion. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Operating heavy equipment during wet periods results in rutting and compaction.

The slope limits the use of this soil as a site for septic tank absorption fields and for dwellings with or without basements. On sites for septic tank absorption fields, this limitation can be overcome by cutting and filling or by installing a trench absorption system on the contour. On sites for dwellings, it can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope limits the use of this soil as a site for local roads and streets. This limitation can be overcome by cutting and filling to shape the roadway.

The capability subclass is IVe.

SmD3—Smithdale loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil is on convex side slopes in the uplands. Most areas are long and narrow, generally following the contour of the side slopes. They range from 2 to 10 acres in size.

Typically, the surface layer is yellowish red loam about 5 inches thick. In most cultivated areas plowing has mixed the surface layer with some red sandy clay loam from the subsoil. The subsoil extends to a depth of 60 inches. It is red sandy clay loam in the upper part and red sandy loam in the lower part.

Included with this soil in mapping are a few small areas of the well drained Lexington and Luverne and moderately well drained Providence and Savannah soils. These soils are in landscape positions similar to those of the Smithdale soil. Also included are areas of the well drained Ochlockonee and moderately well drained luka soils along narrow drainageways.

Permeability is moderate in the Smithdale soil. Available water capacity is moderate or high. The shrink-swell potential is low. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and in most areas can be easily tilled throughout a fairly wide range in moisture content. In areas where erosion has removed all of the original surface layer, exposing the more clayey material in the subsoil, tilth is not good and clods tend to form if the soil is cultivated during wet periods.

Most areas of this soil are used for row crops or pasture. Some areas that have been abandoned are now old fields or have been planted to pine.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. Past erosion has significantly reduced the tilth and productivity of the soil. If the soil is tilled, erosion is a severe hazard.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The response to applications of lime and fertilizer is fair. Maintaining a dense plant cover reduces the hazard of erosion. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include shortleaf pine and loblolly pine. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The slope limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by cutting, by cutting and filling, or by installing a trench absorption system on the contour.

The slope limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope limits the use of this soil as a site for local roads and streets. This limitation can be overcome by cutting and filling to shape the roadway.

The capability subclass is VIe.

SME—Smithdale fine sandy loam, 12 to 25 percent slopes. This moderately steep, well drained soil is on long, slightly convex slopes in the uplands. Individual areas are irregular in shape and range from 10 to 600 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 5 inches thick. The subsurface layer is light yellowish brown fine sandy loam about 8 inches thick. The subsoil extends to a depth of 60 inches. It is yellowish red sandy clay loam in the upper part, red sandy clay loam in the next part, and red sandy loam in the lower part.

Included with this soil in mapping are some small areas of the well drained Lexington soils. These soils are in areas where the upper part of side slopes joins loess-covered uplands and in some slightly concave areas. Also included are some small areas of the well drained Luverne and moderately well drained Savannah soils in landscape positions similar to those of the Smithdale soil; the well drained Ochlockonee and moderately well drained luka soils along many narrow drainageways; the somewhat poorly drained Enville and poorly drained Bibb soils in narrow drainageways where springs are common; and some severely eroded areas, less than 2 acres in size, that have large gullies and are mainly in abandoned fields that have been planted to pine. Some of the gullies are active. In some of the severely eroded areas, ironstone fragments, mainly ½ inch to 3 inches in diameter, cover as much as 10 percent of the surface.

Permeability is moderate in the Smithdale soil. Available water capacity is moderate or high. The shrink-swell potential is low. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

Most areas of this soil are wooded. Some large areas have been cleared and are used as pasture. A few areas are used for row crops. These areas are severely eroded.

This soil is not suited to row crops and is moderately suited to other crops, such as grasses and legumes for hay or pasture. Even if soil conservation practices are used when the soil is tilled, erosion is a severe hazard.

This soil is poorly suited to pasture. Pasture plants respond fairly well to applications of lime and fertilizer. A dense plant cover is essential because the hazard of erosion is severe. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. Applications of fertilizer, pasture renovation, and controlled grazing help to keep the pasture in good condition.

This soil is well suited to trees (fig. 12). The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are the hazard of erosion, competing plants, and the equipment limitation. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Preserving the protective layer of litter reduces the hazard of erosion. The use of heavy equipment during wet periods results in rutting and compaction. Operating equipment across the moderately steep slopes is hazardous.

The slope limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by cutting or by cutting and filling.

The slope limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by cutting or by cutting and filling. Dwellings without basements can be conformed to the natural slope of the land if piles or columns are used. Dwellings with basements can be conformed to the natural slope of the land if retaining walls are installed or if the basement on one side of the dwelling fronts on the lower part of the slope.

The slope limits the use of this soil as a site for local roads and streets. This limitation can be overcome by cutting and filling to shape the roadway.

The capability subclass is VIIe.

SmF—Smithdale fine sandy loam, steep. This well drained soil is on side slopes in the uplands. Slopes range from 25 to 45 percent. Individual areas are long and narrow and range from 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer is light yellowish brown fine sandy loam about 8 inches thick. The subsoil extends to a depth of 60 inches. It is yellowish red sandy clay loam in the upper part, red sandy clay loam in the next part, and red sandy loam in the lower part.

Included with this soil in mapping are a few small areas of the well drained Luverne and Chickasaw soils on the lower parts of the landscape and a few small areas of the well drained Ochlockonee and moderately well drained luka soils in narrow drainageways. Also included are some small areas of the somewhat poorly drained Enville and poorly drained Bibb soils in narrow drainageways that have small springs.

Permeability is moderate in the Smithdale soil. Available water capacity is moderate or high. The shrink-swell potential is low. Reaction is very strongly acid or strongly acid throughout the profile.

Most areas of this soil are wooded.

Because of the slope, this soil is not suited to row crops. It is poorly suited to pasture. The slope makes applications of fertilizer and pasture renovation impractical. Because of the slope, surface runoff is very rapid, an insufficient amount of moisture is stored in the subsoil, and the soil is droughty in summer. The hazard of erosion is severe.

Figure 12.—A wooded area of Smithdale fine sandy loam, 12 to 25 percent slopes.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are the hazard of erosion, competing plants, and the equipment limitation. Carefully designing logging roads and minimizing the removal of vegetation and forest litter when timber is harvested help to control erosion. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction. Operating equipment on the steep slopes is hazardous.

The slope limits the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. Most areas of this soil are only a few acres in size. Better suited soils generally are in nearby areas.

The slope limits the use of this soil as a site for local roads and streets. This limitation can be overcome by cutting and filling to shape the roadway. Also, the roads can be easily routed around the small areas of this soil.

The capability subclass is VIIe.

Sn—Steens loam, rarely flooded. This somewhat poorly drained soil is on low terraces. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 3 to 100 acres in size.

Typically, the surface layer is dark yellowish brown loam about 9 inches thick. The subsurface layer is loam about 11 inches thick. The upper part is pale brown and has a few yellowish brown and light brownish gray mottles, and the lower part is mottled pale brown, light gray, and brownish yellow. The subsoil to a depth of 60 inches is light brownish gray clay loam that has strong brown mottles.

Included with this soil in mapping are a few small areas of the moderately well drained Savannah soils in the slightly higher landscape positions and some small areas of the well drained Ochlockonee and moderately well drained luka soils, commonly in narrow bands close to creeks or in old, filled in, narrow stream meanders that cut across the terraces. Also included are a few small areas of the poorly drained Tooterville soils, generally in the slightly lower landscape positions.

The Steens soil has a seasonal high water table. Permeability is moderately slow. Available water capacity is high. The shrink-swell potential is low. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops. A few areas are wooded or are used as pasture.

Many undrained areas of this soil are used for cultivated crops, but tillage is frequently delayed by wetness. In drained areas the soil is well suited to soybeans, grain sorghum, and corn. Diversions, subsurface tile lines, and shallow ditches are needed.

This soil is moderately suited to pasture in undrained areas and well suited to pasture in drained areas. Grazing should be restricted during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include eastern cottonwood, water oak, sweetgum, and cherrybark oak. The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness, seedlings should be planted on prepared ridges if natural regeneration is unreliable. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and compaction.

The seasonal high water table limits the use of this soil as a site for septic tank absorption fields and dwellings with or without basements. On sites for septic tank absorption fields, this limitation can be overcome by constructing a mound of suitable filtering material.

The wetness limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material.

The capability subclass is IIw.

SO—Steens fine sandy loam, occasionally flooded. This nearly level, somewhat poorly drained soil is on low terraces and flood plains. Most areas are flooded about once every 2 to 5 years during the growing season and possibly more often during the winter. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 3 to 500 acres in size.

Typically, the upper 14 inches is overburden of brown fine sandy loam. The next 6 inches is a buried surface layer of dark brown loam. The subsoil to a depth of 60 inches is clay loam. The upper part is brown and has brownish yellow and light brownish gray mottles, and the lower part is light brownish gray and has yellowish brown mottles.

Included with this soil in mapping are a few small areas of the poorly drained Tooterville soils in the slightly lower landscape positions. Also included are some small areas of the well drained Ochlockonee and moderately well drained luka soils, generally in narrow strips along streams.

The Steens soil has a seasonal high water table. Permeability is moderately slow. Available water capacity is moderate. The shrink-swell potential is low. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops. A few areas are wooded or are used as pasture.

Some unprotected areas of this soil are cultivated. The occasional flooding during the growing season is a hazard. Where protected from flooding, the soil is well suited to soybeans, corn, and grain sorghum and moderately suited to small grain and cotton. If the soil is tilled, erosion is a slight hazard. Diversions, dikes, and shallow ditches are needed. Keeping waterways free of debris helps to protect the soil against stream overflow.

If protected from flooding, this soil is well suited to pasture. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Applications of fertilizer, pasture renovation, protection from flooding, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to trees. The trees that can be planted for commercial production include eastern cottonwood, water oak, sweetgum, and cherrybark oak.

The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness, seedlings should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a moderate seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and compaction.

This soil is not suited to dwellings with or without basements because of the wetness and the flooding.

The flooding limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is IIw.

St—Steens silt loam, overwash, frequently flooded. This nearly level, somewhat poorly drained soil is on low flood plains. It is flooded two or three times each year during the growing season. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 3 to 100 acres in size.

Typically, the upper 14 inches is overburden of dark brown and pale brown silt loam that has a few light brownish gray mottles. The next 5 inches is a buried surface layer of brown silt loam. The subsoil extends to a depth of 60 inches. The upper part is light brownish gray loam that has a few pale brown and light gray mottles, and the lower part is grayish brown clay loam that has a few yellowish brown mottles.

Included with this soil in mapping are a few small areas of the moderately well drained Iuka soils, mainly in narrow bands along some parts of drainageways. Also included are some small areas of the poorly drained Tooterville soils in low spots.

The Steens soil has a seasonal high water table. Permeability is moderately slow. Available water capacity is high. The shrink-swell potential is low. Reaction is strongly acid throughout the profile. The surface layer is friable and can be easily tilled at the proper moisture content. The soil is often flooded or saturated in the spring, however, when tillage and planting are required.

Most areas of this soil are wooded or are used as pasture. Some areas are abandoned cropland. A few areas are used as cropland about every other year, when the soil is dry enough for planting.

This soil is not suited to row crops because it is frequently flooded and has a seasonal high water table. Protecting the soil from flooding is difficult. Suitable outlets for subsurface tile lines or surface ditches generally are not available.

This soil is poorly suited to pasture because it is frequently flooded and is often saturated for long periods. Flash flooding is a hazard to livestock if higher ground is not included in the pasture. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Restricted grazing may be needed for long periods.

This soil is moderately suited to trees. The trees that can be planted for commercial production include water oak, eastern cottonwood, cherrybark oak, and sweetgum. The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness and the frequent stream overflow, seedlings should be planted by hand or machine on prepared ridges if natural regeneration is unreliable. A large, vigorous nursery stock is needed because of a high seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and puddling.

This soil is not suited to dwellings with or without basements because of the wetness and the flooding. The flooding also limits the use of the soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is Vw.

SuB3—Susquehanna clay, 2 to 5 percent slopes, severely eroded. This gently sloping, somewhat poorly drained soil is on slightly convex slopes on uplands. Individual areas are irregular in shape and range from 3 to 200 acres in size.

Typically, the surface layer is strong brown clay about 7 inches thick. In many cultivated areas plowing has mixed the surface layer with some subsoil material. The subsoil to a depth of 60 inches is clay. The upper part is strong brown and has a few light brownish gray mottles, and the lower part is mottled strong brown, red, light brownish gray, brownish yellow, and gray.

Included with this soil in mapping are a few small areas of Susquehanna soils that have slopes of slightly more than 5 percent, generally along the edge of the unit.

The Susquehanna soil is wet during periods of high rainfall, but it does not have a high water table. Permeability is very slow. Available water capacity is moderate. The shrink-swell potential is high. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is sticky when wet and very firm and hard when dry. It can be tilled only within a narrow range in moisture content.

Most areas of this soil are used for row crops. A few areas are used as pasture.

This soil is not suited to cultivated crops. It is moderately suited to grasses and legumes for hay or pasture grown in long rotations with small grain and grain sorghum. Crops respond well to applications of lime and fertilizer. In spring the wetness often delays the use of equipment. The amount of moisture that the soil can store and make available to crops is limited. As a result of erosion, in most areas the plow layer includes some clayey subsoil material and tilth in this layer is poor. Because of the poor tilth, measures that help to control erosion, increase the content of organic matter in the surface layer, and conserve moisture are essential.

This soil is moderately suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during dry periods in summer. The soil is wet during periods of high rainfall and for some time afterward. Grazing should be restricted during these periods. Grazing when the soil is wet causes compaction, which results in poor tilth. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are seedling mortality, competing plants, and the equipment limitation. The low available water capacity increases the seedling mortality rate. Careful planting of vigorous nursery stock can increase the seedling survival rate. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by increasing the size of the absorption field or by constructing a mound of suitable filtering material.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Special design and reinforcement of concrete slabs and foundations are necessary. Keeping the area around the dwelling moist during dry periods in summer can help keep the soil from drying and cracking. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

Low strength and the shrink-swell potential limit the use of this soil as a site for local roads and streets. Excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, and increasing the thickness of the pavement or of the base or subbase material can help to overcome these limitations.

The capability subclass is IVe.

SuC3—Susquehanna clay, 5 to 12 percent slopes, severely eroded. This somewhat poorly drained, sloping soil is on slightly convex slopes on uplands. Individual areas are irregular in shape and range from 3 to 200 acres in size.

Typically, the surface layer is dark yellowish brown clay about 7 inches thick. In most cultivated areas plowing has mixed the surface layer with some strong brown subsoil material. The subsoil to a depth of 60 inches is clay. The upper part is yellowish brown and has a few light brownish gray mottles, and the lower part is mottled brownish yellow, light brownish gray, and red.

Included with this soil in mapping are some small wooded areas where erosion has been slight and the surface layer is fine sandy loam.

The Susquehanna soil is wet during periods of high rainfall, but it does not have a high water table. Permeability is very slow. Available water capacity is moderate. The shrink-swell potential is high. Reaction is strongly acid throughout the profile unless the surface layer has been limed. The surface layer is sticky when wet and very firm and hard when dry. It can be tilled only within a narrow range in moisture content.

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

This soil is not suited to row crops. Past erosion has significantly reduced the tilth and productivity of the soil. If the soil is tilled, erosion is a severe hazard.

This soil is poorly suited to grasses and legumes for hay. Maintaining stands is difficult, and the hazard of erosion is severe.

This soil is poorly suited to pasture. A cover of pasture plants is effective in controlling erosion and improving tilth. The plants respond well to applications of lime and fertilizer. Maintaining a dense plant cover is difficult. Overgrazing depletes the plant cover and results in erosion and the growth of undesirable plant species. The amount of moisture that the soil can store and make available to grasses and legumes is limited. As a result, moisture stress may be a problem during dry periods in summer. The soil is wet during periods of high rainfall and for some time afterward. Grazing should be restricted during these periods. Grazing when the soil is wet causes compaction, which results in poor tilth. Applications of fertilizer, pasture renovation, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include loblolly pine and shortleaf pine. The main management concerns are seedling mortality, competing plants, and the equipment limitation. The low available water capacity increases the seedling mortality rate. Careful planting of vigorous nursery stock can increase the seedling survival rate. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. The use of heavy equipment during wet periods results in rutting and compaction.

The very slow permeability limits the use of this soil as a site for septic tank absorption fields. This limitation can be overcome by increasing the size of the absorption field or by constructing a mound of suitable filtering material.

The high shrink-swell potential limits the use of this soil as a site for dwellings with or without basements. This limitation can be overcome by excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel. Special design and reinforcement of concrete slabs and foundations are necessary. Keeping the area around the dwelling moist during dry periods in summer can help to prevent drying and cracking of the soil. Trees and shrubs that have extensive root systems should not be grown near the dwelling.

Low strength and the shrink-swell potential limit the use of this soil as a site for local roads and streets. Excavating some of the clayey material and replacing it with coarse textured base material, such as sand and gravel, and increasing the thickness of the pavement or of the base or subbase material can help to overcome these limitations. Adding lime to the soil before construction helps to prevent shrinking of the soil.

The capability subclass is VIe.

Tk—Tooterville loam, rarely flooded. This poorly drained soil is on low stream terraces. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 3 to 100 acres in size.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil is about 38 inches thick. It is light brownish gray and has many strong brown mottles. The upper part is sandy clay loam, and the lower part is sandy loam. The substratum to a depth of 60 inches is mottled light gray and strong brown sandy loam.

Included with this soil in mapping are a few small areas of the somewhat poorly drained Steens soils in the slightly higher landscape positions. Also included are some small areas of the well drained Ochlockonee and moderately well drained Iuka soils in narrow bands along creeks or in old, filled in, narrow stream meanders that cut across the terraces.

The Tooterville soil has a seasonal high water table. Permeability is moderate. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is strongly acid or medium acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil are used for row crops. A few areas are wooded.

Unless drained, this soil is poorly suited to such crops as small grain and cotton and moderately suited to corn, soybeans, and grain sorghum. If drained, it is well suited to soybeans, grain sorghum, and corn. It is wet during winter and spring. Diversions, subsurface tile lines, and shallow ditches are needed.

If drained, this soil is moderately suited to pasture. Grazing should be restricted during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include species that can withstand wetness, such as cherrybark oak, water oak, sweetgum, and eastern cottonwood. The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness, seedlings should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a moderate seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and compaction.

This soil is not suitable as a site for dwellings with or without basements because of the wetness and the flooding. Other sites should be considered for these uses.

The wetness limits the use of this soil as a site for local roads and streets. This limitation can be overcome by adding fill material to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material.

The capability subclass is IIIw.

TO—Tooterville fine sandy loam, overwash, occasionally flooded. This nearly level, poorly drained soil is on low terraces and flood plains. Most areas are flooded about once every 2 to 5 years during the growing season and possibly more often during the winter. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 3 to 20 acres in size.

Typically, the upper 14 inches is overburden of recently deposited alluvium. It is dark yellowish brown fine sandy loam. The next 3 inches is a buried surface layer of yellowish brown loam that has a few light brownish gray mottles. The subsoil to a depth of 60 inches is light brownish gray clay loam that has common yellowish brown mottles.

Included with this soil in mapping are a few small areas of the somewhat poorly drained Enville soils, generally in narrow strips along creeks, and a few small areas of the moderately well drained Iuka soils in the slightly higher landscape positions. Also included are a few small areas that are frequently flooded during the growing season. These areas are mainly near the Hardin County line, along Middleton and Hurricane Creeks.

The Tooterville soil has a seasonal high water table. Permeability is moderate. Available water capacity also is moderate. The shrink-swell potential is low. Reaction is strongly acid or medium acid throughout the profile unless the surface layer has been limed. The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content.

Most areas of this soil have been cleared and are used for row crops. A few areas, mainly in the state forest, are wooded.

Under natural conditions, this soil is moderately suited to soybeans, grain sorghum, and corn. If drained and protected from flooding, it is well suited to these crops. Tillage is frequently delayed by the wetness. Diversions, subsurface tile lines, shallow ditches, and dikes are needed. Keeping drainageways free of debris help to protect the soil against stream overflow.

If drained and protected from flooding, this soil is moderately suited to pasture. Grazing should be restricted during wet periods. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Overgrazing depletes the plant cover and results in the growth of undesirable plant species. Applications of fertilizer, pasture renovation, a drainage system, protection from flooding, controlled grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to trees. The trees that can be planted for commercial production include species that can withstand wetness, such as cherrybark oak, water oak, sweetgum, and eastern cottonwood. The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness and the occasional stream overflow, seedlings should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of the moderate seedling mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and compaction.

This soil is not suitable as a site for dwellings with or without basements because of the wetness and the flooding. Other sites should be considered for these uses.

The wetness and the flooding are limitations on sites for local roads and streets. The wetness can be overcome by adding fill material to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material. The flooding can be overcome by adding fill material to raise the roadbed above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered with strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is IIIw.

Ts—Tooterville silt loam, overwash, frequently flooded. This nearly level, poorly drained soil is on flood plains. It is flooded about two or three times each year during the growing season (fig. 13). Slopes range from 0 to 2 percent. Individual areas are irregular in

Figure 13.—Flooding on Tooterville silt loam, overwash, frequently flooded. Iuka silt loam, occasionally flooded, is in the foreground.

shape and range from 2 to 500 acres in size.

Typically, the upper 13 inches is overburden of recently deposited alluvium. It is dark brown and brown silt loam that has a few yellowish brown mottles. The next 6 inches is a buried surface layer of grayish brown silt loam that has a few yellowish brown mottles. The subsoil extends to a depth of 60 inches. The upper part is light brownish gray loam that has common yellowish brown mottles, and the lower part is grayish brown clay loam that has common yellowish brown mottles.

Included with this soil in mapping are a few small areas of the somewhat poorly drained Steens and Enville soils in the slightly higher landscape positions.

The Tooterville soil has a seasonal high water table. Permeability is moderate. Available water capacity is high. The shrink-swell potential is low. Reaction is strongly acid or medium acid throughout the profile.

Most areas of this soil are wooded. A few areas have been cleared and are used as pasture.

This soil is not suited to row crops because it is frequently flooded and has a seasonal high water table at or near the surface.

This soil is poorly suited to pasture because it is frequently flooded and is often saturated for long periods. Flash flooding can be a hazard to livestock if higher ground is not included in the pasture. Grazing when the soil is wet causes compaction, which results in poor tilth and a slower rate of water infiltration. Restricted grazing may be needed for long periods.

This soil is moderately suited to trees. The trees that can be planted for commercial production include water oak, cherrybark oak, sweetgum, and eastern cottonwood. The main management concerns are seedling mortality, the hazard of windthrow, competing plants, and the equipment limitation. Because of the wetness and the frequent flooding, the trees should be planted on prepared ridges if natural regeneration is unreliable. Large, vigorous nursery stock is needed because of a moderate mortality rate. Selected-area cutting helps to prevent windthrow of the remaining trees. Planting and harvesting activities may be delayed for fairly long periods because of the wetness and the flooding. Competing vegetation, which interferes with natural regeneration after the trees are harvested, can be controlled by suitable herbicides or mechanical removal. Restricting the use of heavy equipment to dry periods minimizes rutting and compaction.

This soil is not suitable as a site for dwellings with or without basements because of the flooding and the wetness. Other sites should be considered for these uses.

The flooding and the wetness limit the use of this soil as a site for local roads and streets. The wetness can be overcome by adding fill material to raise the roadbed above the level of wetness or by increasing the thickness of the subbase material. The flooding can be overcome by adding fill material to raise the road above the level of flooding, by constructing stable overflow sections in which a dip in the road is covered by strong concrete and riprap is added on the roadside, or by installing large culverts that permit floodwater to drain away.

The capability subclass is Vw.

Ud—Udorthents-Smithdale complex, gullied. This map unit consists of areas of Udorthents in deep, U-shaped gullies and areas of a severely eroded, well drained Smithdale soil between the gullies. The gullies are about 8 to 25 feet deep, 10 to 50 feet wide, and 50 to 200 feet long. They make up 50 to 80 percent of each area. The Smithdale soil makes up 10 to 30 percent of each area. In most areas, the gullies are not stabilized and further erosion of the gullies is a hazard. In some areas ironstone fragments 1 to 10 inches in size are on the surface. Individual areas consist of deep gullies cutting through areas that once consisted of the Smithdale soil. Subsoil material is exposed along the walls of the gullies. This material is loamy sand, sandy loam, loam, sandy clay loam, clay loam, and sandy clay. Slopes range from 8 to 25 percent.

Typically, the Smithdale soil has a surface layer of yellowish red loam about 4 inches thick. The subsoil extends to a depth of 60 inches. In sequence downward, it is red sandy clay loam, red clay loam, yellowish red sandy clay loam, and reddish yellow sandy loam. In areas where the soil has been completely truncated, the subsoil is exposed. In some areas the upper part of the subsoil is strong brown.

Included with these soils in mapping are a few small areas of the well drained Lexington and moderately well drained Providence soils between the gullies. Also included are some small, narrow areas of the well drained Ochlockonee and moderately well drained Iuka soils, which formed in sediments on the floor of the gullies, and some areas where clayey Coastal Plain deposits are exposed at the base of the gullies.

Permeability is moderate or moderately rapid in the Smithdale soil. Available water capacity is low or moderate. South- and west-facing slopes in the areas of Udorthents are quite droughty. Reaction is strongly acid or very strongly acid throughout the Smithdale soil. The shrink-swell potential is low.

Most areas consist of abandoned farmland. Most areas of the Smithdale soil have reverted to trees. Some areas are planted to pine. A few areas are used as pasture.

These soils are not suited to row crops or pasture because the gullies are too deep and the remaining soil material is too sandy to make regrading and planting feasible.

These soils are poorly suited to the production of hardwoods and moderately suited to the production of loblolly pine and shortleaf pine. Harvesting is difficult. Brush dams and careful planting of seedlings are effective in stabilizing areas of these soils.

These soils are poorly suited to septic tank absorption fields, dwellings, and local roads and streets. Extensive filling and regrading are needed in areas developed for these uses.

The capability subclass is VIIe.

Prime Farmland

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

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

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

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

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

About 43,340 acres in Chester County, or 23.5 percent of the total acreage, meets the requirements for prime farmland. Areas of this land are throughout the county. They are used mainly as cropland.

The map units that meet the requirements for prime farmland are listed in table 6. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 5. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. If applicable, the need for these measures is indicated in parentheses after the map unit name in table 6. Onsite evaluation is necessary to determine if the limitations have been overcome by corrective measures.

Use and Management of the Soils

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

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and 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 for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the suitability 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 county. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where 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

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 county, 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 the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

According to a long-range plan of the Chester County Soil Conservation District, the county had about 60,000 acres of cropland, 11,000 acres of grassland, 90,000 acres of woodland, and 9,000 acres of urban land in 1982. The rest of the acreage was used for miscellaneous purposes. The major type of farming is the production of cash crops, mainly corn, soybeans, wheat, and grain sorghum.

Soil scientists have identified 23 soil series in Chester County. The series range widely in color, texture, drainage, and other characteristics. The eastern and western thirds of the county generally are characterized by well drained soils that have a loamy or clayey subsoil. These soils are on steep side slopes and narrow, sloping ridgetops and are poorly suited to row crops. If row crops are grown, erosion is a severe hazard. The central third of the county generally is characterized by gently sloping and sloping, well drained and moderately well drained soils that have a loamy subsoil. These soils are on broad ridgetops and terraces and are suited to row crops. In many areas growing crops in rotation with pasture or hay helps to control erosion, improves tilth, and increases the content of organic matter.

Erosion on cropland or pasture can be controlled by conservation tillage, terraces, diversions, contour farming, grassed waterways, drill or broadcast planting, and cropping systems in which grasses or close-grown crops are grown in rotation with row crops.

The extent of conservation tillage in areas used for corn and soybeans in Chester County is increasing. In areas where a system of conservation tillage is applied, a reduced tillage method that nearly eliminates plowing is used. A conservation tillage system is effective in controlling erosion on sloping soils. It can be applied on almost all of the soils in the county. It requires less energy and less labor than other tillage methods, lowers production costs, conserves moisture, and makes double cropping easier.

Terraces and diversions reduce the length of slopes and thereby help to control runoff and erosion. They are most practical on deep, well drained soils that have uniform, regular slopes, such as Lexington, Smithdale, and Ruston soils. Some soils, such as Providence, Dulac, and Freeland soils, have a fragipan in the subsoil. On these soils terraces and diversions should be constructed carefully so that the fragipan is not exposed.

Contour farming is an effective, economical erosion-control measure. It is best suited to soils that have smooth, uniform slopes, which are characteristic of most of the soils in Chester County.

Grassed waterways help to control erosion by providing a protective cover of grasses and by serving as a safe outlet for diversions, terraces, and contour rows and as passageways for water that moves from one farm to another. They can be used as a turn area for farm equipment. The plants grown on the grassed waterways can be harvested for hay.

Erosion-control practices provide a protective cover, help to control runoff and pollution, and increase the rate of water infiltration. A cropping system that keeps a plant cover on the soil for extended periods reduces the hazard of erosion and helps to preserve the productive capacity of the soils. Including forage crops of grasses and legumes in the cropping system helps to control erosion on sloping land, provides nitrogen to plants, increases the content of organic matter, and improves tilth.

In areas where soybeans, wheat, grain sorghum, and other crops that are harvested by a combine are grown, drill or broadcast methods of no-till planting can be used. No-till planting eliminates long, straight, unvegetated areas where increased runoff rates can result in rill erosion.

A seasonal high water table and flooding are management concerns on about 13 percent of the acreage used for crops and pasture in the county, mostly in general soil map units 1, 2, and 3. Occasional flooding is a hazard on Iuka and Enville soils. The frequently flooded, poorly drained Bibb and Kinston soils and the frequently flooded Steens and Tooterville soils generally are unsuited to crop production. Most areas of these soils are jurisdictional wetlands and are subject to restrictions that apply to conversion of wetlands.

The design of surface and subsurface drainage systems varies with the kind of soil. On the poorly drained Tooterville and Bibb soils and on the somewhat poorly drained Enville and Steens soils, open ditches, underground drainage tile, or a combination of the two can increase yields. Drainage tile generally provides better drainage, but installing the tile is costly. Draining soils that have a fragipan, such as the somewhat poorly drained Hatchie soils, is difficult. On these soils open ditches generally are more effective than underground drainage tile.

The ditches should be established across the slope and should be deep enough to intercept water as it moves horizontally across the fragipan. Suitable outlets are needed for both underground drainage tile and open ditches. They commonly are not available in areas of the poorly drained Guyton soils and the somewhat poorly drained Falkner and Susquehanna soils.

Levees may be needed along creeks. They help to control runoff and reduce the hazard of flooding on bottom land. Keeping drainageways free of debris, trees, logjams, and silt also is effective in reducing the hazard of flooding.

Further information about erosion control, prevention of flooding, and drainage for each kind of soil can be obtained at the local office of the Soil Conservation Service.

Effects of Erosion

Since the settlement period, erosion has significantly affected the soil resources of Chester County. The surface layer of the soils probably was thicker before settlement. A comparison between soil profiles of present-day farmland and those of uncultivated woodlots nearby illustrates the extent of erosion on cultivated soils in Chester County.

During the course of this survey, soil scientists observed many profiles of both eroded and uneroded soils. They studied such soil characteristics as color, texture, structure of the surface layer, and depth to a fragipan or a clayey subsoil. The recorded observations were used when this survey was written. Comparing descriptions of eroded and uneroded soils indicates that water erosion generally has removed 6 to 18 inches of soil from cultivated areas on sloping uplands. In most uncultivated, uneroded soils, the surface layer is 6 to 9 inches thick. In most cultivated soils on uplands, all or nearly all of the original surface layer has been lost and the former subsoil is now the plow layer.

On a total of 68,302 acres, or about 35 percent of the acreage in the county, the soils that have slopes of less than 12 percent are eroded or severely eroded. On an additional 20,000 acres, the soils that have slopes of more than 12 percent are severely eroded. Hence, a total of 46 percent of the county has been eroded to some degree. Of the additional 20,000 acres, 728 acres is severely gullied. The surface layer of the severely gullied soils is eroded away, and so much of the subsoil is lost that the original soil series could not be identified. These soils are not suitable for crop production unless there are major, costly reclamation projects.

Water erosion has multiple effects on the tilth and productivity of the soils. In the most severely eroded areas, land that once was productive cannot be cultivated. For example, much of the acreage in Chickasaw State Park and Forest was once used for cotton. Because of severe gully erosion, further cultivation is impossible. The Federal Government purchased the land and reforested it with pine trees. Later, the land was returned to the State of Tennessee for use as a recreational area, woodland, and wildlife habitat.

Under natural conditions, most plant nutrients and nearly all of the organic matter in a soil are concentrated in the surface layer. The organic matter has positive effects on soil structure, water infiltration, available water capacity, and general tilth. As erosion removes the surface layer, natural fertility and organic matter content decrease. Also, the cost of management increases because of the need for additional lime and fertilizer to maintain yields and the need for additional fuel for cultivation.

The properties of some soils adversely affect productivity and tilth whenever erosion occurs. One such property is the clayey subsoil in Chickasaw, Luverne, Susquehanna, and Oktibbeha soils. In areas where the clayey subsoil is exposed, the soils are sticky when wet and tilth is poor. If the surface layer is cultivated when wet and sticky, it tends to crust and form clods as it dries. The fragipan in the subsoil restricts rooting in Providence, Dulac, Savannah, Freeland, and Hatchie soils. In areas where some of the soil material above the fragipan has been lost, the rooting depth and the available water capacity are limited and yields are lowered. If either the clayey subsoil or the fragipan is exposed, the surface layer can be tilled only when it is moist enough but not too wet. Cultivation at the wrong moisture content can result in higher energy costs to operate machinery.

A unique management problem is evident in areas of Luverne soils. Typically, scattered ironstone fragments are throughout the subsoil of these soils. If erosion washes away the fine soil particles, the ironstone fragments are left behind. The fragments become concentrated on the surface and often interfere with tillage.

The rate and effects of erosion vary within a field. The effectiveness of fertilizers and herbicides also varies within the field. As a result, selecting management practices that maximize production may be difficult.

Erosion not only damages tilth and productivity but also results in the pollution of streams, rivers, and ponds by sediment, nutrients, and pesticides. It increases the hazard of flooding by helping to clog channels. Controlling erosion minimizes pollution, reduces the hazard of flooding, and improves the quality of water for fish and wildlife. Some eroded soil material is deposited on the lower parts of fields. This material can cover and stifle recently planted crops, resulting in lower yields *(4)*.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

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

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

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 7 are grown in the county, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland *(7)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

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

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

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

There are no class I or class VIII soils in Chester County.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e* or *w*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained. The letter *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).

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

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

Woodland Management and Productivity

Joseph H. Paugh, forester, Soil Conservation Service, helped prepare this section.

Forest vegetation once covered almost all of the land in Chester County. The trees have been cleared from most of the land suitable for cultivation or forage production. Woodland still makes up about 90,000 acres in the county, or nearly 50 percent of the total acreage. Most of the woodland is in areas of soils that are too steep, too wet, too remote, or too severely eroded for row cropping or grass production. If properly managed, these areas produce high-quality trees. Other woodland values include wildlife habitat, recreation, natural beauty, and conservation of soil and water.

The major forest types in the county are upland oak, southern yellow pine, and bottom-land species. The upland oak type is the most extensive. It is common in the uplands throughout the county. Some species of commercial importance commonly included in this forest type are white oak, red oak, shagbark hickory, mockernut hickory, and yellow poplar.

Most of the trees in the southern yellow pine type are not native to the county but are now common in areas where the oak-hickory forest was cut. The county has some native shortleaf pine, mostly in the western part. Understocking and suppression of desirable seedlings are the major management concerns. Much of the pine is in areas of severely eroded soils where row cropping and forage production are now unprofitable. The dominant species are loblolly pine and shortleaf pine. Virginia pine, eastern white pine, and slash pine grow in a few areas but are not very common. Pulpwood is the principal crop derived from the pine forests. Several large tracts owned by forest industries are intensively managed for high production. Many of the smaller tracts are on farms where trees were planted primarily for erosion control. Many of the tracts on farms are unmanaged and have become overstocked. Ice damage is a management concern where loblolly pine is grown *(8)*.

Some soil-related management concerns affect both the upland oak and southern yellow pine forest types.

On the more productive Lexington, Brantley, Dulac, and Providence soils, competing vegetation can be a problem. It can be controlled by suitable herbicides or mechanical removal. In many areas Luverne soils have small ironstone fragments that hinder hand planting of seedlings, especially in eroded areas, where water erosion has removed the fine soil particles, leaving the fragments concentrated on the surface. Chickasaw, Oktibbeha, Susquehanna, Luverne, and Brantley soils have a clayey subsoil that tends to shrink when dry and swell when wet. The shrinking and swelling can adversely affect the root systems of seedlings planted in these soils. As the soils shrink during dry periods in summer, the roots may be exposed and the mortality rate of planted seedlings may be high. In some areas where Chickasaw, Luverne, and Smithdale soils are very steep, erosion is a management concern. It can be controlled by carefully designing and laying out logging roads and skid trails.

The bottom-land forest type is throughout the county. Some of the commercially important species making up this forest type are water oak, water tupelo, sweetgum, willow oak, and cottonwood. Baldcypress grows in some areas of Kinston soils, mostly on the bottom land along the Forked Deer River and Jacks Creek. Yellow poplar is common on drained bottom land that is no longer cropped. Enville, Kinston, Bibb, and Tooterville soils provide abundant moisture and excellent growing conditions for vines and weeds, which compete with hardwood seedlings. In many areas of Kinston soils, frequent flooding of long duration has killed much valuable timber. Many bottom-land channels are clogged with silt because of erosion in the uplands and with beaver dams and debris. The clogged channels and the subsequent flooding have killed or damaged several forests on bottom land. Overcoming these limitations requires community efforts.

Grazing by cattle is a management concern that affects both the upland oak and bottom-land forest types. The cattle compact the soil and injure tree roots. If the cattle require a sheltered area, they are best fenced off in a small area of forest adjacent to pastures.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestration efforts. In the section "Detailed Soil Map Units," the description of each map unit in the county suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 8 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

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

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

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

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

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

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

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year calculated at the age of culmination of mean annual increment.

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

Recreation

Chickasaw State Park and Forest has been developed in Chester County for public recreation (fig. 14). This area is used for camping, picnicking, hunting, fishing, hiking, horseback riding, and swimming. Large areas of forest that several timber companies control are open to the public for hunting.

Many of the soils in the county are well suited to the development of recreational facilities. The soils that are best suited are in areas characterized by hilly terrain; steep, wooded slopes; and many streams. These areas provide a variety of opportunities for recreation.

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

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil

Figure 14.—An area of Smithdale fine sandy loam, 12 to 25 percent slopes, which is suited to recreational uses.

properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry. Strong slopes 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 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 firm after rains and is not dusty when dry. If grading is needed, the depth of the soil over a fragipan should be considered.

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

Wildlife Habitat

The population of fish and wildlife in Chester County is large and varied. White-tailed deer, squirrel, raccoon, woodcock, and thrush inhabit the wooded areas. Quail, cottontail, dove, and many songbirds inhabit the farmed areas, where they can find food and cover. Catfish, largemouth bass, and bream inhabit the rivers, streams, and lakes. Some wetlands provide resting and feeding areas for migratory waterfowl in fall and spring.

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

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

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

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, 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, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, 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 and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, 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. 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. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

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

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

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

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

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

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

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

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets. 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 a very firm, dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

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

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

Sanitary Facilities

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

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

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

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 are less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

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

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

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope can cause construction problems.

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

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

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture, 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 sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

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

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

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

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

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil) and the thickness of suitable material. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source.

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 slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have little or no gravel and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, 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 high water table at or near the surface.

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

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, 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 or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table and permeability of the aquifer.

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 fragipan or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by 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 or sodium. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to a fragipan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of 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. Wetness, slope, and depth to a fragipan affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

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

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

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(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.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution generally are rounded to the nearest 5 percent. Thus, if the ranges of gradation extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent.

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

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

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration 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.

If a soil is assigned to two hydrologic soil groups in table 17, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams or by runoff from adjacent slopes. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

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

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

The information on flooding is based on evidence in the soil profile, namely thin strata of sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

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

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

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

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of selected typical pedons in the survey area and those of chemical analyses are given in tables 18 and 19, respectively. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The University of Tennessee at Knoxville analyzed the soil samples.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(9)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is 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 plain, plus *aquent*, the suborder of the Entisols that is wet).

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 *Aeric* identifies the subgroup that is better aerated than the great group. An example is Aeric Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size 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 coarse-loamy, siliceous, acid, thermic Aeric 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. There can be some variation in the texture of the surface layer or of the substratum 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" *(6)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(9)*. 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."

Bibb Series

The Bibb series consists of poorly drained, moderately permeable soils on flood plains. These soils formed in alluvium derived from loamy Coastal Plain deposits. Slopes range from 0 to 2 percent.

Bibb soils are similar to Kinston soils and are commonly adjacent to Iuka, Enville, and Smithdale soils. Iuka soils are moderately well drained. Kinston soils are finer textured than the Bibb soils. Enville soils are somewhat poorly drained. Smithdale soils are well drained and are on uplands.

Typical pedon of Bibb silt loam, frequently flooded; 150 feet east of a bridge over Jones Creek on New Friendship School Road; 75 feet south in an idle field:

Ap—0 to 4 inches; dark brown (7.5YR 4/2) silt loam; weak fine granular structure; very friable; strongly acid; abrupt smooth boundary.

Ag—4 to 15 inches; light brownish gray (10YR 6/2) silt loam; many medium prominent strong brown (7.5YR 5/8) mottles; weak fine granular structure; friable; strongly acid; clear wavy boundary.

Cg1—15 to 22 inches; light brownish gray (10YR 6/2) loamy sand; few medium prominent yellowish red (5YR 5/8) mottles; massive, parting along horizontal bedding planes; friable; strongly acid; clear wavy boundary.

Cg2—22 to 28 inches; grayish brown (10YR 5/2) silt loam; massive; friable; strongly acid; clear wavy boundary.

Cg3—28 to 36 inches; grayish brown (10YR 5/2) sandy loam; massive; friable; strongly acid; clear wavy boundary.

Cg4—36 to 60 inches; grayish brown (10YR 5/2) loamy sand that has several bands of grayish brown (10YR 5/2) sandy loam less than 5 millimeters thick; massive; friable; strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon and the A horizon, if it occurs, have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The Ag horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. In most pedons it has few to many brownish mottles.

The C horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. In most pedons it has reddish or brownish mottles. It is stratified sand, loamy sand, fine sandy loam, sandy loam, loam, or silt loam.

Brantley Series

The Brantley series consists of well drained, slowly permeable soils on ridgetops, side slopes, and foot slopes in the uplands. These soils formed in clayey Coastal Plain deposits. Slopes range from 5 to 20 percent.

Brantley soils are similar to Luverne soils and are commonly adjacent to Luverne, Oktibbeha, Savannah, and Susquehanna soils. The well drained Luverne soils have less than 35 percent base saturation. The moderately well drained Oktibbeha soils have a high shrink-swell potential and are underlain by marly clay. The moderately well drained Savannah soils are coarser textured than the Brantley soils and have a fragipan. The somewhat poorly drained Susquehanna soils have a high shrink-swell potential.

Typical pedon of Brantley fine sandy loam, 12 to 20 percent slopes; 0.9 mile south of Dry Creek on Highway 22; about 0.7 mile west of Highway 22 on a field road; 60 feet west of the road, in a wooded area:

A—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; moderate fine granular structure; friable; strongly acid; abrupt smooth boundary.

E—3 to 12 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak coarse granular structure; friable; strongly acid; clear smooth boundary.

EB—12 to 14 inches; strong brown (7.5YR 5/6) fine sandy loam; moderate coarse granular structure; friable; strongly acid; clear smooth boundary.

Bt1—14 to 30 inches; yellowish red (5YR 5/8) clay; strong fine subangular blocky structure; friable; many distinct yellowish red (5YR 5/6) clay films on faces of peds and in pores; strongly acid; gradual smooth boundary.

Bt2—30 to 44 inches; yellowish red (5YR 5/8) clay; few fine distinct light reddish brown (5YR 6/3) mottles; strong medium subangular blocky structure; friable; common distinct yellowish red (5YR 5/6) clay films on faces of peds and in pores; strongly acid; gradual smooth boundary.

BC—44 to 56 inches; mottled brownish yellow (10YR 6/8), light brown (7.5YR 6/4), and red (2/5YR 4/8) clay loam; weak coarse subangular blocky structure; friable; common distinct yellowish red (5YR 5/6) clay films on faces of peds; strongly acid; gradual smooth boundary.

C—56 to 60 inches; mottled brownish yellow (10YR 6/8), light brown (7/5YR 6/4), and yellowish red (5YR 5/8) fine sandy loam; massive; friable; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The content of ironstone fragments ranges from 0 to 10 percent, by volume, throughout the profile.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The E and EB horizons, if they occur, have hue of 10YR or 7.5YR and value and chroma of 4 to 6. The A and E horizons are fine sandy loam. The Ap horizon, which can occur in severely eroded areas, has hue of 2.5YR to 7.5YR, value of 4, and chroma of 6. It is clay loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is clay or clay loam.

The BC and C horizons are mottled in hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8 or have hue of 10YR, value of 4 to 6, and chroma of 1 to 8. The BC horizon is clay loam or sandy clay loam. The C horizon is sandy clay loam or fine sandy loam.

Chickasaw Series

The Chickasaw series consists of well drained, very slowly permeable soils on side slopes in the uplands. These soils formed in residuum of Coastal Plain deposits consisting of horizontally bedded, weakly cemented claystone, siltstone, and sandstone. Slopes range from 5 to 45 percent.

Chickasaw soils are commonly adjacent to Iuka, Dulac, and Luverne soils. The moderately well drained Iuka soils are on flood plains and are coarse-loamy. The moderately well drained Dulac soils have a fragipan. Luverne soils formed in stratified, clayey and loamy Coastal Plain deposits and do not have a Cr horizon.

Typical pedon of Chickasaw loam, 12 to 25 percent slopes; 2.7 miles northeast of Highway 100 on Hearn Chapel Road; 0.5 mile southwest on a gravel road; 800 feet northwest of the road, in a wooded area:

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; strongly acid; clear smooth boundary.

E—2 to 5 inches; light yellowish brown (10YR 6/4) loam; weak medium granular structure; very friable; strongly acid; clear smooth boundary.

Bt1—5 to 7 inches; yellowish red (5YR 5/6) clay; weak fine subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—7 to 16 inches; yellowish red (5YR 5/6) clay; moderate fine subangular blocky structure; firm, plastic and sticky; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt3—16 to 20 inches; yellowish red (5YR 5/6) clay; few fine distinct red (2.5YR 4/6) and pale brown (10YR 6/3) mottles; strong fine angular blocky structure; firm, plastic and sticky; few faint clay films on faces of peds; common slickensides and pressure faces; very strongly acid; clear smooth boundary.

2Bt4—20 to 30 inches; light reddish brown (5YR 6/3) clay; few fine distinct yellowish red (5YR 5/8) mottles; weak coarse angular blocky structure; firm, plastic and sticky; few faint clay films on faces of some peds; few small platy fragments of brown (10YR 5/3) claystone, becoming more common with increasing depth; common nonintersecting slickensides and pressure faces; extremely acid; gradual smooth boundary.

2B/C—30 to 45 inches; brown (10YR 5/3) clay; few fine distinct yellowish brown (10YR 5/6) mottles; weak coarse blocky structure in more than half of the mass; firm, plastic and sticky; many small platy fragments of brown (10YR 5/3) claystone, becoming more common with increasing depth; common slickensides and pressure faces; extremely acid; gradual smooth boundary.

2Cr—45 to 60 inches; brown (10YR 5/3), weakly cemented, fractured claystone; common medium distinct yellowish brown (10YR 5/6) mottles; thick horizontal bedding planes; very firm, plastic and sticky; strongly acid.

Depth to the 2Cr horizon ranges from 40 to 60 inches. Reaction is strongly acid to extremely acid throughout the profile unless the surface layer has been limed. The 2B horizon contains significantly more clay and less sand than the overlying horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is fine sandy loam or loam. The Ap horizon, if it occurs, has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is clay loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is fine sandy loam or loam.

The Bt horizon and the 2Bt horizon, if it occurs, have hue of 7.5YR to 2.5YR, value of 4 to 6, and chroma of 3 to 8. In most pedons the 2Bt horizon has mottles in shades of red or brown. These horizons are silty clay or clay.

The 2B/C horizon and the 2C/B horizon, if it occurs, have colors and textures similar to those of the 2Bt and 2Cr horizons. In some pedons they have low-chroma mottles.

The 2Cr horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is dominantly fractured siltstone or claystone. In some pedons, however, it is interbedded with thin lenses of weakly cemented sandstone. It is fractured both vertically and horizontally.

Deanburg Series

The Deanburg series consists of well drained, moderately permeable soils on terraces. These soils formed in alluvial deposits. Slopes range from 2 to 12 percent.

Deanburg soils are similar to Lexington soils and are commonly adjacent to Bibb, Iuka, Kinston, and

Smithdale soils. Bibb and Kinston soils are poorly drained and are on flood plains. Iuka soils are moderately well drained and are on flood plains. Lexington soils have less sand in the upper part of the subsoil than the Deanburg soils. Smithdale soils formed in loamy Coastal Plain deposits.

Typical pedon of Deanburg clay loam, 2 to 5 percent slopes, severely eroded; 0.7 mile north of Oak Grove on Oak Grove Road; 0.7 mile along In and Out Road; 50 feet east of the road, in a cultivated field:

Ap—0 to 7 inches; brown (7.5YR 4/4) clay loam; weak coarse granular structure; friable; medium acid; abrupt smooth boundary.

Bt1—7 to 24 inches; strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; common black stains; medium acid; gradual smooth boundary.

Bt2—24 to 31 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common distinct strong brown (7.5YR 4/6) clay films on faces of peds and in pores; some clay bridging; few black stains; medium acid; gradual smooth boundary.

Bt3—31 to 40 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; some clay bridging; few black stains; strongly acid; gradual smooth boundary.

E/Bt—40 to 60 inches; reddish yellow (7.5YR 6/8) sand that has wavy lamellae of strong brown (7.5YR 4/6) loamy sand one-quarter to one-half inch thick; single grain; loose; medium acid.

The thickness of the solum ranges from 40 to 60 inches. Depth to the E/Bt horizon ranges from 36 to 55 inches. Reaction is strongly acid or medium acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4.

The Bt horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has a few high-chroma mottles. It is clay loam in the upper part and gradually grades to sandy loam in the lower part.

The E/Bt horizon has hue of 7.5YR or 10YR, value of 3 to 7, and chroma of 4 to 8. The E part is sand or loamy sand. The Bt part is loamy sand or sandy loam.

Dulac Series

The Dulac series consists of moderately well drained, slowly permeable soils on uplands. These soils formed in a thin mantle of loess and in the underlying clayey Coastal Plain deposits. Slopes range from 2 to 12 percent.

Dulac soils are similar to Providence soils and are commonly adjacent to Falkner, Providence, and Chickasaw soils. Falkner soils are somewhat poorly drained and do not have a fragipan. Providence soils are underlain by loamy Coastal Plain deposits. Chickasaw soils are well drained and do not have a fragipan.

Typical pedon of Dulac silty clay loam, 2 to 5 percent slopes, severely eroded; 1.7 miles southwest of Highway 45 on Wilson School Road; 1.0 mile northwest on a gravel road; 600 feet east of the road, in a cultivated field:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak fine granular structure; very friable; mixed with some yellowish brown (10YR 5/6) silty clay loam by plowing; medium acid; abrupt smooth boundary.

Bt1—6 to 10 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; common distinct clay films on faces of peds; friable; strongly acid; clear smooth boundary.

Bt2—10 to 16 inches; yellowish brown (10YR 5/8) silty clay loam; few fine distinct light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine black stains; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Btx1—16 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; light gray (10YR 7/2) seams between faces of prisms; common distinct clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Btx2—23 to 33 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; light gray (10YR 7/2) seams between faces of prisms; common distinct clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Btx3—33 to 48 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; light gray (10YR 7/2) seams between faces of prisms; common distinct clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

2Bt—48 to 60 inches; dark yellowish brown (10YR 4/4) clay; few fine distinct gray (10YR 6/1) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate medium angular blocky structure; very firm, plastic and sticky; common slickensides and pressure faces; strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 22 to 36 inches in uneroded areas and from 16 to 22 inches in eroded areas. Depth to the 2B horizon ranges from 30 to 55 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In uncultivated areas the A horizon is less than 6 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is silt loam. Some pedons have a BE horizon.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. In most pedons the Bt2 horizon has mottles in shades of brown. The Bt horizon is silt loam or silty clay loam.

The Btx horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It has mottles in shades of gray or brown. It is silt loam or silty clay loam.

The 2Bt horizon has hue of 2.5YR to 10YR, value of 3 to 6, and chroma of 4 to 8. It has mottles in shades of gray or brown. It is silty clay or clay.

Enville Series

The Enville series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in stratified, loamy and sandy alluvium. Slopes range from 0 to 2 percent.

Enville soils are similar to Bibb and luka soils and are commonly adjacent to Bibb, luka, Ochlockonee, and Smithdale soils. Bibb soils are poorly drained, luka soils are moderately well drained, and Ochlockonee soils are well drained. Smithdale soils formed in loamy Coastal Plain material and are on side slopes in the uplands.

Typical pedon of Enville silt loam, occasionally flooded; 2.8 miles south of Jacks Creek fire tower on Highway 22A; 0.6 mile east of the highway on a gravel road; 100 feet north of the gravel road, in a cultivated field:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

C1—8 to 15 inches; brown (10YR 5/3) loam that has a few thin strata of sandy loam; few medium faint light brownish gray (10YR 6/2) and common fine prominent yellowish red (5YR 4/6) mottles; massive; friable; strongly acid; clear smooth boundary.

C2—15 to 18 inches; brown (10YR 5/3) sandy loam; common fine faint light brownish gray (10YR 6/2) and common fine prominent yellowish red (5YR 4/6) mottles; massive in place, parting to weak fine subangular blocky structure; friable; few fine black stains; strongly acid; clear smooth boundary.

Cg—18 to 25 inches; grayish brown (10YR 5/2) sandy loam that has a few thin strata of silt loam; common fine prominent dark brown (7.5YR 4/4) mottles; massive in place, parting to weak fine subangular blocky structure; friable; few fine black stains and concretions; strongly acid; clear smooth boundary.

C′—25 to 36 inches; brown (10YR 5/3) loam; few fine faint light brownish gray and many fine prominent strong brown (7.5YR 4/6) mottles; massive; friable; few fine black stains and concretions; common bits of charcoal; strongly acid; clear smooth boundary.

Bgb—36 to 60 inches; light brownish gray (10YR 6/2) sandy loam; common medium distinct yellowish brown (10YR 5/4) and common medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; many fine and medium black stains and concretions; strongly acid.

Buried soils are generally at a depth of 20 to 50 inches, but in some pedons they are at a depth of more than 50 inches. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 4. Some pedons have a thin A horizon, which has hue of 10YR, value of 3 or 4, and chroma of 3.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. It has few to many mottles in shades of gray, red, or brown. Strata within the horizon range from about one-eighth inch to several inches in thickness. They are loamy sand, sandy loam, fine sandy loam, loam, or silt loam. The horizon commonly occurs as alternating layers of two or more of these textures, but some pedons have strata consisting of only one of the textures.

The Cg horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 1 or 2. It has mottles in shades of brown. It has the same textures as the C horizon.

The Bgb horizon has hue of 10YR or 7.5YR, value of 6 or 7, and chroma of 1 or 2. It has mottles in shades of red or brown. It is sandy loam, loam, or silt loam. Clay films are on the faces of peds in some pedons. Some pedons have an Ab horizon above the Bgb horizon. The Ab horizon is slightly darker than the Bgb horizon and has similar textures.

Falkner Series

The Falkner series consists of somewhat poorly drained, slowly permeable soils in the uplands. These soils formed in a thin mantle of silty material and in the underlying clayey Coastal Plain deposits. Slopes range from 2 to 5 percent.

Falkner soils are commonly adjacent to Dulac and Chickasaw soils. Dulac soils are moderately well drained and have a fragipan. Chickasaw soils are well drained and clayey.

Typical pedon of Falkner silty clay loam, 2 to 5 percent slopes, severely eroded; 1.7 miles southwest of Highway 45 on Wilson School Road; 0.7 mile northwest on a gravel road; 350 feet southwest of the road, in a cultivated field:

Ap—0 to 8 inches; dark brown (10YR 4/3) silty clay loam; mixed with some yellowish brown (10YR 5/4) silty clay loam by plowing; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.

Bt—8 to 16 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct brownish yellow (10YR 6/8) and common fine faint pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; few distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Btg1—16 to 31 inches; light brownish gray (10YR 6/2) silty clay loam; few fine distinct brownish yellow (10YR 6/8) and common fine distinct strong brown (7.5YR 5/8) mottles; strong medium subangular blocky structure; friable; few faint light brownish gray (10YR 6/2) silt coatings on faces of peds; few distinct clay films on faces of peds; strongly acid; clear smooth boundary.

2Btg2—31 to 42 inches; light brownish gray (10YR 6/2) silty clay; many fine distinct brownish yellow (10YR 6/8) mottles; strong medium angular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; clear smooth boundary.

2Btg3—42 to 60 inches; grayish brown (10YR 5/2) clay; common medium distinct yellowish brown (10YR 5/6) mottles; strong medium angular blocky structure; very firm; few slickensides and pressure faces; strongly acid.

The solum is more than 60 inches thick. Depth to the 2Btg horizon ranges from 15 to 35 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It has mottles in shades of yellow or brown. It is silt loam or silty clay loam.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of yellow or brown.

The 2Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of yellow or brown. It is silty clay or clay.

Freeland Series

The Freeland series consists of moderately well drained soils on stream terraces. These soils formed in loess and in the underlying old alluvium. Slopes range from 2 to 8 percent.

Freeland soils are similar to Providence soils and are commonly adjacent to Guyton, Hatchie, Kinston, Lexington, and Providence soils. Guyton soils are poorly drained. Hatchie soils are somewhat poorly drained. Kinston soils are poorly drained, do not have a fragipan, and are on flood plains. Lexington soils are well drained and do not have a fragipan. Providence soils do not have an E/Bx horizon over the fragipan and are underlain by friable, loamy Coastal Plain sediments within a depth of 60 inches.

Typical pedon of Freeland silt loam, 2 to 5 percent slopes, severely eroded; 0.8 mile north on Henderson-Mifflin Road from its intersection with Luray Avenue in Henderson; 500 feet south of the road, in a field of soybeans:

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

Bt—7 to 18 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct yellowish brown (10YR 5/8) and pale brown (10YR 6/3) mottles; moderate fine subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

E/Btx—18 to 23 inches; E part—light gray (10YR 7/2) silt loam; Btx part—dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; few faint clay films on faces of peds; slightly brittle in the Btx part; strongly acid; abrupt irregular boundary.

Btx/E—23 to 28 inches; Btx part—dark yellowish brown (10YR 4/4) silt loam; few fine light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly brittle; E part—tongues of light gray (10YR 7/2) silt loam between prisms; few fine black stains; common distinct clay films in pores; strongly acid; clear smooth boundary.

2Btx1—28 to 48 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly brittle; noticeable content of sand; very thin light brownish gray (10YR 6/2) silt coatings on faces of prisms; few tongues extending into the horizon; common distinct clay films in pores; strongly acid; clear smooth boundary.

2Btx2—48 to 60 inches; dark yellowish brown (10YR 4/6) loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly brittle; very thin light brownish gray (10YR 6/2) silt coatings on faces of prisms; few faint clay films in pores; strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 18 inches in severely eroded areas to 36 inches. Depth to the 2B horizon ranges from 20 to 48 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It has mottles in shades of brown.

The E part of the E/Btx and Btx/E horizons and the E horizon, if it occurs, have hue of 10YR, value of 6 or 7, and chroma of 2 or 3. The Btx part has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. It has mottles in shades of gray or brown.

The 2Btx horizon has hue of 10YR and value and chroma of 4 to 6. In the upper part it is commonly silt loam that has a noticeable content of sand, but the range includes fine sandy loam, loam, and, in a few places, clay loam.

Guyton Series

The Guyton series consists of poorly drained, slowly permeable soils on flats and in depressions on terraces. These soils formed in silty alluvium over loamy alluvium. Slopes are 0 to 1 percent.

Guyton soils are similar to Tooterville soils and are commonly adjacent to Hatchie and Freeland soils. Hatchie soils are somewhat poorly drained and have a fragipan. Freeland soils are moderately well drained and have a fragipan. Tooterville soils formed in loamy alluvium.

Typical pedon of Guyton silt loam; 1.6 miles north of Highway 100 on Mifflin Road; 150 feet east of the road, in a wooded area:

A—0 to 6 inches; dark brown (10YR 4/3) silt loam; moderate medium granular structure; friable; strongly acid; clear smooth boundary.

Eg—6 to 21 inches; gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/6) and few fine distinct brown (7.5YR 4/4) mottles; weak medium granular structure; friable; strongly acid; abrupt irregular boundary.

B/E—21 to 32 inches; B part—gray (10YR 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common prominent dark gray (10YR 4/1) clay films on faces of peds and in pores; E part—tongues of gray (10YR 6/1) silt loam; strongly acid; clear wavy boundary.

Btg1—32 to 41 inches; gray (10YR 5/1) silty clay loam; few fine prominent yellowish red (5YR 5/8) and yellowish brown (10YR 5/8) mottles; moderate coarse subangular blocky structure; common distinct gray (10YR 5/1) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Btg2—41 to 51 inches; gray (10YR 5/1) silty clay loam; common medium prominent strong brown (7.5YR 5/8) and few fine prominent yellowish red (5YR 5/8) mottles; moderate coarse subangular blocky structure; friable; common distinct gray (10YR 5/1) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

2Btg3—51 to 60 inches; gray (10YR 5/1) clay loam; common fine prominent red (2.5YR 4/6) and common medium prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; slightly brittle in places; common distinct gray (10YR 6/1) clay films in pores; strongly acid.

The solum is more than 60 inches thick. Depth to the underlying loamy alluvium ranges from 30 to 55 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The E horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. It has mottles in shades of brown.

The B part of the B/E horizon has colors and textures similar to those of the Bt horizon. The E part has colors and textures similar to those of the E horizon.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of red or brown. The 2Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of red or brown. It is silt loam, loam, or clay loam.

Hatchie Series

The Hatchie series consists of somewhat poorly drained, slowly permeable soils on terraces. These soils formed in loess and in the underlying old alluvium. Slopes range from 0 to 2 percent.

Hatchie soils are similar to Freeland soils and are commonly adjacent to Guyton, Freeland, Kinston, and Lexington soils. Guyton soils are poorly drained. Freeland soils are moderately well drained. Kinston soils are poorly drained and do not have a fragipan. Lexington soils are well drained and do not have a fragipan.

Typical pedon of Hatchie silt loam; 1.6 miles north of Highway 100 on Mifflin Road; 350 feet east of the road, in a cultivated field:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; common black concretions; strongly acid; abrupt smooth boundary.

Bt1—8 to 19 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light gray (10YR 7/1), few medium distinct yellowish brown (10YR 5/8), and common medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; common black concretions; strongly acid; clear smooth boundary.

Bt2—19 to 26 inches; light yellowish brown (10YR 6/4) silt loam; common medium distinct light gray (10YR 7/1) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common black concretions; strongly acid; clear smooth boundary.

E/Btx—26 to 31 inches; E part—light gray (10YR 7/2) silt loam; Btx part—pockets of firm, brittle, light brownish gray (10YR 6/2) silt loam; common medium faint light gray (10YR 7/1) and prominent yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; common black concretions; strongly acid; abrupt irregular boundary.

Btgx—31 to 42 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; firm; brittle; tongues of light brownish gray (10YR 6/2) silt loam between faces of prisms; common distinct yellowish brown (10YR 5/4) clay films in pores; common black concretions; strongly acid; clear smooth boundary.

2Btx—42 to 60 inches; pale brown (10YR 6/3) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; brittle; noticeable content of sand; light brownish gray (10YR 6/2) silt coatings between faces of prisms; few distinct dark grayish brown (10YR 4/2) clay films in pores; common black concretions and stains; strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 20 to 32 inches. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In most pedons it has grayish mottles.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. It has mottles in shades of gray or brown.

The E part of the E/Btx horizon has hue of 10YR, value of 7, and chroma of 1 or 2. The Btx part has colors and textures similar to those of the Btgx horizon.

The Btgx horizon or the Btx horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It has mottles in shades of gray, yellow, or brown. It is silt loam or silty clay loam.

The 2Btx horizon has value of 5 or 6 and chroma of 3 or 4. In most pedons it has mottles in shades of yellow or brown. It is silt loam that has a significant content of sand, but the range includes loam and, in a few places, clay loam.

Iuka Series

The Iuka series consists of moderately well drained, moderately permeable soils on flood plains. These soils formed in stratified, loamy alluvium. Slopes range from 0 to 2 percent.

Iuka soils are similar to Ochlockonee soils and are commonly adjacent to Enville, Ochlockonee, and Smithdale soils. Enville soils are somewhat poorly drained. Ochlockonee soils are well drained. Smithdale soils are well drained and are on side slopes in the uplands.

Typical pedon of Iuka silt loam, occasionally flooded; 1.5 miles south of Mifflin on Mifflin Road; 1.0 mile west on a paved road; 1,300 feet south of the road, in an idle field:

Ap—0 to 8 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; friable;

strongly acid; abrupt smooth boundary.

C1—8 to 13 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 4/6) mottles; massive; friable; few fine black stains; strongly acid; clear smooth boundary.

C2—13 to 17 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/8) mottles; massive; friable; few fine black stains; strongly acid; abrupt smooth boundary.

C3—17 to 20 inches; stratified light yellowish brown (10YR 6/4) loamy sand and strong brown (7.5YR 5/8) sandy loam; few fine distinct grayish brown (10YR 5/2) mottles; single grain; loose; strongly acid; abrupt smooth boundary.

C4—20 to 23 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 5/8) mottles; massive; friable; strongly acid; clear smooth boundary.

C5—23 to 34 inches; brown (10YR 5/3) sandy loam; common medium faint grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; strongly acid; clear smooth boundary.

Ab—34 to 50 inches; dark brown (10YR 4/3) silt loam; common medium distinct light yellowish brown (10YR 6/4) and light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.

Bwb—50 to 60 inches; pale brown (10YR 6/3) silt loam; common medium faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; strongly acid.

The depth to buried horizons ranges from 20 to more than 60 inches. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4.

The C horizon has hue of 7.5YR or 10YR and value of 4 to 6. It generally has chroma of 3 to 6. In some pedons, however, it has chroma of 1 or 2 below a depth of 20 inches. It has mottles in shades of brown. It is stratified loamy sand, sandy loam, fine sandy loam, loam, or silt loam.

The Ab horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It has mottles in shades of gray or brown.

The Bwb horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. In most pedons it has mottles in shades of gray. It is sandy loam, loam, or silt loam.

Kinston Series

The Kinston series consists of poorly drained, moderately permeable soils on flood plains. These soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Kinston soils are similar to Bibb soils and are commonly adjacent to Freeland, Hatchie, and Enville soils. Bibb soils are coarser textured than the Kinston soils. Enville soils are somewhat poorly drained. The moderately well drained Freeland soils and the somewhat poorly drained Hatchie soils are on terraces and have a fragipan.

Typical pedon of Kinston silt loam, frequently flooded; 0.5 mile south of the Forked Deer River on Garland Levee Road; 100 feet east of the road, in a wooded area:

Oi—1 inch to 0; slightly decomposed leaves and twigs.

A—0 to 5 inches; brown (10YR 4/3) silt loam; common fine distinct grayish brown (10YR 5/2) mottles; moderate medium granular structure; friable; few fine prominent black stains; strongly acid; clear wavy boundary.

Cg1—5 to 17 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark grayish brown (10YR 4/2) and common medium prominent strong brown (7.5YR 4/6) mottles; massive in place, parting to weak medium subangular blocky structure; friable; common medium prominent black stains; few fine black concretions; strongly acid; clear smooth boundary.

Cg2—17 to 30 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; massive in place, parting to weak medium subangular blocky structure; friable; common medium prominent black stains and concretions; strongly acid; gradual smooth boundary.

Cg3—30 to 45 inches; gray (10YR 6/1) loam; common fine prominent dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/6), and brownish yellow (10YR 6/6) mottles; massive in place, parting to weak coarse subangular blocky structure; friable; common medium prominent black stains; many large black concretions; strongly acid; clear smooth boundary.

Cg4—45 to 60 inches; gray (10YR 6/1) loam; common fine prominent brownish yellow (10YR 6/6) and strong brown (7.5YR 4/6) mottles; massive; friable; common medium prominent black stains; strongly acid.

The loamy sediments are more than 60 inches thick. Reaction is strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3. The Cg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of yellow or brown. It is loam or silt loam.

Lexington Series

The Lexington series consists of well drained, moderately permeable soils on ridgetops and side slopes in the uplands. These soils formed in a thin mantle of loess and in the underlying loamy Coastal Plain deposits. Slopes range from 2 to 12 percent.

Lexington soils are similar to Providence soils and are commonly adjacent to Freeland, Providence, and Smithdale soils. Freeland and Providence soils are moderately well drained and have a fragipan. Smithdale soils formed in loamy Coastal Plain deposits and do not have a mantle of loess.

Typical pedon of Lexington silt loam, 2 to 5 percent slopes, eroded; 0.2 mile north of Clark's Creek on Henderson-Mifflin Road; 1.2 miles east on a gravel road; 250 feet north of the road, in a cultivated field:

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

Bt1—8 to 19 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; many distinct dark reddish brown (5YR 3/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—19 to 34 inches; strong brown (7.5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds and in pores; few fine distinct black stains; strongly acid; clear smooth boundary.

Bt3—34 to 40 inches; strong brown (7.5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds and in pores; common medium distinct black stains; strongly acid; clear smooth boundary.

2Bt4—40 to 47 inches; strong brown (7.5YR 4/6) loam; moderate medium subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds and in pores; common medium distinct black stains; strongly acid; clear smooth boundary.

2Bt5—47 to 60 inches; red (2.5YR 4/6) sandy clay loam; few medium distinct red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds and in pores; common medium distinct black (N 2/0) stains; few pockets of pale brown (10YR 6/3) loamy sand; strongly acid.

The solum is more than 60 inches thick. The mantle of loess ranges from 24 to 48 inches in thickness. Reaction is medium acid or strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon or the A horizon, if it occurs, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam or, in eroded areas, silty clay loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is silt loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is silt loam or silty clay loam.

The 2Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8. In most pedons it has mottles in shades of red. It is dominantly sandy loam, sandy clay loam, or loam but in most pedons has few or common pockets of loamy sand or sand.

Luverne Series

The Luverne series consists of well drained, moderately slowly permeable soils on uplands. These soils formed in stratified, loamy and clayey Coastal Plain deposits. Slopes range from 5 to 45 percent.

Luverne soils are similar to Brantley soils and are commonly adjacent to Brantley, Enville, and Smithdale soils. Brantley soils have more than 35 percent base saturation 50 inches below the top of the argillic horizon. Enville soils are somewhat poorly drained and are on flood plains. Smithdale soils are coarser textured than the Luverne soils and have a thicker solum.

Typical pedon of Luverne fine sandy loam, 5 to 8 percent slopes; 0.1 mile east of Little White Oak Creek on State Highway 22A; 0.5 mile north on a paved county road; 25 feet east of the road, in a wooded area:

A—0 to 2 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; strongly acid; clear smooth boundary.

E—2 to 6 inches; pale brown (10YR 6/3) fine sandy loam; weak medium granular structure; friable; strongly acid; clear smooth boundary.

Bt1—6 to 20 inches; strong brown (7.5YR 5/6) clay; weak fine subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—20 to 33 inches; yellowish red (5YR 5/6) clay; moderate coarse subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

BC—33 to 48 inches; yellowish red (5YR 5/6) clay loam; weak coarse subangular blocky structure;

some relict rock structure in some peds; friable; few distinct clay films on faces of peds; strongly acid; gradual smooth boundary.

C—48 to 60 inches; stratified light reddish brown (2.5YR 6/4) sandy loam and red (2.5YR 4/6) sandy clay loam; few thin layers of pinkish gray (5YR 6/2) clay; massive; friable; very strongly acid.

The thickness of the solum ranges from 20 to 50 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. In some pedons the content of ironstone fragments ranges from 1 to 10 percent, by volume, throughout the solum.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. The Ap horizon, if it occurs, has hue of 5YR or 7.5YR, value of 5, and chroma of 4 to 6. It is clay loam. The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 4 to 8. The lower part has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. The Bt horizon is clay loam or clay.

The BC horizon has hue of 2.5YR or 5YR, value of 5 or 6, and chroma of 6 to 8. It is clay loam or sandy clay loam.

The C horizon has strata that have hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. It ranges from sandy clay loam to silt loam.

Ochlockonee Series

The Ochlockonee series consists of well drained, moderately rapidly permeable soils on flood plains. These soils formed in stratified, sandy and loamy alluvium. Slopes range from 0 to 2 percent.

Ochlockonee soils are similar to luka soils and are commonly adjacent to luka, Smithdale, and Steens soils. luka soils are moderately well drained. Smithdale soils are well drained and are on uplands. Steens soils are somewhat poorly drained.

Typical pedon of Ochlockonee loam, occasionally flooded; 150 feet east of Dry Creek on Jacks Creek Road; 1,070 feet north of the road, in a cultivated field:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; very friable; medium acid; abrupt smooth boundary.

C1—8 to 17 inches; yellowish brown (10YR 5/4) silt loam; few fine prominent strong brown (7.5YR 5/8) mottles; massive; friable; strongly acid; clear wavy boundary.

C2—17 to 23 inches; stratified dark yellowish brown (10YR 4/4) silt loam and brownish yellow (10YR 6/6) sand; massive in the silt loam and single grain in the sand; friable in the silt loam and loose in the sand; strongly acid; clear wavy boundary.

C3—23 to 27 inches; dark yellowish brown (10YR 4/6) silt loam; few fine prominent strong brown (7.5YR 5/8) mottles; massive; friable; strongly acid; abrupt smooth boundary.

C4—27 to 33 inches; yellowish brown (10YR 5/6) sand; single grain; loose; strongly acid; abrupt smooth boundary.

C5—33 to 50 inches; brown (10YR 4/3) silt loam; few fine distinct light yellowish brown (10YR 6/4) mottles; massive; friable; few fine black stains; strongly acid; clear smooth boundary.

Ab—50 to 60 inches; dark brown (10YR 3/3) silt loam; moderate fine granular structure; friable; strongly acid.

The depth to buried horizons ranges from 20 to more than 60 inches. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon or the A horizon, if it occurs, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4.

The C horizon has strata that have hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It has mottles in shades of brown. Mottles with chroma of 2 or less are below a depth of 3 feet in some pedons. This horizon is stratified silt loam, loam, fine sandy loam, or loamy sand.

The Ab horizon, if it occurs, has value of 3 or 4 and chroma of 2 to 4.

Oktibbeha Series

The Oktibbeha series consists of moderately well drained, very slowly permeable soils on side slopes in the uplands. These soils formed in clayey Coastal Plain deposits underlain by marly clay. Slopes range from 5 to 20 percent.

Oktibbeha soils are similar to Chickasaw soils and are commonly adjacent to Savannah, Brantley, and Susquehanna soils. The well drained Chickasaw soils are underlain by weakly cemented claystone. The moderately well drained Savannah soils have a fragipan and are coarser textured than the Oktibbeha soils. The somewhat poorly drained Susquehanna soils have a solum that is more than 60 inches thick. The well drained Brantley soils have a moderate shrink-swell potential and are underlain by loamy material.

Typical pedon of Oktibbeha fine sandy loam, 12 to 20 percent slopes; 1.9 miles east of Little White Oak on Highway 22A; 1.1 miles north on a gravel road on Rickman Farm; 30 feet east of the road, in a pasture:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak coarse granular structure; very friable; medium acid; abrupt smooth boundary.

E—4 to 7 inches; pale brown (10YR 6/3) fine sandy loam; weak fine subangular blocky structure; friable; strongly acid; abrupt wavy boundary.

Bt1—7 to 19 inches; strong brown (7.5YR 4/6) clay; strong fine subangular blocky structure; firm, very sticky and very plastic; common distinct dark brown (7.5YR 4/4) clay films on faces of peds; common slickensides; strongly acid; clear smooth boundary.

Bt2—19 to 26 inches; strong brown (7.5YR 5/6) clay; strong medium angular blocky structure; firm, very sticky and very plastic; common distinct reddish brown (5YR 5/4) clay films on faces of peds; common slickensides; strongly acid; clear smooth boundary.

Bt3—26 to 41 inches; red (2.5YR 4/6) clay; common medium prominent brown (7.5YR 5/2) mottles; strong coarse angular blocky structure; firm, very sticky and very plastic; common distinct reddish brown (5YR 5/4) clay films on faces of peds; common slickensides; few vertical cracks one-quarter to three-quarters of an inch wide extending through the horizon; strongly acid; gradual smooth boundary.

BC—41 to 48 inches; brown (10YR 5/3) clay; massive in place, parting to weak very coarse angular blocky structure; very firm, very sticky and very plastic; common slickensides; few vertical cracks one-quarter to three-quarters of an inch wide extending into the horizon; medium acid; clear smooth boundary.

C—48 to 60 inches; olive (5Y 5/3) marly clay; few medium prominent olive yellow (2.5Y 6/8) mottles; massive; very firm, sticky and plastic; common soft white nodules of calcium carbonate; few fossil marine shells; neutral.

The thickness of the solum ranges from 24 to 50 inches. Reaction ranges from strongly acid to slightly acid in the solum unless the surface layer has been limed. The C horizon is neutral or mildly alkaline.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4. In severely eroded pedons the Ap horizon has colors and textures similar to those of the Bt horizon. The E horizon, if it occurs, has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 6 to 8. In some pedons the lower part of this horizon has mottles in one or more of these colors and may also have a few low-chroma mottles. The BC horizon has colors and textures similar to those in the lower part of the Bt horizon or in the C horizon.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 3 to 8. In most pedons it has mottles in one or more of these colors. In some pedons it has low-chroma mottles.

Providence Series

The Providence series consists of moderately well drained, moderately slowly permeable soils on uplands. These soils formed in a thin mantle of loess and in the underlying Coastal Plain sediments. Slopes range from 2 to 12 percent.

Providence soils are similar to Savannah soils and are commonly adjacent to Lexington and Smithdale soils. Lexington soils are well drained and do not have a fragipan. Savannah soils have more sand in the particle-size control section than the Providence soils. Smithdale soils are well drained, do not have a fragipan, and formed in loamy Coastal Plain sediments.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, eroded; 4.0 miles north of Highway 100 on Glendale Road; 1.4 miles north and east on a gravel road; 555 feet west in a cultivated field:

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

Bt1—8 to 12 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium subangular blocky structure; friable; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—12 to 18 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine black stains; strongly acid; abrupt smooth boundary.

Btx1—18 to 28 inches; strong brown (7.5YR 4/6) silt loam; few fine prominent light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; moderate coarse and very coarse prismatic structure parting to moderate coarse subangular blocky; few very thin brown (10YR 5/3) silt coatings on faces of prisms; firm; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; very strongly acid; clear smooth boundary.

2Btx2—28 to 51 inches; strong brown (7.5YR 4/6) loam; many medium distinct strong brown (7.5YR 5/8) mottles; moderate coarse and very coarse prismatic structure parting to moderate coarse subangular blocky; firm; compact and brittle; few thin pale brown (10YR 6/3) silt coatings on faces of prisms; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

2Bt—51 to 60 inches; strong brown (7.5YR 5/6) sandy loam; many medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; many distinct dark brown (10YR 4/3) clay films on faces of peds and in pores; strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 18 to 30 inches. The thickness of the loess ranges from 20 to 48 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam in severely eroded areas. The A horizon, if it occurs, has hue of 10YR, value of 4, and chroma of 2 or 3. It is silt loam.

The E horizon, if it occurs, has hue of 10YR, value of 5, and chroma of 3 or 4. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The Btx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It has mottles in shades of gray or brown. It is silt loam or silty clay loam.

The 2Btx horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It has mottles in shades of brown. It is sandy clay loam, clay loam, loam, or sandy loam.

The 2Bt horizon has hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 4 to 8. It has mottles in shades of brown. It is sandy loam, sandy clay loam, clay loam, or loam.

Ruston Series

The Ruston series consists of well drained, moderately permeable soils on ridgetops in the uplands. Most of the ridgetops are narrow and convex. These soils formed in loamy Coastal Plain deposits. Slopes range from 5 to 8 percent.

Ruston soils are similar to Smithdale soils and are commonly adjacent to Lexington, Luverne, Providence, Savannah, and Smithdale soils. The well drained Lexington soils have a fine-silty control section and have more than 35 percent base saturation. The well drained Luverne soils have a clayey control section and a solum that is less than 50 inches thick. The moderately well drained Providence soils have a fine silty control section, have more than 35 percent base saturation, and have a fragipan. The moderately well drained Savannah soils have a fragipan. The well drained Smithdale soils are not bisequal and are on the steeper slopes.

Typical pedon of Ruston clay loam, in an area of Ruston-Savannah complex, 5 to 8 percent slopes, severely eroded; from the intersection of Tar Creek Road and Oak Grove Road, 0.6 mile north on Oak Grove Road to a fork in the road; 50 feet northwest of the road, in a cultivated field:

Ap—0 to 7 inches; strong brown (7.5YR 4/6) clay loam; weak coarse granular structure; friable; strongly acid; abrupt smooth boundary.

Bt1—7 to 22 inches; strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; many distinct dark brown (7.5YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—22 to 32 inches; yellowish red (5YR 5/6) sandy clay loam; few black stains; moderate medium subangular blocky structure; friable; common distinct dark brown (7.5YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.

BE—32 to 40 inches; strong brown (7.5YR 5/6) sandy loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak very coarse subangular blocky structure; firm and slightly brittle in streaks and pockets; prominent black stains; strongly acid; gradual smooth boundary.

E—40 to 45 inches; yellowish brown (10YR 5/4) loamy sand; single grain; loose; strongly acid; clear wavy boundary.

B't—45 to 60 inches; red (2.5YR 4/8) sandy clay loam; moderate coarse subangular blocky structure; friable; common distinct reddish brown (2.5YR 4/4) clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. The A and E horizons, if they occur, have hue of 10YR, value of 4 to 6, and chroma of 2 to 4. They are fine sandy loam.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6. In some pedons it has high-chroma mottles. It is clay loam or sandy clay loam.

The BE and E horizons have hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 6. In most pedons the BE horizon has mottles in shades of brown. The BE and E horizons are sandy loam or loamy sand.

The B't horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8.

Savannah Series

The Savannah series consists of moderately well drained, moderately slowly permeable soils on ridgetops and side slopes in the uplands and on terraces. These soils formed in loamy Coastal Plain deposits. Slopes range from 2 to 12 percent.

Savannah soils are similar to Providence soils and are commonly adjacent to Luverne, Ruston, and Smithdale soils. Providence soils are fine-silty. Luverne soils are well drained and clayey and do not have a fragipan. Ruston and Smithdale soils are well drained and do not have a fragipan.

Typical pedon of Savannah fine sandy loam, 2 to 5 percent slopes, eroded; 1,260 feet east of Middleton Creek on the road between Roby and Center Point; 300 feet south of the road, in a cultivated field:

Ap—0 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; moderate fine granular structure; friable; slightly acid; abrupt smooth boundary.

Bt1—8 to 20 inches; brown (7.5YR 5/4) clay loam; moderate medium subangular blocky structure; friable; common distinct dark brown (7.5YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—20 to 34 inches; yellowish brown (10YR 5/6) clay loam; few fine distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; few distinct dark brown (7.5YR 4/4) clay films on faces of peds; few fine black stains and concretions; strongly acid; clear smooth boundary.

Btx1—34 to 46 inches; yellowish brown (10YR 5/4) loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate coarse and very coarse prismatic structure; firm; compact and brittle; prisms ranging from 3 to 6 inches in width; thin gray seams of clay loam between faces of prisms; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; common black stains; strongly acid; gradual smooth boundary.

Btx2—46 to 60 inches; yellowish brown (10YR 5/6) loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate very coarse prismatic structure; firm; compact and brittle; prisms ranging from 4 to 10 inches in width; thin gray seams of clay loam between faces of prisms; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; few black stains; strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 16 to 36 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. A few small rounded pebbles are in some pedons.

The Ap horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. In severely eroded areas it is clay loam. Undisturbed areas have a thin A horizon, which has hue of 10YR, value of 3, and chroma of 2, and an E horizon, which has hue of 10YR, value of 6, and chroma of 3. The A and E horizons are fine sandy loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 8. It is clay loam, sandy clay loam, or loam.

The Btx horizon has hue of 10YR, value of 5, and chroma of 4 to 6. It has mottles in shades of gray or brown. It is sandy clay loam or loam.

Smithdale Series

The Smithdale series consists of well drained, moderately permeable soils on side slopes in the uplands. These soils formed in loamy Coastal Plain deposits. Slopes range from 8 to 45 percent.

Smithdale soils are commonly adjacent to Lexington, Providence, Ruston, and Savannah soils. Lexington soils are fine-silty. Providence and Savannah soils are moderately well drained and have a fragipan. Ruston soils are bisequal.

Typical pedon of Smithdale fine sandy loam, 12 to 25 percent slopes; 0.5 mile east of Jacks Creek fire tower on Highway 22A; 1.7 miles north on a paved road; 60 feet east of the road, in a wooded area:

A—0 to 5 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; strongly acid; abrupt smooth boundary.

E—5 to 13 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine subangular blocky structure; friable; strongly acid; abrupt wavy boundary.

Bt1—13 to 18 inches; yellowish red (5YR 4/6) sandy clay loam; moderate fine subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—18 to 39 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common distinct dark red (2.5YR 3/6) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt3—39 to 53 inches; red (2.5YR 4/8) sandy clay loam; moderate coarse subangular blocky structure; friable; common distinct dark red (2.5YR 3/6) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt4—53 to 60 inches; red (2.5YR 4/8) sandy loam; weak coarse subangular blocky structure; friable; few distinct dark red (2.5YR 3/6) clay films on faces of peds; few pockets of loamy sand; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. Some pedons have an Ap horizon, which has hue of 10YR or 7.5YR, value of 4, and chroma of 3 to 6.

The E horizon has value of 5 or 6 and chroma of 2 to 4. It is fine sandy loam or loamy sand.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam, clay loam, or loam in the upper part. In the lower part it is sandy loam or loam that has a few pockets of sand or loamy sand.

Steens Series

The Steens series consists of somewhat poorly drained soils on low terraces. These soils formed in loamy alluvial deposits. Slopes range from 0 to 2 percent.

Steens soils are similar to Tooterville soils and are commonly adjacent to Iuka, Ochlockonee, and Tooterville soils. Iuka and Ochlockonee soils are coarse-loamy. Iuka soils are moderately well drained. Ochlockonee soils are well drained. Tooterville soils are poorly drained.

Typical pedon of Steens loam, rarely flooded; from the intersection of Laurel Hill Road and Palestine Road, 0.5 mile east on Laurel Hill Road; 0.1 mile east on a gravel road; 300 feet south of the road, in a cultivated field:

Ap—0 to 9 inches; brown (10YR 4/3) loam; weak coarse granular structure; friable; few fine black concretions; medium acid; abrupt smooth boundary.

E1—9 to 13 inches; pale brown (10YR 6/3) loam; common medium prominent yellowish brown (10YR 5/8) and few fine faint light brownish gray mottles; weak fine subangular blocky structure; friable; common fine and medium black concretions; strongly acid; gradual smooth boundary.

E2—13 to 20 inches; mottled pale brown (10YR 6/3), light gray (10YR 7/2), and brownish yellow (10YR 6/8) loam; weak fine subangular blocky structure; friable; common fine and medium black concretions; strongly acid; abrupt wavy boundary.

Btg—20 to 60 inches; light brownish gray (10YR 6/2) clay loam; common medium prominent strong brown (7.5YR 5/8) mottles; moderate very coarse prismatic structure parting to moderate coarse subangular blocky; friable; common light gray (10YR 7/2) coatings of fine sand on faces of prisms; common distinct gray (10YR 5/1) clay films on faces of peds and in pores; common medium and coarse black concretions; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid throughout the profile unless the surface layer has been limed. Some pedons have overwash of fine sandy loam or silt loam as much as 20 inches thick.

The Ap horizon, or the Ab horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 3. These horizons are fine sandy loam, loam, or silt loam.

The E horizon, if it occurs, has hue of 10YR, value of 6 or 7, and chroma of 2 or 3 and has mottles in shades of yellow, brown, or gray, or it does not have a matrix color and is mottled in shades of yellow, brown, or gray. It is loam or silt loam.

The Bt horizon, if it occurs, has hue of 10YR, value of 5, and chroma of 3 or 4. It has mottles in shades of yellow or gray. It is clay loam, sandy clay loam, or loam.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of brown. It is clay loam, sandy clay loam, or loam.

Susquehanna Series

The Susquehanna series consists of somewhat poorly drained, very slowly permeable soils on uplands. These soils formed in clayey Coastal Plain deposits. Slopes range from 2 to 12 percent.

Susquehanna soils are similar to Falkner soils and are commonly adjacent to Oktibbeha and Brantley soils. The somewhat poorly drained Falkner soils formed in a silty mantle and in the underlying clayey Coastal Plain deposits. The moderately well drained Oktibbeha soils are underlain by marly clay. Brantley soils are well drained and slowly permeable.

Typical pedon of Susquehanna clay, 2 to 5 percent slopes, severely eroded; 0.6 mile northeast on old Highway 22A from its intersection with new Highway 22A; 0.2 mile east on a gravel road; 40 feet south of the road, in a cultivated field:

Ap—0 to 7 inches; strong brown (7.5YR 5/6) clay; weak coarse granular structure; friable; medium acid; abrupt smooth boundary.

Bt1—7 to 22 inches; strong brown (7.5YR 5/6) clay; few fine prominent light brownish gray (10YR 6/2) mottles; strong medium angular blocky structure; firm, sticky and plastic; few slickensides; few distinct pale brown (10YR 6/3) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Bt2—22 to 30 inches; strong brown (7.5YR 5/6) clay; few fine prominent light brownish gray (10YR 6/2) mottles; moderate fine angular blocky structure; very firm, very sticky and very plastic; many slickensides; few distinct brown (10YR 5/3) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Bt3—30 to 48 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 4/8), and gray (10YR 5/1) clay; moderate medium angular blocky structure; very firm, very sticky and very plastic; many slickensides; few distinct yellowish brown (10YR 5/4) clay films on faces of peds and in pores; strongly acid; clear smooth boundary.

Bt4—48 to 60 inches; mottled light brownish gray (2.5Y 6/2), brownish yellow (10YR 6/8), and red (2.5YR 4/8) clay; moderate coarse angular blocky structure; very firm, very sticky and very plastic; many slickensides; few distinct weak red (2.5YR 5/2) clay films on faces of peds and in pores; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6.

The upper part of the Bt horizon has hue of 7.5YR or 5YR, value of 5, and chroma of 4 to 6 and has mottles in shades of brown, red, or gray, or it has no matrix color and is mottled in shades of brown, red, or gray. The lower part is mottled in shades of yellow, red, brown, or gray.

Tooterville Series

The Tooterville series consists of poorly drained, moderately slowly permeable soils on low terraces. These soils formed in loamy alluvial deposits. Slopes range from 0 to 2 percent.

Tooterville soils are similar to Guyton soils and are commonly adjacent to Iuka, Ochlockonee, and Savannah soils. Guyton soils have less sand in the particle-size control section than the Tooterville soils and have an E horizon that tongues into the Bt horizon. Iuka and Ochlockonee soils are coarse-loamy. Iuka soils are moderately well drained. Ochlockonee soils are well drained. Savannah soils are moderately well drained and have a fragipan.

Typical pedon of Tooterville loam, rarely flooded; from the intersection of Bethel Road and Montezuma-Silerton Road, 0.7 mile east on Montezuma-Silerton Road; 150 feet south of the road, in a cultivated field:

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

Btg1—8 to 31 inches; light brownish gray (10YR 6/2) sandy clay loam; many medium prominent strong brown (7.5YR 5/8) mottles; moderate coarse subangular blocky structure; friable; few faint clay films on faces of peds; few fine black stains and concretions; strongly acid; gradual smooth boundary.

Btg2—31 to 46 inches; light brownish gray (10YR 6/2) sandy loam; many medium prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; few fine black stains and concretions; strongly acid; clear irregular boundary.

Cg—46 to 60 inches; mottled light gray (10YR 7/2) and strong brown (7.5YR 5/8) sandy loam; massive; friable; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is strongly acid to medium acid throughout the profile unless the surface layer has been limed. Some pedons have overwash of fine sandy loam, loam, or silt loam 10 to 20 inches thick.

The Ap horizon, the A horizon, and the Ab horizon in areas where the soils have a layer of overwash have hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Some pedons have an E horizon, which is loam or sandy loam.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has common or many brownish mottles. It is loam, sandy clay loam, or clay loam in the upper part and ranges to sandy loam in the lower part.

The Cg horizon has mottles in shades of gray or brown. It is sandy loam or fine sandy loam.

Formation of the Soils

In this section the factors of soil formation are related to the soils in Chester County. The soils can vary greatly from place to place. The characteristics of the soil at any given point are a result of the interaction of five factors of soil formation. These factors are parent material, climate, living organisms, relief, and time.

Parent Material

Three general types of parent material have been identified in Chester County. They are Coastal Plain deposits, loess, and alluvium.

The parent materials of the soils in Chester County were deposited before, during, and after the last ice age. Before the ice age, the entire county was under water. What is now called the Gulf of Mexico at that time extended up the Mississippi Valley into what is now southern Illinois. About a million years ago, the earth's climate cooled somewhat and great ice sheets formed and slowly advanced over what is now Canada and the northern United States. As more of the earth's surface water became part of the glaciers, the sea level dropped, eventually exposing the area now known as Chester County. The materials on the ancient sea floor then began to be transformed into the soils that are currently in the county.

Geologists have identified about seven different distinct layers of ancient sea deposits in Chester County. The deposits range from about 1 to 90 million years in age. They are called Coastal Plain deposits. They were deposited in successive layers, one on top of the other, the oldest layer being the lowest.

As running water slowly eroded and cut into the landscape, it exposed the various layers of Coastal Plain deposits in different parts of the county. The deposits generally are loamy but range from sand to clay. They have a low content of silt. Reddish soils generally formed in these deposits. Smithdale, Luverne, Chickasaw, Brantley, Oktibbeha, and Susquehanna soils formed entirely in Coastal Plain deposits. They are exposed on some ridgetops and many hillsides.

As the earth's climate began to warm again, the glaciers started to melt. Large volumes of water carried away soil particles that had been frozen in the ice. The water also picked up soil material as it rushed over the ground. The soil material was moved down the Mississippi River and commonly was deposited on flood plains. The prevailing winds, which were from the southwest, picked up and blew eastward some medium-sized soil particles called silt. About 2 to 4 feet of this wind-blown soil material, or loess, was deposited over parts of Chester County.

Some of the soils in the county formed in two kinds of parent material. The lower layers of Lexington, Providence, Dulac, and Falkner soils, for example, formed in Coastal Plain deposits. These layers are remnants of an older soil that formed in parts of the county before the deposition of loess. The upper layers of these soils formed in the more recent deposits of loess.

As rivers and streams flooded the county, they deposited soil material called alluvium on their flood plains. As the rivers and streams cut deeper into the landscape, some alluvial deposits became terraces and were no longer susceptible to stream overflow. The old alluvial deposits then began to be transformed into the soils currently on the terraces throughout the county. These soils are younger than the soils that formed in Coastal Plain deposits.

Savannah, Steens, and Tooterville soils formed entirely in the alluvial deposits. In areas of other soils, a thin mantle of loess was deposited on top of the alluvial material. Freeland, Hatchie, and Guyton soils formed in loess and in the underlying alluvium. Deanburg soils formed dominantly in old alluvium but have some loess in the upper part of the subsoil.

Parent material continues to wash from the upland loess and Coastal Plain deposits and is accumulating as alluvium on bottom land. Ochlockonee, Iuka, Enville, and Bibb soils formed in alluvium derived from loess and Coastal Plain deposits.

The erosion and subsequent deposition of soil material from the uplands to the bottom land greatly accelerated after the county was settled and the uplands were intensively farmed. As a result, the soils on most of the bottom land in the county have 2 to 4 feet of recently deposited soil material that is only slightly altered. This material is underlain by an older soil that formed in alluvium accumulated before the county was settled. The older soil generally has the strongly expressed horizons characteristic of an advanced stage of soil formation, indicating that the landscape was more stable before intensive farming in the uplands.

Some soils on bottom land, particularly those on the broader bottom land in the southwestern and southeastern parts of the county, have received little or no recent soil material. Examples are Tooterville and Steens soils.

Further information about the kinds of parent material in the county is given in the section "Geology and Underlying Material."

Climate

Climate generally is an important factor of soil formation over large geographic areas. For example, climate has affected soils differently in the cooler and drier northern Midwestern States than in the warm and humid Southeastern States. The climate in Chester County has affected most of the soils in about the same way. It is characterized by high rainfall and warm temperatures. The high rainfall causes intensive leaching, moving soluble and colloidal material downward in the soil. Some of the material accumulates in the lower layers, and some moves out of the soil. Weathering and the translocation of material are nearly continuous because the soil is frozen for only short periods and to shallow depths. The warm temperatures tend to promote rapid decomposition of organic matter. The organic acids produced during decomposition hasten the development of clay minerals and the removal of carbonates.

Additional information about the climate in the county is given in the section "General Nature of the County."

Living Organisms

Insects, bacteria, fungi, and the higher forms of plant and animal life are important in the formation of soils. Through their various activities, they mix the soil and add and recycle organic matter, nitrogen, and other nutrients. Their activities affect soil structure, porosity, and natural fertility.

Originally, a dense stand of forest vegetation covered Chester County. On Lexington, Smithdale, Providence, Dulac, and other well drained soils in the uplands, the dominant trees were probably oak, hickory, yellow poplar, shortleaf pine, and American chestnut. The good drainage and aeration in these soils permitted the deep, uniform rooting of plants, unless the soils had a fragipan, and the maximum activity of micro-organisms. Also, suitable den sites for burrowing animals were available.

In the wetter areas on bottom land, the dominant trees were probably water-tolerant oaks, sycamore, beech, black willow, gum, ash, maple, and cypress. The seasonal high water table in these areas results in periods when the soils are waterlogged and poorly aerated. Under these conditions, the rooting of plants is somewhat restricted. During wet periods, the activity of micro-organisms is restricted to anaerobic species. Most burrowing animals are not active in wet soils, although crawfish are common in some areas. Kinston, Iuka, Enville, and Guyton are examples of soils that formed under wet conditions.

Before Chester County was settled, the influence of the native vegetation on soil formation was greater than that of animal activity. Since settlement, however, human activities have greatly affected soil formation. The most influential of these has been clearing forests and tilling the soil; introducing new plants; applying fertilizer; adding chemicals that control insects, disease, and weeds; improving drainage; and controlling flooding. Many areas that remain wooded are affected by such activities as selective harvesting, improving timber stands, and planting pure stands of preferred species.

Accelerated erosion in farmed areas on uplands has removed several inches to several feet of soil material. Consequently, erosion has greatly reduced the organic matter content of the surface layer in many of the soils. Much of the eroded soil material from the uplands has been carried out of the county in rivers and streams. Some of the material has been deposited on bottom land throughout the county. As a result, the present surface of much of the bottom land is 2 to 4 feet higher than when the uplands were first cultivated. Nearly all of the soils on bottom land have an old buried surface layer below the more recent deposits. Examples are Ochlockonee, Iuka, and Enville soils.

Changes in structure, color, content of organic matter and nutrients, and thickness of the surface layer or plow layer are known to be the result of human activities. Many of the results of these activities, however, will probably not be evident for several centuries.

Relief

Relief has affected soil formation in Chester County, mainly through its effect on the amount of surface water that runs off some areas and accumulates in others. Runoff generally is slow or medium on ridgetops. Much of the water that the ridgetops receive moves downward through the soil, carrying clay particles and soluble and colloidal material. Lexington, Providence, Ruston, and Dulac are examples of soils that formed on ridgetops in Chester County. As the slope increases on upland side slopes, the rate of runoff increases and the amount of water that filters through the soil decreases. Chickasaw, Smithdale, and Luverne are examples of soils that formed on steep side slopes in the uplands.

Soils that formed on the terraces and bottom land below the uplands receive rainfall and runoff from the higher positions on the landscape. Runoff is generally slow on these soils. Large quantities of water generally move through the soils. Savannah, Freeland, Hatchie, and Guyton are examples of soils that formed on terraces. Iuka, Enville, and Bibb are examples of soils that formed on bottom land.

Relief affects not only the rate of surface runoff but also the rate of erosion. The loess that was deposited over much of the county accumulated on many broad, gently sloping ridgetops. It was generally washed off the steeper hillsides as quickly as it was deposited. Consequently, the soils that formed on the hillsides have only a thin layer of loess or, more commonly, no loess at all.

Less water was available for plant growth in the soils on steep slopes than in the soils on flats. As a result, the native plant species differed on each of the sites. As drainage varied, so did aeration and the environment of plant roots, micro-organisms, and chemical activity. These physical and chemical differences helped to cause differences among the soils.

Time

Time determines the degree to which parent material, climate, living organisms, and relief affect the formation of a soil. As the length of time increases, the soil horizons generally become more strongly developed. The length of time needed for a soil to show strong development varies, depending on the other soil-forming factors. Generally, less time is required if the climate is warm and humid, the vegetation is lush, and the parent material is loamy.

Iuka, Enville, and Ochlockonee are among the youngest soils in Chester County. They are on flood plains. They regularly receive fresh soil material from the adjacent uplands. They have only weakly expressed horizons.

Soils on uplands, such as Smithdale, Brantley, and Luverne, are among the oldest soils in the county. The lower horizons of Lexington, Providence, and Dulac soils formed in Coastal Plain deposits. They are much older than the upper horizons, which formed in the more recently deposited loess.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vols., illus.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Goodspeed Publishing Company. 1887. History of Tennessee. 235 pp.

(4) National Water Erosion-Soil Productivity Research Planning Committee. 1981. Water erosion effects on soil productivity: A research perspective. J. Soil and Water Conserv. 36: 82-90, illus.

(5) Russell, E.E., and William S. Parks. 1975. Stratigraphy of the outcropping Upper Cretaceous, Paleocene, and Lower Eocene in western Tennessee (including descriptions of younger fluvial deposits). State of Tenn., Dep. Conserv., Div. Geol., Bull. 75, 115 pp., illus.

(6) United States Department of Agriculture. 1951 (being revised). Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus.

(7) United States Department of Agriculture. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210, 21 pp.

(8) United States Department of Agriculture. 1971. Forest statistics for Tennessee counties. Forest Serv., South. Forest Exp. Stn. Resour. Bull. SO-32, 58 pp., illus.

(9) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bottom land. The normal flood plain of a stream, subject to flooding.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

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.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

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.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have 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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

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.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gleyed soil. 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.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

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 uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential.

They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Infiltration 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.

Ironstone fragments. Thin, flat pieces of indurated iron oxide.

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.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

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).

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.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

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.

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 ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil 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 substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

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.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (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 by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-81 at Jackson Experiment Station)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	46.2	27.5	36.9	73	2	33	4.64	2.20	6.73	8	1.7
February----	50.8	30.4	40.6	76	5	51	4.41	2.40	6.18	7	1.7
March-------	59.5	38.7	49.1	82	18	135	5.21	3.26	6.96	8	.9
April-------	71.7	49.1	60.4	87	29	319	5.26	3.08	7.20	8	.0
May---------	79.1	57.1	68.1	93	37	561	4.98	2.33	7.25	7	.0
June--------	86.8	64.9	75.9	97	49	777	3.90	2.19	5.41	6	.0
July--------	89.9	68.5	79.2	99	54	905	4.14	2.07	5.93	7	.0
August------	89.2	66.4	77.8	99	52	862	2.89	1.03	4.45	5	.0
September---	83.1	59.9	71.5	96	40	645	3.63	1.21	5.61	6	.0
October-----	73.3	46.9	60.1	90	27	324	2.53	1.17	3.73	4	.0
November----	60.3	37.9	49.1	81	17	79	4.13	2.13	5.86	6	.1
December----	50.5	31.1	40.8	74	8	31	4.47	2.03	6.55	7	.5
Yearly:											
Average---	70.0	48.2	59.1	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	-2	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,722	50.19	40.71	59.63	79	4.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-81 at Jackson Experiment Station)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 27	Apr. 8	Apr. 18
2 years in 10 later than--	Mar. 19	Apr. 3	Apr. 14
5 years in 10 later than--	Mar. 5	Mar. 25	Apr. 6
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 29	Oct. 23	Oct. 11
2 years in 10 earlier than--	Nov. 4	Oct. 28	Oct. 16
5 years in 10 earlier than--	Nov. 14	Nov. 5	Oct. 24

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-81 at Jackson Experiment Station)

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	227	205	185
8 years in 10	236	212	190
5 years in 10	253	224	201
2 years in 10	270	237	211
1 year in 10	280	243	217

TABLE 4.--STRATIGRAPHY OF CHESTER COUNTY, TENNESSEE

Period	Epoch	Age (million years)	Formation
Quaternary	Pleistocene	1-2	Fluvial deposits
Tertiary	Pliocene	2-12	
	Middle and lower Eocene	40-53	Claiborne
			Wilcox
	Paleocene	53-65	Porters Creek Clay
			Clayton
Cretaceous	Upper Cretaceous	65-90	McNairy
			Coon Creek
			Demopolis
			Sardis

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
BB	Bibb silt loam, frequently flooded	4,670	2.5
BrC	Brantley fine sandy loam, 5 to 12 percent slopes	350	0.2
BrD3	Brantley clay loam, 8 to 12 percent slopes, severely eroded	1,280	0.7
BrE	Brantley fine sandy loam, 12 to 20 percent slopes	630	0.3
ChD	Chickasaw loam, 8 to 12 percent slopes	250	0.1
ChD3	Chickasaw clay loam, 5 to 12 percent slopes, severely eroded	1,160	0.6
ChE	Chickasaw loam, 12 to 25 percent slopes	3,370	1.8
DeB2	Deanburg loam, 2 to 5 percent slopes, eroded	800	0.4
DeB3	Deanburg clay loam, 2 to 5 percent slopes, severely eroded	630	0.3
DrC3	Deanburg clay loam, 5 to 8 percent slopes, severely eroded	550	0.3
DrD3	Deanburg sandy clay loam, 8 to 12 percent slopes, severely eroded	520	0.3
DuB3	Dulac silty clay loam, 2 to 5 percent slopes, severely eroded	1,600	0.9
DuC	Dulac silt loam, 5 to 8 percent slopes	440	0.2
DuC3	Dulac silty clay loam, 5 to 8 percent slopes, severely eroded	1,830	1.0
DuD3	Dulac silty clay loam, 8 to 12 percent slopes, severely eroded	1,130	0.6
En	Enville silt loam, occasionally flooded	6,020	3.3
FaB3	Falkner silty clay loam, 2 to 5 percent slopes, severely eroded	210	0.1
FrB2	Freeland silt loam, 2 to 5 percent slopes, eroded	1,250	0.7
FrB3	Freeland silt loam, 2 to 5 percent slopes, severely eroded	2,330	1.3
FrC3	Freeland silt loam, 5 to 8 percent slopes, severely eroded	880	0.5
Gu	Guyton silt loam	900	0.5
Ha	Hatchie silt loam	2,260	1.3
Iu	Iuka silt loam, occasionally flooded	6,080	3.3
KN	Kinston silt loam, frequently flooded	9,430	5.1
LeB2	Lexington silt loam, 2 to 5 percent slopes, eroded	2,260	1.2
LeB3	Lexington silty clay loam, 2 to 5 percent slopes, severely eroded	4,170	2.3
LeC	Lexington silt loam, 5 to 8 percent slopes	900	0.5
LeC3	Lexington silty clay loam, 5 to 8 percent slopes, severely eroded	7,330	4.0
LeD3	Lexington silty clay loam, 8 to 12 percent slopes, severely eroded	970	0.5
LuC	Luverne fine sandy loam, 5 to 8 percent slopes	470	0.3
LuC3	Luverne clay loam, 5 to 12 percent slopes, severely eroded	970	0.5
LuE	Luverne fine sandy loam, 12 to 25 percent slopes	6,790	3.7
LVF	Luverne and Chickasaw fine sandy loams, steep	1,150	0.6
Oc	Ochlockonee loam, occasionally flooded	5,040	2.7
OkC	Oktibbeha fine sandy loam, 5 to 8 percent slopes	330	0.2
OkD3	Oktibbeha clay, 8 to 12 percent slopes, severely eroded	370	0.2
OkE	Oktibbeha fine sandy loam, 12 to 20 percent slopes	1,690	0.9
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded	1,250	0.7
PrB3	Providence silty clay loam, 2 to 5 percent slopes, severely eroded	3,220	1.7
PrC	Providence silt loam, 5 to 8 percent slopes	320	0.2
PrC3	Providence silty clay loam, 5 to 8 percent slopes, severely eroded	6,970	3.8
PrD3	Providence silty clay loam, 8 to 12 percent slopes, severely eroded	1,780	1.0
RuC	Ruston-Savannah complex, 5 to 8 percent slopes	2,690	1.5
RuC3	Ruston-Savannah complex, 5 to 8 percent slopes, severely eroded	8,200	4.4
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded	550	0.3
SaB3	Savannah clay loam, 2 to 5 percent slopes, severely eroded	1,320	0.7
SaC3	Savannah clay loam, 5 to 8 percent slopes, severely eroded	1,840	1.0
SaD3	Savannah clay loam, 8 to 12 percent slopes, severely eroded	1,730	0.9
SmD	Smithdale fine sandy loam, 8 to 12 percent slopes	1,470	0.8
SmD3	Smithdale loam, 8 to 12 percent slopes, severely eroded	4,690	2.5
SME	Smithdale fine sandy loam, 12 to 25 percent slopes	47,980	26.0
SmF	Smithdale fine sandy loam, steep	4,910	2.7
Sn	Steens loam, rarely flooded	2,260	1.2
SO	Steens fine sandy loam, occasionally flooded	4,810	2.6
St	Steens silt loam, overwash, frequently flooded	580	0.3
SuB3	Susquehanna clay, 2 to 5 percent slopes, severely eroded	460	0.2
SuC3	Susquehanna clay, 5 to 12 percent slopes, severely eroded	730	0.4
Tk	Tooterville loam, rarely flooded	2,020	1.1
TO	Tooterville fine sandy loam, overwash, occasionally flooded	2,250	1.2
Ts	Tooterville silt loam, overwash, frequently flooded	930	0.5
Ud	Udorthents-Smithdale complex, gullied	730	0.4
	Total	184,700	100.0

TABLE 6.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
DeB2	Deanburg loam, 2 to 5 percent slopes, eroded
En	Enville silt loam, occasionally flooded
FrB2	Freeland silt loam, 2 to 5 percent slopes, eroded
Gu	Guyton silt loam (where drained)
Ha	Hatchie silt loam
Iu	Iuka silt loam, occasionally flooded
LeB2	Lexington silt loam, 2 to 5 percent slopes, eroded
Oc	Ochlockonee loam, occasionally flooded
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded
Sn	Steens loam, rarely flooded
SO	Steens fine sandy loam, occasionally flooded
St	Steens silt loam, overwash, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
Tk	Tooterville loam, rarely flooded (where drained)
TO	Tooterville fine sandy loam, overwash, occasionally flooded

TABLE 7.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Grain sorghum	Improved bermudagrass	Tall fescue
		Lbs	Bu	Bu	Bu	Bu	AUM*	AUM*
BB------------- Bibb	Vw	---	---	---	---	---	---	---
BrC------------ Brantley	IIIe	450	50	20	35	50	8.0	---
BrD3----------- Brantley	VIe	---	---	---	---	---	7.0	---
BrE------------ Brantley	VIIe	---	---	---	---	---	---	---
ChD------------ Chickasaw	IVe	---	---	---	---	---	5.5	---
ChD3----------- Chickasaw	VIe	---	---	---	---	---	---	---
ChE------------ Chickasaw	VIIe	---	---	---	---	---	---	---
DeB2----------- Deanburg	IIe	650	75	30	45	80	10.0	6.5
DeB3----------- Deanburg	IIIe	600	70	25	40	70	9.0	6.0
DrC3----------- Deanburg	IVe	450	60	20	30	60	8.0	---
DrD3----------- Deanburg	VIe	---	---	---	---	---	7.0	---
DuB3----------- Dulac	IIIe	575	70	30	45	75	6.5	8.0
DuC------------ Dulac	IIIe	575	70	30	35	75	6.0	7.0
DuC3----------- Dulac	IVe	500	60	20	30	60	5.5	---
DuD3----------- Dulac	VIe	---	---	---	---	---	5.0	---
En------------- Enville	IIw	550	90	35	40	100	10.0	9.0
FaB3----------- Falkner	IVe	400	50	20	30	50	7.0	6.0
FrB2----------- Freeland	IIe	725	80	32	38	90	8.5	8.0
FrB3----------- Freeland	IIIe	700	75	30	35	85	8.5	7.5

See footnote at end of table.

TABLE 7.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Grain sorghum	Improved bermudagrass	Tall fescue
		Lbs	Bu	Bu	Bu	Bu	AUM*	AUM*
FrC3------------ Freeland	IVe	600	60	20	25	70	7.5	6.0
Gu-------------- Guyton	IIIw	---	---	23	30	---	---	7.0
Ha-------------- Hatchie	IIw	650	85	35	35	90	7.0	9.0
Iu-------------- Iuka	IIw	750	110	40	45	100	9.0	8.0
KN-------------- Kinston	VIw	---	---	---	---	---	---	---
LeB2------------ Lexington	IIe	650	85	35	45	95	9.0	8.0
LeB3------------ Lexington	IIIe	550	75	30	35	85	8.5	7.5
LeC------------- Lexington	IIIe	650	80	30	40	90	8.0	6.5
LeC3------------ Lexington	IVe	400	60	25	30	65	7.5	5.5
LeD3------------ Lexington	VIe	---	---	---	---	---	6.5	---
LuC------------- Luverne	IVe	600	70	40	---	---	8.0	---
LuC3------------ Luverne	VIe	---	---	---	---	---	7.0	---
LuE------------- Luverne	VIIe	---	---	---	---	---	---	---
LVF------------- Luverne and Chickasaw	VIIe	---	---	---	---	---	---	---
Oc-------------- Ochlockonee	IIw	650	110	40	40	100	8.0	8.0
OkC------------- Oktibbeha	IVe	---	50	30	30	50	7.0	---
OkD3------------ Oktibbeha	VIe	---	---	---	---	---	6.0	---
OkE------------- Oktibbeha	VIIe	---	---	---	---	---	---	---
PrB2------------ Providence	IIe	700	80	35	40	90	9.5	8.5
PrB3------------ Providence	IIIe	550	60	25	35	80	7.0	---

See footnote at end of table.

TABLE 7.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Grain sorghum	Improved bermudagrass	Tall fescue
		Lbs	Bu	Bu	Bu	Bu	AUM*	AUM*
PrC-------------- Providence	IIIe	550	80	35	35	80	9.0	---
PrC3------------ Providence	IVe	400	45	20	25	60	8.5	---
PrD3------------ Providence	VIe	---	---	---	---	---	7.5	---
RuC-------------- Ruston-Savannah	IIIe	600	67	27	42	70	10.6	---
RuC3------------ Ruston-Savannah	IVe	500	60	20	38	60	8.9	---
SaB2------------ Savannah	IIe	650	75	35	40	80	8.5	8.0
SaB3------------ Savannah	IIIe	600	70	30	35	75	8.0	7.5
SaC3------------ Savannah	IVe	---	---	20	25	60	7.5	---
SaD3------------ Savannah	VIe	---	---	---	---	---	6.0	6.0
SmD-------------- Smithdale	IVe	400	55	25	---	---	9.0	---
SmD3------------ Smithdale	VIe	---	---	---	---	---	8.0	---
SME, SmF--------- Smithdale	VIIe	---	---	---	---	---	---	---
Sn, SO----------- Steens	IIw	550	75	30	40	80	8.0	---
St--------------- Steens	Vw	---	---	---	---	---	---	---
SuB3------------ Susquehanna	IVe	---	---	20	30	50	---	7.5
SuC3------------ Susquehanna	VIe	---	---	---	20	---	---	6.5
Tk, TO----------- Tooterville	IIIw	---	70	30	40	60	---	8.0
Ts--------------- Tooterville	Vw	---	---	---	---	---	---	---
Ud--------------- Udorthents-Smithdale	VIIe	---	---	---	---	---	---	---

* 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 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
BB: Bibb	Slight	Severe	Severe	Moderate	Severe	Sweetgum	90	100	Eastern cottonwood, sweetgum, yellow poplar.
						Water oak	90	86	
						Blackgum	---	---	
						Yellow poplar	---	---	
BrC, BrD3: Brantley	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	70	114	
BrE: Brantley	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine	80	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	---	---	
ChD: Chickasaw	Slight	Moderate	Slight	Slight	Moderate	Southern red oak	70	57	Southern red oak, shortleaf pine, loblolly pine.
						Shortleaf pine	70	114	
						Sweetgum	80	86	
						White oak	---	---	
						Black oak	---	---	
ChD3: Chickasaw	Moderate	Severe	Severe	Slight	Moderate	Southern red oak	70	57	Southern red oak, shortleaf pine, loblolly pine.
						Shortleaf pine	70	114	
						Sweetgum	80	86	
						White oak	---	---	
						Black oak	---	---	
ChE: Chickasaw	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak	70	57	Southern red oak, shortleaf pine, loblolly pine.
						Shortleaf pine	70	114	
						Sweetgum	80	86	
						White oak	---	---	
						Black oak	---	---	
DeB2: Deanburg	Slight	Moderate	Slight	Slight	Moderate	Southern red oak	70	57	Loblolly pine, eastern cottonwood, cherrybark oak, sweetgum.
						Mockernut hickory	---	---	
						White oak	70	57	
						Sweetgum	90	100	
						Cherrybark oak	80	86	
DeB3, DrC3, DrD3: Deanburg	Slight	Moderate	Moderate	Slight	Moderate	Southern red oak	70	57	Shortleaf pine, loblolly pine.
						Mockernut hickory	---	---	
						Sweetgum	90	100	
DuB3: Dulac	Slight	Moderate	Slight	Moderate	Moderate	Southern red oak	70	57	Shortleaf pine, loblolly pine, sweetgum.
						Loblolly pine	80	114	
						Shortleaf pine	75	114	
						Sweetgum	80	86	
DuC, DuC3, DuD3: Dulac	Moderate	Moderate	Slight	Moderate	Moderate	Southern red oak	70	57	Loblolly pine, shortleaf pine, sweetgum.
						Loblolly pine	80	114	
						Shortleaf pine	75	114	
						Sweetgum	80	86	
En: Enville	Slight	Moderate	Slight	Moderate	Severe	Yellow poplar	100	114	Yellow poplar, eastern cottonwood, shortleaf pine.
						Sweetgum	100	143	
						Water oak	95	86	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
FaB3------------ Falkner	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	85	114	Cherrybark oak, loblolly pine, shortleaf pine, sweetgum.
						Shortleaf pine------	75	114	
						Sweetgum------------	90	100	
FrB2, FrB3, FrC3----------- Freeland	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	84	114	Loblolly pine, yellow poplar, shortleaf pine, yellow poplar, shortleaf pine, cherrybark oak.
						Shortleaf pine------	64	100	
						Sweetgum------------	90	100	
Gu-------------- Guyton	Slight	Severe	Moderate	Severe	Severe	Sweetgum------------	---	129	Cherrybark oak, sweetgum.
						Green ash-----------	---	158	
						Southern red oak----	---	---	
						Water oak-----------	---	---	
Ha-------------- Hatchie	Slight	Moderate	Moderate	Slight	Moderate	Cherrybark oak------	90	114	Cherrybark oak, sweetgum, water oak, yellow poplar.
						Loblolly pine-------	90	129	
						Shortleaf pine------	80	129	
						Sweetgum------------	90	100	
						Water oak-----------	90	86	
Iu-------------- Iuka	Slight	Moderate	Moderate	Moderate	Severe	Loblolly pine-------	100	129	Loblolly pine, eastern cottonwood, yellow poplar.
						Sweetgum------------	100	143	
						Eastern cottonwood--	105	---	
						Water oak-----------	100	---	
KN**------------ Kinston	Slight	Severe	Severe	Severe	Severe	Sweetgum------------	95	114	Water tupelo, water oak.
						White oak-----------	95	57	
						Eastern cottonwood--	100	---	
						Cherrybark oak------	95	57	
LeB2, LeB3------ Lexington	Slight	Moderate	Slight	Slight	Moderate	Southern red oak----	70	57	Yellow poplar, loblolly pine, shortleaf pine, southern red oak.
						Cherrybark oak------	80	86	
						Loblolly pine-------	80	114	
						Shortleaf pine------	70	114	
						Sweetgum------------	89	100	
						Yellow poplar-------	90	86	
LeC, LeC3, LeD3- Lexington	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak----	70	57	Yellow poplar, loblolly pine, shortleaf pine, southern red oak.
						Cherrybark oak------	80	86	
						Loblolly pine-------	80	114	
						Shortleaf pine------	70	114	
						Sweetgum------------	89	100	
						Yellow poplar-------	90	86	
LuC, LuC3------- Luverne	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	81	114	Loblolly pine, southern red oak, shortleaf pine.
						Shortleaf pine------	73	114	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
LuE------------- Luverne	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine-------	81	114	Loblolly pine, southern red oak, shortleaf pine.
						Shortleaf pine------	73	114	
LVF**:									
Luverne--------	Severe	Severe	Slight	Slight	Moderate	Loblolly pine-------	81	114	Loblolly pine, southern red oak, shortleaf pine.
						Shortleaf pine------	73	114	
Chickasaw------	Severe	Severe	Slight	Slight	Moderate	Southern red oak----	70	57	Southern red oak, shortleaf pine, loblolly pine.
						Shortleaf pine------	70	114	
						Sweetgum-----------	80	86	
						White oak-----------	---	---	
						Black oak-----------	---	---	
Oc-------------- Ochlockonee	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	100	158	Loblolly pine, yellow poplar, eastern cottonwood.
						Eastern cottonwood--	100	129	
						Yellow poplar-------	110	129	
						Sweetgum-----------	90	100	
						Water oak-----------	80	71	
OkC, OkD3------- Oktibbeha	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	76	100	Loblolly pine, shortleaf pine.
						Shortleaf pine------	66	100	
						Southern red oak----	70	57	
OkE------------- Oktibbeha	Moderate	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	76	100	Loblolly pine, shortleaf pine.
						Shortleaf pine------	66	100	
						Southern red oak----	70	57	
PrB2, PrB3------ Providence	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	84	114	Loblolly pine, shortleaf pine, sweetgum, yellow poplar.
						Shortleaf pine------	64	100	
						Sweetgum-----------	90	100	
PrC, PrC3, PrD3- Providence	Moderate	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	84	114	Loblolly pine, shortleaf pine, sweetgum, yellow poplar.
						Shortleaf pine------	64	100	
						Sweetgum-----------	90	100	
RuC**:									
Ruston---------	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	84	114	Loblolly pine, shortleaf pine.
						Shortleaf pine------	75	114	
Savannah-------	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	81	114	Loblolly pine, shortleaf pine.
						Shortleaf pine------	76	114	
						Southern red oak----	75	57	
RuC3**:									
Ruston---------	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	84	114	Loblolly pine, shortleaf pine.
						Shortleaf pine------	75	114	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
RuC3**:									
Savannah	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine	81	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	76	114	
						Southern red oak	75	57	
SaB2, SaB3, SaC3, SaD3 Savannah	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine	81	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	76	114	
						Southern red oak	75	57	
SmD, SmD3 Smithdale	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine	80	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	69	114	
SME, SmF Smithdale	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine	80	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	69	114	
Sn, SO** Steens	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine	90	129	Eastern cottonwood, sweetgum, cherrybark oak, water oak.
						Sweetgum	85	86	
						Water oak	90	86	
St Steens	Slight	Moderate	Severe	Severe	Severe	Loblolly pine	90	129	Eastern cottonwood, sweetgum, cherrybark oak, water oak.
						Sweetgum	85	86	
						Water oak	90	86	
SuB3, SuC3 Susquehanna	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	78	114	Loblolly pine, shortleaf pine.
						Shortleaf pine	68	100	
Tk, TO**, Ts Tooterville	Slight	Severe	Moderate	Moderate	Severe	Cherrybark oak	80	86	Eastern cottonwood, cherrybark oak, water oak.
						Eastern cottonwood	95	114	
						Water oak	95	86	
						Sweetgum	85	86	
Ud**: Udorthents.									
Smithdale	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine	80	114	Loblolly pine.
						Shortleaf pine	69	8	

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
BB-------------------- Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding, too sandy.	Severe: wetness.
BrC, BrD3------------- Brantley	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.
BrE------------------- Brantley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
ChD, ChD3------------- Chickasaw	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight.
ChE------------------- Chickasaw	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Moderate: slope.
DeB2------------------ Deanburg	Slight---------------	Slight---------------	Moderate: slope.	Severe: erodes easily.
DeB3------------------ Deanburg	Slight---------------	Slight---------------	Moderate: slope.	Slight.
DrC3------------------ Deanburg	Slight---------------	Slight---------------	Severe: slope.	Slight.
DrD3------------------ Deanburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
DuB3------------------ Dulac	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.
DuC, DuC3------------- Dulac	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.
DuD3------------------ Dulac	Severe: wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.
En-------------------- Enville	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
FaB3------------------ Falkner	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.
FrB2, FrB3------------ Freeland	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
FrC3: Freeland	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.
Gu: Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ha: Hatchie	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.
Iu: Iuka	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
KN*: Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
LeB2, LeB3: Lexington	Slight	Slight	Moderate: slope.	Severe: erodes easily.
LeC, LeC3: Lexington	Slight	Slight	Severe: slope.	Severe: erodes easily.
LeD3: Lexington	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
LuC: Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight.
LuC3: Luverne	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.
LuE: Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
LVF*:				
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chickasaw	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.
Oc: Ochlockonee	Severe: flooding.	Slight	Moderate: flooding.	Slight.
OkC: Oktibbeha	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight.
OkD3: Oktibbeha	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey.
OkE: Oktibbeha	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Moderate: slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
PrB2, PrB3 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.
PrC, PrC3 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.
PrD3 Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.
RuC*, RuC3*:				
Ruston	Slight	Slight	Severe: slope.	Slight.
Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.
SaB2 Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.
SaB3, SaC3 Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.
SaD3 Savannah	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Moderate: wetness.
SmD, SmD3 Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
SME Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
SmF Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Sn, SO* Steens	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.
St Steens	Severe: flooding, wetness.	Moderate: flooding, wetness, percs slowly.	Severe: wetness, flooding.	Moderate: wetness, flooding.
SuB3 Susquehanna	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.
SuC3 Susquehanna	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Tk, TO*: Tooterville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ts: Tooterville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
Ud*: Udorthents.				
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
BB----------------- Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
BrC, BrD3---------- Brantley	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BrE---------------- Brantley	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
ChD, ChD3---------- Chickasaw	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ChE---------------- Chickasaw	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DeB2--------------- Deanburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DeB3, DrC3, DrD3--- Deanburg	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
DuB3--------------- Dulac	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DuC, DuC3, DuD3---- Dulac	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
En----------------- Enville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Fair	Fair.
FaB3--------------- Falkner	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FrB2, FrB3--------- Freeland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FrC3--------------- Freeland	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gu----------------- Guyton	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Ha----------------- Hatchie	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Iu----------------- Iuka	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
KN*---------------- Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
LeB2, LeB3--------- Lexington	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LeC, LeC3, LeD3---- Lexington	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
LuC, LuC3---------- Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LuE---------------- Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LVF*:										
Luverne-----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Chickasaw---------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Oc----------------- Ochlockonee	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OkC, OkD3---------- Oktibbeha	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
OkE---------------- Oktibbeha	Very poor.	Fair	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	---
PrB2, PrB3--------- Providence	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PrC, PrC3, PrD3---- Providence	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuC*:										
Ruston------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Savannah----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RuC3*:										
Ruston------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Savannah----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaB2--------------- Savannah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SaB3, SaC3--------- Savannah	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaD3--------------- Savannah	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Good	Very poor.
SmD, SmD3---------- Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SmE---------------- Smithdale	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SmF---------------- Smithdale	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Sn, SO*------------ Steens	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
St----------------- Steens	Poor	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair.
SuB3, SuC3--------- Susquehanna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Tk----------------- Tooterville	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
TO*, Ts------------ Tooterville	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Ud*: Udorthents.										
Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
BB: Bibb	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.
BrC, BrD3: Brantley	Severe: cutbanks cave.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.
BrE: Brantley	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
ChD, ChD3: Chickasaw	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.
ChE: Chickasaw	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.
DeB2, DeB3: Deanburg	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: low strength.
DrC3: Deanburg	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: low strength.
DrD3: Deanburg	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
DuB3, DuC, DuC3: Dulac	Severe: wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: low strength.
DuD3: Dulac	Severe: wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, slope.	Severe: low strength.
En: Enville	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.
FaB3: Falkner	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.
FrB2, FrB3: Freeland	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.
FrC3: Freeland	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Gu----------------- Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.
Ha----------------- Hatchie	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: low strength, wetness.
Iu----------------- Iuka	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.
KN*---------------- Kinston	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, low strength.
LeB2, LeB3--------- Lexington	Severe: cutbanks cave.	Slight-----------	Slight-----------	Slight------------	Severe: low strength.
LeC, LeC3---------- Lexington	Severe: cutbanks cave.	Slight-----------	Slight-----------	Moderate: slope.	Severe: low strength.
LeD3--------------- Lexington	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.
LuC---------------- Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.
LuC3--------------- Luverne	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.
LuE---------------- Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
LVF*:					
Luverne-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
Chickasaw---------	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.
Oc----------------- Ochlockonee	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
OkC---------------- Oktibbeha	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.
OkD3--------------- Oktibbeha	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
OkE: Oktibbeha	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.
PrB2, PrB3: Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.
PrC, PrC3: Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.
PrD3: Providence	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.
RuC*:					
Ruston	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.
RuC3*:					
Ruston	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: low strength.
Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.
SaB2: Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.
SaB3, SaC3: Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.
SaD3: Savannah	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: low strength, wetness, slope.
SmD, SmD3: Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
SmE, SmF: Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Sn: Steens	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, low strength, flooding.
SO*, St: Steens	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
SuB3-------------- Susquehanna	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.
SuC3-------------- Susquehanna	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.
Tk---------------- Tooterville	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
TO*, Ts----------- Tooterville	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.
Ud*: Udorthents.					
Smithdale---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BB----------------- Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
BrC, BrD3----------- Brantley	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
BrE----------------- Brantley	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
ChD, ChD3----------- Chickasaw	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
ChE----------------- Chickasaw	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
DeB2, DeB3, DrC3---- Deanburg	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight-----------	Fair: too clayey, thin layer.
DrD3---------------- Deanburg	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: too clayey, slope, thin layer.
DuB3, DuC, DuC3----- Dulac	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
DuD3---------------- Dulac	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
En------------------ Enville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
FaB3---------------- Falkner	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
FrB2, FrB3, FrC3---- Freeland	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Gu------------------ Guyton	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ha----------------- Hatchie	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Iu----------------- Iuka	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
KN*---------------- Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
LeB2, LeB3, LeC, LeC3-------------- Lexington	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
LeD3--------------- Lexington	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
LuC---------------- Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
LuC3--------------- Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
LuE---------------- Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
LVF*:					
Luverne------------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Chickasaw----------	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Oc----------------- Ochlockonee	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: wetness.
OkC---------------- Oktibbeha	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
OkD3--------------- Oktibbeha	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
OkE---------------- Oktibbeha	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PrB2, PrB3, PrC, PrC3---------------- Providence	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
PrD3---------------- Providence	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
RuC*, RuC3*:					
Ruston-------------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
Savannah-----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SaB2, SaB3, SaC3---- Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SaD3---------------- Savannah	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
SmD, SmD3----------- Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
SME, SmF------------ Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Sn------------------ Steens	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
SO*, St------------- Steens	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: flooding, wetness.	Poor: wetness.
SuB3---------------- Susquehanna	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
SuC3---------------- Susquehanna	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Tk------------------ Tooterville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
TO*, Ts------------- Tooterville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ud*:					
Udorthents.					
Smithdale----------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BB: Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones.
BrC, BrD3: Brantley	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BrE: Brantley	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
ChD, ChD3: Chickasaw	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
ChE: Chickasaw	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
DeB2, DeB3, DrC3: Deanburg	Good	Probable	Improbable: too sandy.	Fair: too clayey.
DrD3: Deanburg	Good	Probable	Improbable: too sandy.	Fair: too clayey, slope.
DuB3, DuC, DuC3: Dulac	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
DuD3: Dulac	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
En: Enville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
FaB3: Falkner	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FrB2, FrB3, FrC3: Freeland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Gu: Guyton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ha: Hatchie	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Iu: Iuka	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
KN*: Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
LeB2: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
LeB3: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
LeC: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
LeC3: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
LeD3: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
LuC, LuC3: Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LuE: Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
LVF*:				
Luverne	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Chickasaw	Poor: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Oc: Ochlockonee	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
OkC: Oktibbeha	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
OkD3: Oktibbeha	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
OkE: Oktibbeha	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
PrB2, PrB3, PrC, PrC3: Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PrD3: Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
RuC*:				
Ruston	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RuC*:				
Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
RuC3*:				
Ruston	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SaB2, SaB3, SaC3 Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SaD3 Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SmD, SmD3 Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SME Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SmF Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Sn, SO*, St Steens	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SuB3, SuC3 Susquehanna	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Tk, TO*, Ts Tooterville	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ud*:				
Udorthents.				
Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
BB: Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Erodes easily, wetness.	Erodes easily, wetness.
BrC, BrD3, BrE: Brantley	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
ChD: Chickasaw	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, droughty.
ChD3: Chickasaw	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily, droughty.
ChE: Chickasaw	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, droughty.
DeB2: Deanburg	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
DeB3, DrC3: Deanburg	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable.
DrD3: Deanburg	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
DuB3, DuC, DuC3: Dulac	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Erodes easily, wetness.	Wetness, erodes easily.
DuD3: Dulac	Severe: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
En: Enville	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
FaB3: Falkner	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
FrB2, FrB3, FrC3: Freeland	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Erodes easily, wetness.	Erodes easily, rooting depth.
Gu: Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ha: Hatchie	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Iu: Iuka	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Erodes easily, wetness.	Erodes easily, wetness.
KN*: Kinston	Moderate: seepage.	Severe: wetness.	Slight	Flooding	Wetness	Wetness.
LeB2, LeB3, LeC, LeC3: Lexington	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
LeD3: Lexington	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
LuC: Luverne	Moderate: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Favorable	Favorable.
LuC3, LuE: Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope.
LVF*:						
Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope.
Chickasaw	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, droughty.
Oc: Ochlockonee	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Favorable	Favorable.
OkC: Oktibbeha	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Percs slowly	Percs slowly.
OkD3, OkE: Oktibbeha	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
PrB2, PrB3, PrC, PrC3: Providence	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Erodes easily, wetness.	Erodes easily, rooting depth.
PrD3: Providence	Severe: slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
RuC*:						
Ruston	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Favorable	Favorable.
Savannah	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Wetness	Rooting depth.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
RuC3*:						
Ruston	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Favorable	Favorable.
Savannah	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Wetness	Rooting depth.
SaB2, SaB3, SaC3 Savannah	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Wetness	Rooting depth.
SaD3 Savannah	Severe: slope.	Severe: piping.	Severe: no water.	Slope	Slope, wetness.	Slope, rooting depth.
SmD, SmD3, SME, SmF Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Sn Steens	Slight	Severe: wetness.	Severe: slow refill.	Favorable	Erodes easily, wetness.	Wetness, erodes easily.
SO* Steens	Slight	Severe: wetness.	Severe: slow refill.	Flooding	Wetness	Wetness.
St Steens	Slight	Severe: wetness.	Severe: slow refill.	Flooding	Erodes easily, wetness.	Wetness, erodes easily.
SuB3 Susquehanna	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.
SuC3 Susquehanna	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Tk Tooterville	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Favorable	Erodes easily, wetness.	Wetness, erodes easily.
TO* Tooterville	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Flooding	Wetness	Wetness.
Ts Tooterville	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Flooding	Erodes easily, wetness.	Wetness, erodes easily.
Ud*: Udorthents.						
Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
BB--------------- Bibb	0-15	Silt loam--------	ML, CL-ML	A-4	95-100	90-100	80-90	50-80	<25	NP-7
	15-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
BrC-------------- Brantley	0-6	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	95-100	95-100	95-100	36-55	<30	NP-7
	6-24	Clay, clay loam, sandy clay.	CL, ML	A-7	95-100	95-100	90-100	60-75	41-50	16-22
	24-60	Sandy clay loam, clay loam.	SC, SM, CL, ML	A-4, A-6	95-100	95-100	80-100	36-70	30-40	7-15
BrD3------------- Brantley	0-5	Clay loam--------	CL, ML	A-6, A-7, A-4	95-100	95-100	90-100	65-80	30-45	9-16
	5-55	Clay, clay loam, sandy clay.	CL, ML	A-7	95-100	95-100	90-100	60-75	41-50	16-22
	55-60	Sandy clay loam, clay loam.	SC, SM, CL, ML	A-4, A-6	95-100	95-100	80-100	36-70	30-40	7-15
BrE-------------- Brantley	0-14	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	95-100	95-100	95-100	36-55	<30	NP-7
	14-56	Clay, clay loam, sandy clay.	CL, ML	A-7	95-100	95-100	90-100	60-75	41-50	16-22
	56-60	Fine sandy loam, loamy fine sand, sandy clay loam.	SM, SC, ML	A-2, A-4	95-100	95-100	70-100	30-60	<38	NP-9
ChD-------------- Chickasaw	0-7	Loam-------------	CL-ML, CL, ML	A-4	95-100	90-100	75-95	65-95	<30	NP-10
	7-20	Clay loam, silty clay, clay.	CL, CH	A-7	95-100	90-100	85-95	75-95	41-60	19-33
	20-45	Silty clay, clay	CH	A-7	95-100	90-100	90-100	80-95	51-70	25-40
	45-60	Weathered bedrock	---	---	---	---	---	---	---	---
ChD3------------- Chickasaw	0-5	Clay loam--------	CL	A-6, A-7	95-100	90-100	80-95	70-95	30-45	11-22
	5-20	Clay loam, silty clay, clay.	CL, CH	A-7	95-100	90-100	85-95	75-95	41-60	19-33
	20-45	Silty clay, clay	CH	A-7	95-100	90-100	90-100	80-95	51-70	25-40
	45-60	Weathered bedrock	---	---	---	---	---	---	---	---
ChE-------------- Chickasaw	0-5	Loam-------------	CL-ML, CL, ML	A-4	95-100	90-100	75-95	65-95	<30	NP-10
	5-20	Clay loam, silty clay, clay.	CL, CH	A-7	95-100	90-100	85-95	75-95	41-60	19-33
	20-45	Silty clay, clay	CH	A-7	95-100	90-100	90-100	80-95	51-70	25-40
	45-60	Weathered bedrock	---	---	---	---	---	---	---	---
DeB2------------- Deanburg	0-9	Loam-------------	ML, CL-ML, CL	A-4	100	100	90-100	65-90	<30	3-10
	9-45	Clay loam, sandy clay loam, loam.	ML, CL, SC, CL-ML	A-4, A-6, A-7	100	100	80-95	40-80	25-48	6-25
	45-60	Sand, loamy sand	SM, SP-SM	A-2	100	100	50-75	11-30	---	NP
DeB3------------- Deanburg	0-7	Clay loam--------	CL, SC	A-6, A-7	100	100	80-100	40-80	28-48	11-25
	7-40	Clay loam, sandy clay loam, loam.	ML, CL, SC, CL-ML	A-4, A-6, A-7	100	100	80-95	40-80	25-48	6-25
	40-60	Sand, loamy sand	SM, SP-SM	A-2	100	100	50-75	11-30	---	NP

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
DrC3: Deanburg	0-6	Clay loam	CL, SC	A-6, A-7	100	100	80-100	40-80	28-48	11-25
	6-26	Clay loam, sandy clay loam, loam.	ML, CL, SC, CL-ML	A-4, A-6, A-7	100	100	80-95	40-80	25-48	6-25
	26-60	Sand, loamy sand	SM, SP-SM	A-2	100	100	50-75	11-30	---	NP
DrD3: Deanburg	0-4	Sandy clay loam	CL, SC	A-6, A-7	100	100	80-100	40-80	28-48	11-25
	4-20	Clay loam, sandy clay loam, loam.	ML, CL, SC, CL-ML	A-4, A-6, A-7	100	100	80-95	40-80	25-48	6-25
	20-60	Sand, loamy sand	SM, SP-SM	A-2	100	100	50-75	11-30	---	NP
DuB3: Dulac	0-6	Silty clay loam	CL	A-6, A-7	100	100	90-100	85-95	35-45	15-25
	6-16	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	90-100	85-95	30-45	11-25
	16-48	Silt loam, silty clay loam.	CL	A-6, A-7	100	95-100	90-100	85-95	30-45	11-25
	48-60	Clay, silty clay	CH, MH	A-7	95-100	90-100	85-100	80-95	55-85	25-50
DuC: Dulac	0-6	Silt loam	ML, CL-ML	A-4	100	100	95-100	85-95	20-25	2-7
	6-24	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	90-100	85-95	30-45	11-25
	24-45	Silt loam, silty clay loam.	CL	A-6, A-7	100	95-100	90-100	85-95	30-45	11-25
	45-60	Clay, silty clay	CH, MH	A-7	95-100	90-100	85-100	80-95	55-85	25-50
DuC3, DuD3: Dulac	0-6	Silty clay loam	CL	A-6, A-7	100	100	90-100	85-95	35-45	15-25
	6-16	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	90-100	85-95	30-45	11-25
	16-46	Silt loam, silty clay loam.	CL	A-6, A-7	100	95-100	90-100	85-95	30-45	11-25
	46-60	Clay, silty clay	CH, MH	A-7	95-100	90-100	85-100	80-95	55-85	25-50
En: Enville	0-8	Silt loam	ML, CL-ML	A-4	100	95-100	80-100	40-85	<30	NP-7
	8-36	Stratified loam, sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	100	95-100	45-95	20-85	<30	NP-7
	36-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	100	95-100	60-100	30-85	<30	NP-7
FaB3: Falkner	0-8	Silty clay loam	CL	A-6, A-7	100	100	95-100	85-100	30-45	15-25
	8-31	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	95-100	85-95	30-45	15-30
	31-60	Silty clay, clay	CH	A-7	100	100	90-100	85-95	51-75	30-50
FrB2: Freeland	0-8	Silt loam	ML, CL-ML, CL	A-4	100	100	85-100	60-95	<30	NP-10
	8-26	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	75-100	20-38	6-15
	26-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	100	100	85-95	65-95	20-40	5-18
FrB3: Freeland	0-7	Silt loam	ML, CL-ML, CL	A-4	100	100	85-100	60-95	<30	NP-10
	7-23	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	75-100	20-38	6-15
	23-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	100	100	85-95	65-95	20-40	5-18

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
FrC3------------- Freeland	0-6	Silt loam--------	ML, CL-ML, CL	A-4	100	100	85-100	60-95	<30	NP-10
	6-18	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	75-100	20-38	6-15
	18-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	100	100	85-95	65-95	20-40	5-18
Gu--------------- Guyton	0-21	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	65-90	<27	NP-7
	21-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	100	100	94-100	75-95	22-40	6-18
Ha--------------- Hatchie	0-8	Silt loam--------	ML, CL-ML, CL	A-4	100	100	95-100	70-95	<25	3-10
	8-31	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	70-95	20-32	6-14
	31-60	Silt loam, loam, clay loam.	CL-ML, CL	A-4, A-6	100	95-100	90-100	60-85	22-34	6-15
Iu--------------- Iuka	0-8	Silt loam--------	ML, CL-ML	A-4	95-100	95-100	80-95	50-80	<30	NP-7
	8-60	Fine sandy loam, loam, sandy loam.	SM, SM-SC, ML, CL-ML	A-4	95-100	85-100	65-100	36-75	<30	NP-7
KN*-------------- Kinston	0-5	Silt loam--------	ML, CL, CL-ML	A-4, A-6	100	98-100	85-100	50-97	17-40	4-15
	5-60	Loam, silt loam	CL	A-4, A-6, A-7	100	95-100	75-100	60-95	20-45	8-22
LeB2------------- Lexington	0-8	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	40-60	Sandy clay loam, loam.	SC, CL, CL-ML	A-2, A-4, A-6	100	95-100	50-85	20-65	22-35	5-15
LeB3------------- Lexington	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	6-24	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	24-60	Sandy clay loam, loam.	SC, CL, CL-ML	A-2, A-4, A-6	100	95-100	50-85	20-65	22-35	5-15
LeC-------------- Lexington	0-6	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	6-34	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	34-60	Sandy clay loam, loam.	SC, CL, CL-ML	A-2, A-4, A-6	100	95-100	50-85	20-65	22-35	5-15
LeC3, LeD3------- Lexington	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	6-22	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	22-60	Sandy clay loam, loam.	SC, CL, CL-ML	A-2, A-4, A-6	100	95-100	50-85	20-65	22-35	5-15
LuC-------------- Luverne	0-6	Fine sandy loam	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	6-48	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	48-60	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	95-100	85-100	85-100	36-76	32-56	2-14

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
LuC3------------- Luverne	0-6	Clay loam--------	SM, ML, CL, SC	A-6, A-4	90-100	85-100	80-100	40-70	22-38	3-16
	6-44	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	44-60	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	95-100	85-100	85-100	36-76	32-56	2-14
LuE-------------- Luverne	0-6	Fine sandy loam	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	6-40	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	40-60	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	95-100	85-100	85-100	36-76	32-56	2-14
LVF*:										
Luverne---------	0-5	Fine sandy loam	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	5-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	35-60	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	95-100	85-100	85-100	36-76	32-56	2-14
Chickasaw-------	0-6	Fine sandy loam	CL-ML, CL, ML	A-4	95-100	90-100	75-95	65-95	<30	NP-10
	6-42	Clay loam, silty clay, clay.	CL, CH	A-7	95-100	90-100	85-95	75-95	41-60	19-33
	42-60	Weathered bedrock	---	---	---	---	---	---	---	---
Oc--------------- Ochlockonee	0-8	Loam-------------	ML, CL-ML	A-4	100	95-100	95-100	50-90	<30	NP-7
	8-60	Fine sandy loam, sandy loam, silt loam, sand.	SM, ML, SC, CL, SM, ML	A-4	100	95-100	95-100	36-75	<32	NP-9
OkC-------------- Oktibbeha	0-7	Fine sandy loam	ML, SM	A-4	100	90-100	65-85	40-60	<30	NP-7
	7-48	Clay-------------	CH	A-7	100	95-100	95-100	95-100	55-65	30-40
	48-60	Clay, silty clay	CL	A-7	95-100	90-100	90-100	90-100	41-49	25-30
OkD3------------- Oktibbeha	0-5	Clay-------------	CL, ML, CH	A-7	100	95-100	90-100	75-95	42-64	19-34
	5-47	Clay-------------	CH	A-7	100	95-100	95-100	95-100	55-65	30-40
	47-60	Clay, silty clay	CL	A-7	95-100	90-100	90-100	90-100	41-49	25-30
OkE-------------- Oktibbeha	0-7	Fine sandy loam	ML, SM	A-4	100	90-100	65-85	40-60	<30	NP-7
	7-48	Clay-------------	CH	A-7	100	95-100	95-100	95-100	55-65	30-40
	48-60	Clay, silty clay	CL	A-7	95-100	90-100	90-100	90-100	41-49	25-30
PrB2------------- Providence	0-8	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	8-18	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	18-51	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	51-60	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
PrB3------------- Providence	0-6	Silty clay loam	CL	A-6, A-7	100	100	95-100	85-100	30-45	11-20
	6-18	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	18-55	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	55-60	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
PrC---------------Providence	0-8	Silt loam---------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	8-24	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	24-51	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	51-60	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
PrC3, PrD3-------Providence	0-4	Silty clay loam	CL	A-6, A-7	100	100	95-100	85-100	30-45	11-20
	4-18	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	18-55	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	55-60	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
RuC*:										
Ruston-----------	0-6	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	6-33	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	33-56	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	56-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
Savannah---------	0-8	Fine sandy loam	SM, ML	A-2-4, A-4	98-100	90-100	60-100	30-65	<25	NP-4
	8-28	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	28-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
RuC3*:										
Ruston-----------	0-7	Clay loam---------	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	10-20
	7-32	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	32-45	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	45-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	85-100	78-100	70-100	36-75	30-42	11-20
Savannah---------	0-6	Clay loam---------	CL	A-6, A-4	98-100	95-100	90-100	65-80	30-40	9-16
	6-20	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	20-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
SaB2--------------Savannah	0-8	Fine sandy loam	SM, ML	A-2-4, A-4	98-100	90-100	60-100	30-65	<25	NP-4
	8-34	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	34-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
SaB3, SaC3, SaD3-- Savannah	0-6	Clay loam	CL	A-6, A-4	98-100	95-100	90-100	65-80	30-40	9-16
	6-26	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	26-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
SmD Smithdale	0-7	Fine sandy loam	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	7-53	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	53-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
SmD3 Smithdale	0-5	Loam	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	5-53	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	53-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
SmE, SmF Smithdale	0-13	Fine sandy loam	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	13-53	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	53-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
Sn Steens	0-20	Loam	ML, CL-ML, CL	A-4	100	100	90-100	70-90	<30	3-10
	20-60	Clay loam, loam, sandy clay loam.	CL, SC	A-4, A-6	100	90-100	80-95	40-80	22-40	8-20
So* Steens	0-14	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	100	90-100	70-85	40-55	<25	NP-7
	14-60	Clay loam, loam, sandy clay loam.	CL, SC	A-4, A-6	100	90-100	80-95	40-80	22-40	8-20
St Steens	0-19	Silt loam	ML, CL-ML, CL	A-4	100	100	90-100	70-90	<30	3-10
	19-60	Clay loam, loam, sandy clay loam.	CL, SC	A-4, A-6	100	90-100	80-95	40-80	22-40	8-20
SuB3, SuC3 Susquehanna	0-7	Clay	CH	A-7	100	100	85-100	80-95	50-90	28-56
	7-60	Clay, silty clay loam, silty clay.	CH	A-7	100	100	88-100	80-98	50-90	28-56
Tk Tooterville	0-8	Loam	ML, CL-ML, CL	A-4	100	100	90-100	65-95	<30	3-10
	8-31	Sandy clay loam, loam, clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	100	100	85-95	40-70	20-35	5-15
	31-60	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	100	100	60-95	30-65	<25	NP-4
To* Tooterville	0-17	Fine sandy loam	ML, SM	A-4, A-2	100	100	85-95	30-65	<20	NP-3
	17-60	Sandy clay loam, loam, clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	100	100	85-95	40-70	20-35	5-15
Ts Tooterville	0-19	Silt loam	ML, CL-ML, CL	A-4	100	100	90-100	65-95	<30	3-10
	19-60	Sandy clay loam, loam, clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	100	100	85-95	40-70	20-35	5-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Ud*: Udorthents.										
Smithdale-------	0-4	Sandy loam-------	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	4-46	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	46-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	Pct	g/cc	In/hr	In/in	pH			
BB--------------- Bibb	0-15	2-18	1.20-1.55	0.6-2.0	0.15-0.20	4.5-5.5	Low---------	0.28	5
	15-60	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	Low---------	0.37	
BrC-------------- Brantley	0-6	8-21	1.20-1.50	0.6-2.0	0.10-0.15	4.5-6.5	Low---------	0.28	5
	6-24	35-55	1.50-1.70	0.06-0.2	0.12-0.20	4.5-6.0	Moderate----	0.28	
	24-60	25-35	1.50-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low---------	0.24	
BrD3------------- Brantley	0-5	27-35	1.20-1.50	0.6-2.0	0.12-0.18	4.5-5.5	Low---------	0.28	5
	5-55	35-55	1.50-1.70	0.06-0.2	0.12-0.20	4.5-6.0	Moderate----	0.28	
	55-60	25-35	1.50-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low---------	0.24	
BrE-------------- Brantley	0-14	8-21	1.20-1.50	0.6-2.0	0.10-0.15	4.5-6.5	Low---------	0.28	5
	14-56	35-55	1.50-1.70	0.06-0.2	0.12-0.20	4.5-6.0	Moderate----	0.28	
	56-60	25-35	1.50-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low---------	0.24	
ChD-------------- Chickasaw	0-7	8-20	1.50-1.60	0.6-2.0	0.14-0.18	5.1-6.0	Low---------	0.32	3
	7-20	35-55	1.40-1.60	<0.06	0.10-0.15	4.5-5.5	High--------	0.32	
	20-45	40-70	1.40-1.65	<0.06	0.08-0.14	<4-5.5	High--------	0.32	
	45-60	---	---	---	---	---	------------	----	
ChD3------------- Chickasaw	0-5	30-45	1.50-1.60	0.2-0.6	0.12-0.16	5.1-6.0	Moderate----	0.37	3
	5-20	35-55	1.40-1.60	<0.06	0.10-0.15	4.5-5.5	High--------	0.32	
	20-45	40-70	1.40-1.65	<0.06	0.08-0.14	<4-5.5	High--------	0.32	
	45-60	---	---	---	---	---	------------	----	
ChE-------------- Chickasaw	0-5	8-20	1.50-1.60	0.6-2.0	0.14-0.18	5.1-6.0	Low---------	0.32	3
	5-20	35-55	1.40-1.60	<0.06	0.10-0.15	4.5-5.5	High--------	0.32	
	20-45	40-70	1.40-1.65	<0.06	0.08-0.14	<4-5.5	High--------	0.32	
	45-60	---	---	---	---	---	------------	----	
DeB2------------- Deanburg	0-9	10-25	1.40-1.60	0.6-2.0	0.16-0.22	5.1-6.0	Low---------	0.37	4
	9-45	15-35	1.40-1.60	0.6-2.0	0.10-0.20	5.1-6.0	Low---------	0.24	
	45-60	5-15	1.30-1.50	2.0-6.0	0.02-0.10	5.1-6.0	Low---------	0.20	
DeB3------------- Deanburg	0-7	20-35	1.40-1.60	0.6-2.0	0.15-0.20	5.1-6.0	Low---------	0.32	4
	7-40	15-35	1.40-1.60	0.6-2.0	0.10-0.20	5.1-6.0	Low---------	0.24	
	40-60	5-15	1.30-1.50	2.0-6.0	0.02-0.10	5.1-6.0	Low---------	0.20	
DrC3------------- Deanburg	0-6	20-35	1.40-1.60	0.6-2.0	0.15-0.20	5.1-6.0	Low---------	0.32	4
	6-26	15-35	1.40-1.60	0.6-2.0	0.10-0.20	5.1-6.0	Low---------	0.24	
	26-60	5-15	1.30-1.50	2.0-6.0	0.02-0.10	5.1-6.0	Low---------	0.20	
DrD3------------- Deanburg	0-4	20-35	1.40-1.60	0.6-2.0	0.15-0.20	5.1-6.0	Low---------	0.32	4
	4-20	15-35	1.40-1.60	0.6-2.0	0.10-0.20	5.1-6.0	Low---------	0.24	
	20-60	5-15	1.30-1.50	2.0-6.0	0.02-0.10	5.1-6.0	Low---------	0.20	
DuB3------------- Dulac	0-6	27-35	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.43	3
	6-16	20-30	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.43	
	16-48	20-35	1.60-1.80	0.06-0.2	0.10-0.13	4.5-5.5	Low---------	0.43	
	48-60	40-55	1.50-1.70	0.2-0.6	0.10-0.14	4.5-5.5	High--------	0.20	
DuC-------------- Dulac	0-6	6-18	1.20-1.40	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.49	3
	6-24	20-30	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.43	
	24-45	20-35	1.60-1.80	0.06-0.2	0.10-0.13	4.5-5.5	Low---------	0.43	
	45-60	40-55	1.50-1.70	0.2-0.6	0.10-0.14	4.5-5.5	High--------	0.20	

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	Pct	g/cc	In/hr	In/in	pH			
DuC3, DuD3-------Dulac	0-6	27-35	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.43	3
	6-16	20-30	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low---------	0.43	
	16-46	20-35	1.60-1.80	0.06-0.2	0.10-0.13	4.5-5.5	Low---------	0.43	
	46-60	40-55	1.50-1.70	0.2-0.6	0.10-0.14	4.5-5.5	High--------	0.20	
En---------------Enville	0-8	6-18	1.30-1.45	0.6-2.0	0.15-0.20	5.1-6.5	Low---------	0.37	5
	8-36	4-18	1.30-1.45	0.6-2.0	0.06-0.18	4.5-5.5	Low---------	0.28	
	36-60	10-18	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low---------	0.28	
FaB3-------------Falkner	0-8	27-35	1.40-1.60	0.2-0.6	0.14-0.19	4.5-6.0	Low---------	0.43	4
	8-31	20-35	1.40-1.60	0.2-0.6	0.19-0.22	4.5-6.0	Moderate----	0.43	
	31-60	38-60	1.40-1.50	0.06-0.2	0.16-0.18	4.5-6.5	High--------	0.24	
FrB2-------------Freeland	0-8	10-25	1.40-1.60	0.6-2.0	0.14-0.24	5.1-6.5	Low---------	0.49	3
	8-26	18-35	1.40-1.60	0.6-2.0	0.18-0.22	4.5-5.5	Low---------	0.49	
	26-60	10-35	1.60-1.75	0.2-0.6	0.09-0.12	5.1-6.5	Low---------	0.43	
FrB3-------------Freeland	0-7	10-25	1.40-1.60	0.6-2.0	0.14-0.24	5.1-6.5	Low---------	0.49	3
	7-23	18-35	1.40-1.60	0.6-2.0	0.18-0.22	4.5-5.5	Low---------	0.49	
	23-60	10-35	1.60-1.75	0.2-0.6	0.09-0.12	5.1-6.5	Low---------	0.43	
FrC3-------------Freeland	0-6	10-25	1.40-1.60	0.6-2.0	0.14-0.24	5.1-6.5	Low---------	0.49	3
	6-18	18-35	1.40-1.60	0.6-2.0	0.18-0.22	4.5-5.5	Low---------	0.49	
	18-60	10-35	1.60-1.75	0.2-0.6	0.09-0.12	5.1-6.5	Low---------	0.43	
Gu---------------Guyton	0-21	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low---------	0.43	5
	21-60	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.5	Low---------	0.37	
Ha---------------Hatchie	0-8	10-25	1.40-1.60	0.6-2.0	0.17-0.22	5.6-6.5	Low---------	0.49	3
	8-31	18-30	1.40-1.60	0.6-2.0	0.17-0.22	4.5-5.5	Low---------	0.49	
	31-60	20-30	1.60-1.80	0.2-0.6	0.09-0.12	4.5-5.5	Low---------	0.43	
Iu---------------Iuka	0-8	6-15	1.30-1.55	0.6-2.0	0.15-0.20	5.1-6.0	Low---------	0.37	5
	8-60	8-18	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	Low---------	0.28	
KN*--------------Kinston	0-5	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low---------	0.37	5
	5-60	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low---------	0.32	
LeB2-------------Lexington	0-8	12-30	1.30-1.50	0.6-2.0	0.17-0.22	4.5-6.0	Low---------	0.49	3
	8-40	20-33	1.40-1.55	0.6-2.0	0.16-0.21	4.5-6.0	Low---------	0.43	
	40-60	15-29	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.0	Low---------	0.24	
LeB3-------------Lexington	0-6	12-30	1.30-1.50	0.6-2.0	0.17-0.22	4.5-6.0	Low---------	0.49	3
	6-24	20-33	1.40-1.55	0.6-2.0	0.16-0.21	4.5-6.0	Low---------	0.43	
	24-60	15-29	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.0	Low---------	0.24	
LeC--------------Lexington	0-6	12-30	1.30-1.50	0.6-2.0	0.17-0.22	4.5-6.0	Low---------	0.49	3
	6-34	20-33	1.40-1.55	0.6-2.0	0.16-0.21	4.5-6.0	Low---------	0.43	
	34-60	15-29	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.0	Low---------	0.24	
LeC3, LeD3-------Lexington	0-6	12-30	1.30-1.50	0.6-2.0	0.17-0.22	4.5-6.0	Low---------	0.49	3
	6-22	20-33	1.40-1.55	0.6-2.0	0.16-0.21	4.5-6.0	Low---------	0.43	
	22-60	15-29	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.0	Low---------	0.24	
LuC--------------Luverne	0-6	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low---------	0.24	4
	6-48	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate----	0.28	
	48-60	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low---------	0.28	
LuC3-------------Luverne	0-6	20-35	1.35-1.65	0.2-0.6	0.12-0.16	3.6-5.5	Low---------	0.28	4
	6-44	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate----	0.28	
	44-60	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low---------	0.28	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	Pct	g/cc	In/hr	In/in	pH			
LuE--------------- Luverne	0-6	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	4
	6-40	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate----	0.28	
	40-60	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28	
LVF*:									
Luverne----------	0-5	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	4
	5-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate----	0.28	
	35-60	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28	
Chickasaw--------	0-6	8-20	1.50-1.60	0.6-2.0	0.14-0.18	5.1-6.0	Low----------	0.32	3
	6-42	35-55	1.40-1.60	<0.06	0.10-0.15	4.5-5.5	High---------	0.32	
	42-60	---	---	---	---	---	-------------	----	
Oc---------------- Ochlockonee	0-8	7-22	1.40-1.60	2.0-6.0	0.10-0.20	4.5-6.5	Low----------	0.24	5
	8-60	3-18	1.40-1.70	2.0-6.0	0.06-0.20	4.5-5.5	Low----------	0.17	
OkC--------------- Oktibbeha	0-7	10-18	1.20-1.50	0.6-2.0	0.10-0.15	4.5-6.5	Low----------	0.28	4
	7-48	60-80	1.00-1.30	<0.06	0.12-0.16	4.5-6.5	High---------	0.32	
	48-60	50-70	1.10-1.40	<0.06	0.05-0.10	6.6-8.4	High---------	0.32	
OkD3-------------- Oktibbeha	0-5	40-60	1.10-1.40	<0.06	0.12-0.16	4.5-6.5	Moderate----	0.32	4
	5-47	60-77	1.00-1.30	<0.06	0.12-0.16	4.5-6.5	High---------	0.32	
	47-60	50-65	1.10-1.40	<0.06	0.05-0.10	6.6-8.4	High---------	0.32	
OkE--------------- Oktibbeha	0-7	10-18	1.20-1.50	0.6-2.0	0.10-0.15	4.5-6.5	Low----------	0.28	4
	7-48	60-80	1.00-1.30	<0.06	0.12-0.16	4.5-6.5	High---------	0.32	
	48-60	50-70	1.10-1.40	<0.06	0.05-0.10	6.6-8.4	High---------	0.32	
PrB2-------------- Providence	0-8	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3
	8-18	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43	
	18-51	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32	
	51-60	10-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.32	
PrB3-------------- Providence	0-6	27-32	1.40-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low----------	0.43	3
	6-18	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43	
	18-55	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32	
	55-60	10-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.32	
PrC--------------- Providence	0-8	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3
	8-24	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43	
	24-51	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32	
	51-60	10-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.32	
PrC3, PrD3-------- Providence	0-4	27-32	1.40-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low----------	0.43	3
	4-18	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43	
	18-55	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32	
	55-60	10-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.32	
RuC*:									
Ruston-----------	0-6	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5
	6-33	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28	
	33-56	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.32	
	56-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28	
Savannah---------	0-8	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low----------	0.24	3
	8-28	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low----------	0.28	
	28-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.24	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	Pct	g/cc	In/hr	In/in	pH			
RuC3*:									
Ruston----------	0-7	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28	5
	7-32	18-35	1.30-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28	
	32-45	10-20	1.30-1.40	0.6-2.0	0.12-0.15	4.5-6.0	Low---------	0.32	
	45-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28	
Savannah--------	0-6	27-32	1.40-1.55	0.6-2.0	0.12-0.15	3.6-5.5	Low---------	0.28	3
	6-20	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low---------	0.28	
	20-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low---------	0.24	
SaB2------------- Savannah	0-8	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low---------	0.24	3
	8-34	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low---------	0.28	
	34-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low---------	0.24	
SaB3, SaC3, SaD3- Savannah	0-6	27-32	1.40-1.55	0.6-2.0	0.12-0.15	3.6-5.5	Low---------	0.28	3
	6-26	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low---------	0.28	
	26-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low---------	0.24	
SmD-------------- Smithdale	0-7	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5
	7-53	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24	
	53-60	12-27	1.40-1.55	0.6-2.0	0.14-0.16	4.5-5.5	Low---------	0.28	
SmD3------------- Smithdale	0-5	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5
	5-53	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24	
	53-60	12-27	1.40-1.55	0.6-2.0	0.14-0.16	4.5-5.5	Low---------	0.28	
SME, SmF--------- Smithdale	0-13	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5
	13-53	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24	
	53-60	12-27	1.40-1.55	0.6-2.0	0.14-0.16	4.5-5.5	Low---------	0.28	
Sn--------------- Steens	0-20	10-16	1.50-1.55	0.6-2.0	0.20-0.22	4.5-6.5	Low---------	0.37	4
	20-60	20-35	1.45-1.70	0.2-0.6	0.10-0.17	4.5-5.5	Low---------	0.20	
SO*-------------- Steens	0-14	8-14	1.45-1.65	0.6-2.0	0.15-0.16	4.5-6.5	Low---------	0.28	4
	14-60	20-35	1.45-1.70	0.2-0.6	0.10-0.17	4.5-5.5	Low---------	0.20	
St--------------- Steens	0-19	10-16	1.50-1.55	0.6-2.0	0.20-0.22	4.5-6.5	Low---------	0.37	4
	19-60	20-35	1.45-1.70	0.2-0.6	0.10-0.17	4.5-5.5	Low---------	0.20	
SuB3, SuC3------- Susquehanna	0-7	35-50	1.25-1.50	<0.06	0.12-0.15	4.5-5.5	High--------	0.32	5
	7-60	35-60	1.25-1.50	<0.06	0.12-0.15	4.5-5.5	High--------	0.32	
Tk--------------- Tooterville	0-8	10-25	1.30-1.60	0.6-2.0	0.16-0.20	5.1-6.0	Low---------	0.37	5
	8-31	18-35	1.30-1.60	0.6-2.0	0.12-0.18	5.1-6.0	Low---------	0.32	
	31-60	5-16	1.30-1.60	0.6-2.0	0.10-0.15	5.1-6.0	Low---------	0.24	
TO*-------------- Tooterville	0-17	5-18	1.30-1.60	0.6-2.0	0.10-0.15	5.1-6.0	Low---------	0.24	5
	17-60	18-35	1.30-1.60	0.6-2.0	0.12-0.18	5.1-6.0	Low---------	0.32	
Ts--------------- Tooterville	0-19	10-25	1.30-1.60	0.6-2.0	0.16-0.20	5.1-6.0	Low---------	0.37	5
	19-60	18-35	1.30-1.60	0.6-2.0	0.12-0.18	5.1-6.0	Low---------	0.32	
Ud*: Udorthents.									
Smithdale--------	0-4	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5
	4-46	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24	
	46-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
BB-----Bibb	D	Frequent----	Brief to long.	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Moderate.
BrC, BrD3, BrE----Brantley	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
ChD, ChD3, ChE----Chickasaw	C	None--------	---	---	>6.0	---	---	40-60	Soft	High-----	High.
DeB2, DeB3, DrC3, DrD3----Deanburg	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
DuB3, DuC, DuC3, DuD3----Dulac	C	None--------	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	Moderate	High.
En-----Enville	C	Occasional	Brief-----	Nov-Apr	1.0-1.5	Apparent	Dec-Apr	>60	---	Moderate	High.
FaB3-----Falkner	C	None--------	---	---	1.5-2.5	Perched	Jan-Mar	>60	---	High-----	Moderate.
FrB2, FrB3, FrC3--Freeland	C	None--------	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High-----	Moderate.
Gu-----Guyton	D	None--------	---	---	0-1.5	Perched	Dec-May	>60	---	High-----	High.
Ha-----Hatchie	C	None--------	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	Moderate.
Iu-----Iuka	C	Occasional	Very brief to brief.	Dec-Apr	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
KN*-----Kinston	B/D	Frequent----	Long------	Nov-Jun	0-1.0	Apparent	Nov-Jun	>60	---	High-----	High.
LeB2, LeB3, LeC, LeC3, LeD3-----Lexington	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
LuC, LuC3, LuE----Luverne	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
LVF*:											
Luverne----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Chickasaw--------	C	None--------	---	---	>6.0	---	---	40-60	Soft	High-----	High.
Oc-----Ochlockonee	B	Occasional	Very brief	Dec-Apr	3.0-5.0	Apparent	Dec-Apr	>60	---	Low------	High.
OkC, OkD3, OkE----Oktibbeha	D	None--------	---	---	>6.0	---	---	>60	---	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro- logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard- ness	Uncoated steel	Concrete
					Ft			In			
PrB2, PrB3, PrC, PrC3, PrD3-------Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
RuC*, RuC3*:											
Ruston-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Savannah---------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SaB2, SaB3, SaC3, SaD3-------------Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SmD, SmD3, SmE, SmF--------------Smithdale	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Sn----------------Steens	C	Rare--------	---	---	1.0-2.5	Apparent	Dec-Apr	>60	---	Low------	High.
SO*---------------Steens	C	Occasional	Brief to long.	Dec-Jun	1.0-2.5	Apparent	Dec-Apr	>60	---	Low------	High.
St----------------Steens	C	Frequent----	Brief to long.	Dec-Jun	1.0-2.5	Apparent	Dec-Apr	>60	---	Low------	High.
SuB3, SuC3--------Susquehanna	D	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Tk----------------Tooterville	D	Rare--------	---	---	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
TO*---------------Tooterville	D	Occasional	Brief to long.	Dec-Apr	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
Ts----------------Tooterville	D	Frequent----	Brief to long.	Dec-Apr	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
Ud*: Udorthents.											
Smithdale--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS

(The pedons are typical for the series. See the section "Soil Series and Their Morphology" for the location of the pedons)

Soil name and sample number	Depth	Horizon	Particle-size distribution							
			Very coarse sand (2.0-1.0 mm)	Coarse sand (1.0-0.5 mm)	Medium sand (0.5-0.25 mm)	Fine sand (0.25-0.10 mm)	Very fine sand (0.10-0.05 mm)	Total sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct
Chickasaw:										
S80TN-023-1-1	0-2	A	1.8	1.7	2.6	19.7	21.5	47.3	43.5	9.2
2	2-5	E	2.5	2.4	3.3	19.8	21.6	49.6	41.4	9.0
3	5-7	Bt1	0.9	1.3	2.6	8.2	13.6	26.6	32.2	41.2
4	7-16	Bt2	0.4	0.8	2.1	4.1	13.5	20.9	28.4	50.7
5	16-20	Bt3	0.3	0.9	0.4	1.4	7.6	10.6	35.9	53.5
6	20-30	2Bt4	0.3	0.6	0.9	2.2	2.8	6.8	24.4	68.8
7	30-45	2B/C	0.1	0.1	0.4	3.4	1.4	5.4	24.0	70.6
8	45-60	2Cr	0.1	0.4	0.4	0.4	0.7	2.0	26.9	71.1
Enville:										
S81TN-023-1	0-8	Ap	0.2	3.5	11.8	7.8	9.2	32.5	54.5	13.0
2	8-15	C1	1.0	2.3	8.2	10.5	18.5	40.5	37.0	22.5
3	15-18	C2	0.0	3.3	28.6	21.5	19.0	72.4	17.1	10.5
4	18-25	Cg	0.0	0.2	5.8	16.7	30.3	53.0	34.9	12.1
5	25-36	C'	1.1	3.7	10.1	8.3	14.1	37.3	46.2	16.5
6	36-60	Bgb	2.2	6.2	19.5	15.6	15.2	58.7	30.0	11.3
Luverne:										
S81TN-023-2-1	0-2	A	4.1	5.5	4.8	9.9	52.8	77.1	12.7	10.2
2	2-6	E	0.8	0.8	1.1	11.6	47.5	60.0	22.6	17.4
3	6-20	Bt1	0.2	0.5	0.3	2.5	25.0	28.5	18.2	53.3
4	20-33	Bt2	0.6	0.6	0.5	2.6	32.2	36.5	22.4	41.1
5	33-48	BC	0.2	0.3	0.4	2.4	38.5	41.8	25.1	33.1
6	48-60	C	0.0	0.1	0.3	3.4	47.6	51.4	22.0	26.6

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS

(Absence of an entry indicates that a determination was not made. The pedons are typical for the series. See the section "Soil Series and Their Morphology" for the location of the pedons)

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable bases: Na	Cation-exchange capacity	Base saturation	Reaction 1:1 soil:water	Organic carbon
	In		---Milliequivalents/100 grams of soil---					Pct	pH	Pct
Chickasaw:										
S80TN-023-1	0-2	A	7.50	2.30	0.46	0.05	22.21	46.4	5.5	---
2	2-5	E	1.70	1.50	0.21	0.04	11.35	30.4	5.1	---
3	5-7	Bt1	3.00	4.00	0.34	0.05	20.10	36.8	4.8	---
4	7-16	Bt2	2.20	4.80	0.28	0.06	18.84	39.0	4.7	---
5	16-20	Bt3	2.80	7.30	0.37	0.10	27.57	38.3	4.6	---
6	20-30	2Bt4	7.40	21.00	0.94	0.42	50.36	59.1	4.2	---
7	30-45	2B1C	8.30	21.20	0.89	0.51	46.40	66.6	4.2	---
8	45-60	2Cr	11.50	25.00	0.73	0.97	51.13	73.9	4.3	---
Enville:										
S81TN-023-1-1	0-8	Ap	3.81	0.31	0.22	0.17	19.93	22.6	6.5	0.44
2	8-15	C1	1.91	0.28	0.17	0.10	20.06	12.3	5.4	0.16
3	15-18	C2	0.99	0.19	0.13	0.05	17.85	7.6	5.4	0.28
4	18-25	Cg	1.43	0.20	0.13	0.07	20.12	9.1	4.9	---
5	25-36	C'	1.67	0.97	0.21	0.11	19.96	14.8	5.1	---
6	36-60	Bgb	0.79	0.63	0.15	0.06	17.34	9.4	5.0	---
Luverne:										
S81TN-023-2-1	0-2	A	1.54	1.15	0.51	0.32	23.16	15.2	4.4	---
2	2-6	E	0.40	0.28	0.17	0.11	17.45	5.5	4.7	---
3	6-20	Bt1	0.25	1.19	0.25	0.02	26.35	6.5	4.5	---
4	20-33	Bt2	0.08	0.88	0.21	0.02	22.14	5.6	4.8	---
5	33-48	BC	0.07	0.54	0.13	0.03	20.49	3.8	4.7	---
6	48-60	C	0.06	0.55	0.11	0.02	19.74	3.7	4.5	---

TABLE 20.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Brantley	Fine, mixed, thermic Ultic Hapludalfs
Chickasaw	Fine, montmorillonitic, thermic Typic Hapludalfs
Deanburg	Fine-loamy, mixed, thermic Ultic Hapludalfs
Dulac	Fine-silty, mixed, thermic Typic Fragiudalfs
Enville	Coarse-loamy, siliceous, acid, thermic Aeric Fluvaquents
Falkner	Fine-silty, siliceous, acid, thermic Aquic Paleudalfs
Freeland	Fine-silty, siliceous, thermic Glossic Fragiudalfs
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Hatchie	Fine-silty, siliceous, thermic Glossaquic Fragiudalfs
Iuka	Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
*Lexington	Fine-silty, mixed, thermic Typic Paleudalfs
Luverne	Clayey, mixed, thermic Typic Hapludults
Ochlockonee	Coarse-loamy, siliceous, acid, thermic Typic Udifluvents
Oktibbeha	Very fine, montmorillonitic, thermic Vertic Hapludalfs
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Steens	Fine-loamy, siliceous, thermic Aeric Ochraqualfs
Susquehanna	Fine, montmorillonitic, thermic Vertic Paleudalfs
Tooterville	Fine-loamy, siliceous, thermic Typic Ochraqualfs

*U.S. G.P.O.:1994-300-438:80022/SCS

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.