

SOIL SURVEY OF

Amite County, Mississippi



United States Department of Agriculture
Soil Conservation Service and Forest Service
In cooperation with
Mississippi Agricultural and Forestry Experiment Station

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in the period 1965-70. Soil names and descriptions were approved in 1971. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1971. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, and the Mississippi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Amite County Soil and Water Conservation District.

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

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms, ranches, and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Amite County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside, and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol. It shows the page where each kind of soil is described and gives the capability classification and the woodland suitability group in which each soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an over-

lay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions.

Foresters and others can refer to the section "Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Wildlife."

Community planners and others can read about soil properties that affect the choice sites for nonindustrial buildings and for recreation areas in the section "Use of the Soils for Town and Country Planning."

Engineers and builders can find, under "Use of the Soils in Engineering," tables that contain test data, estimates of soil properties, and information about features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of Soils."

Newcomers in Amite County will be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County."

Cover: Dairy cattle grazing oats and crimson clover in an area of Providence silt loam, 2 to 5 percent slopes.

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SOIL SURVEY OF AMITE COUNTY, MISSISSIPPI

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND FOREST SERVICE, IN COOPERATION WITH THE MISSISSIPPI AGRICULTURAL AND FORESTRY EXPERIMENT STATION

AMITE COUNTY is in the southwestern part of Mississippi (fig. 1). It has a land area of 466,560

acres, or 729 square miles. The county is rectangular. It is about 24 miles wide from north to south and about 30 miles long from east to west. The southern boundary is 31° north latitude.

Raising beef cattle, dairying, and managing wood crops are the main enterprises. Some field crops are also grown. The petroleum industry and other industries produce large amounts of income. Garment factories and wood-using plants are the largest industrial installations in the county. Many employees of industrial plants are also part-time farmers.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Amite County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Providence and Ruston, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

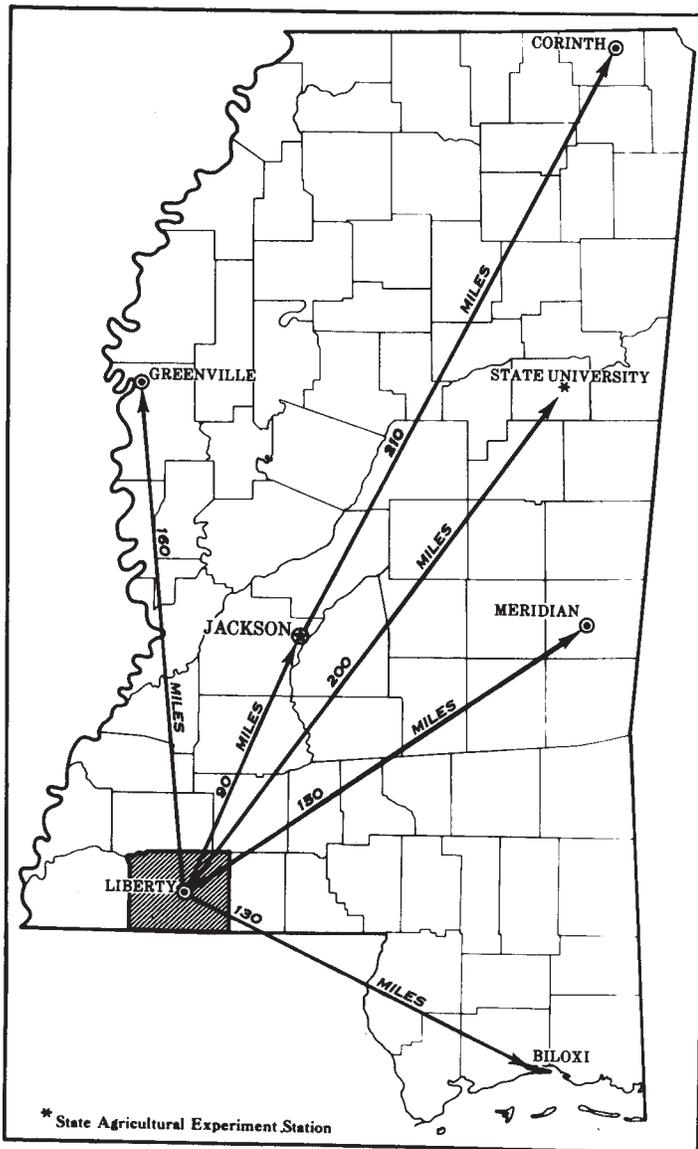


Figure 1.—Location of Amite County in Mississippi.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Providence silt loam, 2 to 5 percent slopes, severely eroded, is one of several phases within the Providence series.

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

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Two such kinds of mapping unit, soil associations and undifferentiated groups, are shown on the soil map of Amite County.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils joined by a hyphen. Susquehanna-Smithdale association, hilly, is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils or of two or more. Bruno soils is an undifferentiated soil group in Amite County.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants and as material for structures, foundation for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this to slow permeability or to a high water table. They see

that streets, road pavements, and foundations for houses crack on a given kind of soil, and they relate this failure to a high shrink-swell potential. Thus, they use observation and knowledge of soil properties, together with available research data, to predict the limitations or suitability of a soil for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their study and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Amite County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

Soil associations and delineations on the general soil map in this soil survey do not always agree fully with general soil maps of adjacent counties published at a different date. Differences are brought about by better knowledge of soils and modifications or refinements in soil series concepts. In addition, the uses of the general soil map have expanded in recent years, thus requiring a more precise and detailed map to accommodate the need. Still another difference is caused by the range in slope of the soils within an association.

The soil associations in Amite County are described in the following pages.

1. Gillsburg-Ariel-Peoria association

Nearly level, mainly somewhat poorly drained and well drained soils that have a loamy subsoil high in silt; on flood plains

This association is on flood plains along the East Fork Amite River, West Fork Amite River, Tangipahoa River, Tickfaw River, Beaver Creek, and Comite

Creek and on flood plains along smaller creeks throughout most of the county, except the northwestern part. In places the flood plains are more than a mile wide.

This association makes up about 11 percent of the county. It is about 50 percent Gillsburg soils, 35 percent Ariel soils, and 10 percent Peoria soils. The rest is mainly Bude, Ruston, and Providence soils.

The Gillsburg soils are in low positions in areas that are generally some distance from old stream channels. These soils are somewhat poorly drained. The surface layer is dark grayish-brown silt loam about 4 inches thick. The subsoil is mottled silt loam that is dark brown and light brownish gray in the upper part and grayer as depth increases.

Ariel soils are along the stream channels. These soils are well drained. The surface layer is dark-brown to brown silt loam about 8 inches thick. The upper part of the subsoil is dark-brown silt loam about 22 inches thick; the lower part is mottled brownish and grayish silt loam that is grayer with increase in depth.

Peoria soils are in depressional areas that are generally some distance from old stream channels. These soils are poorly drained. The surface layer is brown silt loam in the upper 2 inches and mottled brownish, yellowish, and grayish silt loam in the lower 7 inches. Next is about 27 inches of light-gray to light brownish-gray silt that is mottled with yellowish brown. Below this, to a depth of 64 inches, is dark grayish-brown silt loam that is underlain, to a depth of 72 inches, by light brownish-gray silt loam that has mottles of yellowish brown.

Most of the acreage of this association is in hardwoods. Some of the acreage has been cleared of trees and is mainly in pasture, but small areas are in row crops. Cotton, corn, and soybeans are the main crops. Farms average about 100 acres in size. Most farmers earn a large part of their income from occupations other than farming.

This association is occasionally flooded. A hazard of flooding is a limitation to residential uses. Areas used for these purposes should be drained and protected from floods.

Streams and woodland in this association provide excellent opportunities for fishing and hunting. The game is mainly duck, turkey, deer, and squirrel.

2. Collins-Bude association

Nearly level, moderately well drained and somewhat poorly drained soils that have a loamy subsoil high in silt; some have a fragipan; on flood plains

This association is on flood plains along the Homochitto River and Brushy Creek in the northwestern part of the county. In places the flood plains are more than a mile wide.

This association makes up about 1 percent of the county. It is about 60 percent Collins soils and 15 percent Bude soils. The rest is mainly Ariel, Bruno, and Peoria soils.

Collins soils are generally along the streams. These soils are moderately well drained. The surface layer is dark grayish-brown silt loam in the upper 2 inches

and brown silt loam in the lower 6 inches. The underlying material to a depth of 20 inches is layers of brown or yellowish-brown silt loam stratified with thin layers of light brownish-gray very fine sandy loam. Below is 28 inches of silt loam or very fine sandy loam that is mottled in shades of brown and gray.

Bude soils are at the higher elevations on large flats adjacent to the uplands. These soils are somewhat poorly drained. The surface layer is dark grayish-brown silt loam about 5 inches thick. The upper 11 inches of the subsoil is yellowish-brown silt loam. Below this is a silt loam fragipan that is mottled brownish and grayish to a depth of 25 inches and mottled brownish, yellowish, and grayish between depths of 25 and 60 inches.

3. Providence-Bude association

Nearly level to sloping, moderately well drained and somewhat poorly drained soils that have a loamy subsoil high in silt and a fragipan; on uplands

This association is on uplands in the northeastern part of the county. It is on broad flats and the narrower side slopes.

This association makes up about 16 percent of the county. It is about 60 percent Providence soils and 13 percent Bude soils. The rest is mainly Ariel, Gillsburg, Peoria, and Ruston soils.

Providence soils are gently sloping on flats and moderately sloping on side slopes. These soils are moderately well drained. The surface layer is dark grayish-brown silt loam about 5 inches thick. The subsoil extends to a depth of 70 inches. The upper 17 inches is strong-brown silty clay loam. The next 48 inches is a fragipan that is mottled strong-brown and light-gray silty clay loam in the upper 7 inches; mottled strong-brown, yellowish-red, and light-gray silt loam in the next 9 inches; and yellowish-red sandy loam that has mottles of yellowish brown and gray in the lower 32 inches.

Bude soils are in broad, nearly level areas on flats. These soils are somewhat poorly drained. The surface layer is dark grayish-brown silt loam about 5 inches thick. The upper 11 inches of the subsoil is yellowish-brown silt loam. Below this is a silt loam fragipan that is mottled brownish and grayish to a depth of 25 inches and mottled brownish, yellowish, and grayish between depths of 25 and 60 inches.

Much of the acreage of this association has been cleared of trees. The cleared areas are in pasture and row crops. The farms average 200 acres in size. Most farmers earn a large part of their income from occupations other than farming.

The soils of this association are well suited to row crops, pasture, and trees. Suited crops are cotton, corn, soybeans, and small grain.

This association is occasionally flooded. A hazard of flooding is a limitation to residential or industrial uses. Areas used for these purposes should be drained and protected from floods.

The streams and woodland in this association provide opportunities for fishing and hunting. The game is mainly turkey, deer, squirrel, and duck.

Most of the acreage of this association has been cleared of trees. It is mainly in pasture, but small areas are in row crops. Farms average about 80 acres in size.

The soils in this association are well suited to row crops, pasture, and trees. Suitable crops are cotton, corn, soybeans, and small grain. Loblolly pine and shortleaf pine are suitable kinds of trees.

The woodland in this association provides opportunities for hunting turkey, deer, quail, and squirrel.

4. *Providence-Ruston association*

Nearly level to sloping, moderately well drained and well drained soils that have a loamy subsoil; some are high in silt and have a fragipan; on uplands

This association consists of broad, gently sloping areas on ridges and of sloping areas on side slopes in the western part of the county.

This association makes up about 35 percent of the county. It is about 50 percent Providence soils and 20 percent Ruston soils. The rest is mainly Bude, Ora, and Smithdale soils.

Providence soils are gently sloping and are on ridges. These soils are moderately well drained and have a fragipan. The surface layer is dark grayish-brown silt loam about 5 inches thick. The subsoil extends to a depth of 70 inches. The upper 17 inches is strong-brown silty clay loam. The next 48 inches is a fragipan that is mottled strong-brown and light-gray silty clay loam in the upper 7 inches; mottled strong-brown, yellowish-red, and light-gray silt loam in the next 9 inches; and yellowish-red sandy loam that has mottles of yellowish brown and gray in the lower 32 inches.

Ruston soils are moderately sloping and strongly sloping and are on side slopes. These soils are well drained and sandy. The surface layer is dark-gray sandy loam about 3 inches thick. The subsurface layer is 3 inches of brown sandy loam that grades into 2 inches of mixed yellowish-brown and yellowish-red loam. The upper 22 inches of the subsoil is yellowish red and is mainly sandy clay loam. The lower part, to a depth of about 85 inches, is red sandy clay loam and sandy loam that have mottles of reddish yellow and yellowish brown.

Most of the acreage of this association has been cleared of trees. Most cleared areas are in pasture, but small areas are in row crops. Farms average about 150 acres in size.

The soils in this association are well suited to row crops, pasture, and trees. Suitable crops are cotton, corn, soybeans, and small grain.

The woodland in this association provides good opportunities for hunting turkey, deer, quail, and squirrel.

5. *Ora-Smithdale-Providence association*

Gently sloping to sloping, moderately well drained soils that have a loamy subsoil and a fragipan, and rolling to hilly, well-drained soils that have a loamy subsoil; on uplands

This association consists of broad, gently sloping to sloping areas on ridges and hilly side slopes in narrow bands adjacent to the streams.

This association makes up about 19 percent of the county. It is about 40 percent Ora soils, 30 percent Smithdale soils, and 20 percent Providence soils. The rest is mainly Bude, Peoria, Ruston, and Saffell soils.

Ora soils are sloping and gently sloping and are on ridges. These soils are moderately well drained and have a fragipan. The surface layer is dark grayish-brown loam in the upper 2 inches and brown loam in the lower 4 inches. The subsoil is yellowish-red loam or clay loam in the upper 17 inches. Below this is a loam fragipan that extends to a depth of 68 inches. The fragipan is mottled yellowish red, red, strong brown, light yellowish brown, and light brownish gray in the upper part; it is red in the lower part and is mottled strong brown and brownish yellow.

Smithdale soils are moderately steep in most places and are on side slopes. A few areas are steep. These soils are well drained. The surface layer is dark grayish-brown sandy loam in the upper 5 inches and brown sandy loam in the lower 4 inches. The subsoil is mainly yellowish-red sandy clay loam to a depth of 46 inches and red sandy loam between depths of 46 and 84 inches.

Providence soils are sloping and gently sloping and are on ridges. These soils are moderately well drained and have a fragipan. The surface layer is dark grayish-brown silt loam about 5 inches thick. The subsoil extends to a depth of 70 inches. The upper 17 inches is strong-brown silty clay loam. The next 48 inches is a fragipan that is mottled strong-brown and light-gray silty clay loam in the upper 7 inches; mottled strong-brown, yellowish-red, and light-gray silt loam in the next 9 inches; and yellowish-red sandy loam that has mottles of yellowish brown and gray in the lower 32 inches.

A large acreage of this association has been cleared of trees. Most of this is in pasture, but a small part is in row crops. Farms average about 100 acres in size. Farmers earn a large part of their income from dairy farming.

The gently sloping to sloping soils in this association are suited to row crops. The rolling to hilly soils are better suited to pasture and trees than to most other uses. Suitable crops are cotton, corn, soybeans, and small grain.

The woodlands in this association provide good opportunities for hunting quail, turkey, and squirrel.

6. *Saffell-Smithdale-Providence association*

Rolling to hilly, well-drained soils that have a loamy subsoil; some are gravelly; gently sloping to sloping, moderately well drained soils that have a loamy subsoil high in silt and have a fragipan; on uplands

This association consists of narrow areas on ridges and of areas on side slopes of hills that are in narrow bands adjacent to the East Fork Amite River, West Fork Amite River, and Beaver Creek.

This association makes up about 5 percent of the county. It is about 40 percent Saffell soils, 30 percent

Smithdale soils, and 20 percent Providence soils. The rest is mainly Ora and Ariel soils.

Saffell soils are moderately steep in most places and are on side slopes. A few areas are steep. These soils are well drained and gravelly. The surface layer is dark grayish-brown gravelly sandy loam in the upper 3 inches and yellowish-brown gravelly sandy loam in the lower 5 inches. The subsoil is mainly yellowish-red gravelly sandy clay loam to a depth of 17 inches and red gravelly sandy loam between depths of 17 and 42 inches. Below, and extending to a depth of 80 inches, is yellowish-red gravelly loamy sand.

Smithdale soils are moderately steep in places and are on side slopes. They are steep in a few areas. These soils are well drained. The surface layer is dark grayish-brown sandy loam in the upper 5 inches and brown sandy loam in the lower 4 inches. The subsoil is mainly yellowish-red sandy clay loam to a depth of 46 inches and red sandy loam between depths of 46 and 84 inches.

Providence soils are on the narrow ridgetops. These soils are moderately well drained and have a fragipan. The surface layer is dark grayish-brown silt loam about 5 inches thick. The subsoil extends to a depth of 70 inches. The upper 17 inches is strong-brown silty clay loam. The next 48 inches is a fragipan that is mottled strong-brown and light-gray silty clay loam in the upper 7 inches; mottled strong-brown, yellowish-red, and light-gray silt loam in the next 9 inches; and yellowish-red sandy loam that has mottles of yellowish brown and gray in the lower 32 inches.

Much of the acreage of this association is in pine trees. Most areas that have been cleared of trees are in pasture, but some small areas are in row crops. Farms average 60 acres in size. Most farmers earn their income solely from farming.

The soils in this association are suited to pasture grasses and pine trees.

The woodland in this association provides good opportunities for hunting quail, turkey, and squirrel.

7. Smithdale-Susquehanna association

Rolling to hilly, well-drained soils that have a loamy subsoil and somewhat poorly drained soils that have a clayey subsoil; on uplands

This association consists of a rolling to hilly area in the northwestern part of the county. Nearly all of this area is in the Homochitto National Forest.

This association makes up about 13 percent of the county. It is about 50 percent Smithdale soils and 20 percent Susquehanna soils. The rest is mainly Saffell soils, Providence soils, a deep sandy soil, and a small area of severely gullied land.

Smithdale soils are commonly on ridges and upper side slopes. These soils are moderately steep and are well drained. A few areas are steep. The surface layer is dark grayish-brown sandy loam in the upper 5 inches and brown sandy loam in the lower 4 inches. The subsoil is mainly yellowish-red sandy clay loam to a depth of 46 inches and red sandy loam between depths of 46 and 84 inches.

Susquehanna soils are on side slopes, and they commonly occupy the lower positions. These soils are

somewhat poorly drained. The surface layer is very dark grayish-brown silt loam in the upper 2 inches and brown silt loam in the lower 5 inches. Below this the upper 19 inches of the subsoil is red clay that has brownish and grayish mottles. The lower part of the subsoil, which extends to a depth of 80 inches, is mottled red, brown, and gray clay that is grayer with increase in depth.

Much of the acreage of this association is in pine trees. A few areas of soils that are gently sloping and a few areas that are on the narrow bottoms have been cleared of trees and are in row crops. Farms are few and scattered.

The soils in this association are well suited to pine trees. The hazard of erosion is severe where the soils are cultivated.

The woodland in this association provides good opportunities for hunting quail, turkey, deer, and squirrel.

Descriptions of the Soils

In this section the soils of Amite County are described and their use and management are discussed. Each soil series is described in considerable detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils. Unless it is otherwise stated, the colors given in the descriptions are those of moist soils.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. At the end of each description of a mapping unit is listed the capability unit and woodland suitability group to which the mapping unit has been assigned. The capability unit and woodland suitability group for each soil in the county can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The approximate acreage and proportionate extent of the mapping units are given in table 1. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (12).¹

¹ Italic numbers in parentheses refer to Literature Cited, p. 42.

TABLE 1.—Approximate acreage and proportionate extent of the soils

Soil	Acres	Percent	Soil	Acres	Percent
Ariel silt loam	39,038	8.4	Ruston sandy loam, 2 to 5 percent slopes, severely eroded	841	.2
Bruno soils	491	.1	Ruston sandy loam, 5 to 8 percent slopes	18,422	4.0
Bude silt loam	11,116	2.4	Ruston sandy loam, 5 to 8 percent slopes, severely eroded	4,312	.9
Collins silt loam	3,133	.7	Saffell gravelly sandy loam, 8 to 12 percent slopes	1,597	.3
Gillsburg silt loam	45,325	9.7	Saffell gravelly sandy loam, 12 to 30 percent slopes	14,856	3.2
Ora loam, 2 to 5 percent slopes	30,329	6.5	Smithdale sandy loam, 8 to 12 percent slopes	31,336	6.7
Ora loam, 2 to 5 percent slopes, severely eroded	885	.2	Smithdale sandy loam, 8 to 12 percent slopes, severely eroded	7,004	1.5
Ora loam, 5 to 8 percent slopes	15,227	3.3	Smithdale sandy loam, 12 to 35 percent slopes	41,275	8.8
Ora loam, 5 to 8 percent slopes, severely eroded	1,888	.4	Smithdale sandy loam, 12 to 35 percent slopes, severely eroded	2,286	.5
Peoria silt loam	12,950	2.8	Susquehanna-Smithdale association, hilly	18,307	3.8
Providence silt loam, 2 to 5 percent slopes	111,455	23.9			
Providence silt loam, 2 to 5 percent slopes, severely eroded	3,458	.7			
Providence silt loam, 5 to 8 percent slopes	34,286	7.4			
Providence silt loam, 5 to 8 percent slopes, severely eroded	5,005	1.1			
Ruston sandy loam, 0 to 2 percent slopes	832	.2			
Ruston sandy loam, 2 to 5 percent slopes	10,906	2.3	Total	466,560	100.0

Ariel Series

The Ariel series consists of well-drained soils on flood plains. These soils formed in loamy material high in silt. Slopes are 0 to 2 percent.

In a representative profile the surface layer is dark-brown to brown silt loam that has pale-brown and strong-brown mottles. It is about 8 inches thick. The upper 17 inches of the subsoil is dark-brown silt loam. Below this, the subsoil is mottled brownish and grayish silt loam that is grayer with increase in depth.

Representative profile of Ariel silt loam, in cultivated field about 40 acres in size, 11 miles northeast of Liberty, 0.9 mile west and 100 feet north, NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 3 N., R. 5 E.:

- Ap1—0 to 5 inches, dark-brown (10YR 4/3) silt loam; common, medium, faint, pale-brown (10YR 6/3) mottles; weak, fine, granular structure; friable; strongly acid; abrupt, smooth boundary.
- Ap2—5 to 8 inches, brown (10YR 5/3) silt loam; few, fine, faint, strong-brown mottles; weak, fine, granular structure; friable; strongly acid; clear, smooth boundary.
- B21—8 to 25 inches, dark-brown (7.5YR 4/4) silt loam; weak, medium, subangular blocky structure; friable; few patchy oxide coatings; many fine pores; strongly acid; clear, wavy boundary.
- B22—25 to 30 inches, mottled dark-brown (10YR 4/3), pale-brown (10YR 6/3), and light brownish-gray (10YR 6/2) silt loam; weak, medium, subangular blocky structure; friable; many fine and medium pores; few oxide coatings on ped faces; few, fine and medium, black and brown concretions; strongly acid; clear, wavy boundary.
- A2b—30 to 39 inches, mottled pale-brown (10YR 6/3) light-gray (10YR 7/1), and yellowish-brown (10YR 5/8) silt loam; weak, very coarse, prismatic structure parting to weak, medium, subangular blocky; hard, slightly compact and brittle; many fine pores; few tongues of gray silt loam $\frac{1}{2}$ inch to 2 inches wide between prisms; few black and brown concretions; strongly acid; clear, wavy boundary.
- B21b—39 to 54 inches, mottled light brownish-gray (10YR 6/2) and yellowish-brown (10YR 5/8) silt loam; weak, very coarse, prismatic structure parting to

weak, medium, subangular blocky; hard, slightly compact and brittle; many fine voids; few tongues of gray silty clay loam $\frac{1}{2}$ inch to 2 inches wide between prisms; few black and brown concretions; strongly acid; gradual, wavy boundary.

B22b—54 to 65 inches, mottled light brownish-gray (10YR 6/2), light-gray (10YR 7/1), and yellowish-brown (10YR 5/4) silt loam; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; hard, slightly brittle and compact; many fine voids; few clay films on ped faces; common, fine, brown concretions; strongly acid.

The Ap horizon is dark grayish brown, grayish brown, brown, or dark brown. The B21 and B22 horizons are dark brown, brown, or dark yellowish brown and have grayish mottles in the lower part. The A2b horizon has colors similar to those of the B horizon or is mottled in shades of gray and brown. The A2b horizon is silt loam that has a clay content of 12 to 18 percent. The B2b horizon is mottled in shades of brown or gray or is brownish and has few to many gray mottles. It is silt loam or loam. Depth to the buried solum ranges from 20 to 40 inches. All horizons are strongly acid or very strongly acid.

Ariel soils are near Bruno, Collins, Gillsburg, and Peoria soils. They are better drained than Gillsburg and Peoria soils. They lack the bedding planes of Collins and Bruno soils. They have no horizons that have a high sodium content as do Peoria soils.

Ariel silt loam (Ar).—This soil is on flood plains. Slopes are 0 to 2 percent. Most areas of this soil are subject to flooding for short periods.

Included with this soil in mapping are small areas of Bruno, Collins, and Gillsburg soils.

Reaction is strongly acid or very strongly acid. Permeability is moderately slow. Available water capacity is high. Runoff is slow.

Most of the acreage of this soil is used for pasture. A small acreage is woodland or is used for row crops.

This is one of the best farming soils in the county, but it is subject to flooding, which causes slight to moderate crop damage. It is well suited to cotton, corn, soybeans, small grain, and pasture. This soil can be continuously row cropped if management practices include proper arrangement of rows, use of surface field ditches to remove excess water, and addition of crop residue to help prevent crusting and packing.

This soil is suited to southern hardwoods and to pine trees. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIw-1; woodland suitability group 1w8.

Bruno Series

The Bruno series consists of excessively drained soils on flood plains. These soils formed in sandy material that has thin, interbedded, loamy strata. Slopes are 0 to 2 percent.

In a representative profile the surface layer is pale-brown loamy fine sand about 8 inches thick. The underlying material is brownish loamy fine sand or sand and strata of loamy material.

Representative profile of a Bruno loamy fine sand, from an area of Bruno soils, on a sandbar about 20 acres in size along the Homochitto River, one-fourth mile north of Mount Nebo Lake, Sec. 17, T. 4 N., R. 1 E.:

- A1—0 to 8 inches, pale-brown (10YR 6/3) loamy fine sand; weak, fine, granular structure; very friable; slightly acid; abrupt, smooth boundary.
- C1—8 to 16 inches, yellowish-brown (10YR 5/8) silt loam and very fine sandy loam; thin lenses of pale-brown (10YR 6/3) sand; structureless; very friable; bedding planes; neutral; abrupt, smooth boundary.
- C2—16 to 22 inches, brown (10YR 5/3) loamy fine sand; single grained; loose; slightly acid; abrupt, smooth boundary.
- C3—22 to 28 inches, mottled strong-brown (7.5YR 5/6), gray (10YR 6/1), and yellowish-brown (10YR 5/8) silt loam; structureless; very friable; bedding planes; slightly acid; abrupt, smooth boundary.
- C4—28 to 50 inches, pale-brown (10YR 6/3) sand; single grained; loose; slightly acid; abrupt, smooth boundary.
- C5—50 to 58 inches, light brownish-gray (10YR 6/2) silt loam and very fine sandy loam; structureless; loose; strongly acid.

The A horizon ranges from pale brown to brown. It is loamy fine sand or sandy loam. The C horizon is yellowish-brown, brown, pale-brown, or light brownish-gray loamy fine sand or sand that contains strata of silt loam, very fine sandy loam, or loam. Reaction is neutral to strongly acid throughout the profile.

Bruno soils are near Ariel, Collins, and Gillsburg soils. They are sandier and better drained than these soils.

Bruno soils (Br).—This undifferentiated group consists of soils on flood plains. Slopes are 0 to 2 percent. The surface layer ranges from loamy fine sand to sandy loam. Most areas of these soils are subject to frequent flooding for short periods.

Included with this soil in mapping are small areas of Ariel, Collins, and Gillsburg soils.

Reaction is strongly acid to neutral. Permeability is moderately rapid. Available water capacity is low. Runoff is slow.

These soils are suited to deep-rooted pasture grasses and to sod-forming plants. They are suited to willow, water oak, sweetgum, and other southern hardwoods. These soils are droughty, and the hazard of flooding is severe on them. Consequently, they are only fairly well suited to crops commonly grown in the county. The soils are better suited to use as woodland. Woodland grazing is not recommended. Capability unit Vw-1; woodland suitability group 2s5.

Bude Series

The Bude series consists of somewhat poorly drained soils that have a fragipan. The soils formed in loamy material that has a high percentage of silt.

In a representative profile the surface layer is dark grayish-brown silt loam about 5 inches thick. The upper 11 inches of the subsoil is yellowish-brown silt loam. Below this is a silt loam fragipan that is mottled brownish and grayish to a depth of 25 inches and mottled brownish, yellowish, and grayish between depths of 25 and 60 inches.

Representative profile of Bude silt loam, in an area about 80 acres in size in mixed pines and hardwoods, in the northeastern part of the county, NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 11, T. 4 N., R. 6 E.:

- Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many, fine and medium roots; strongly acid; abrupt, smooth boundary.
- B2—5 to 16 inches, yellowish-brown (10YR 5/6) silt loam; weak, fine and medium, subangular blocky structure; friable; few patchy clay films in pores and on some vertical ped faces; common, fine and medium roots; strongly acid; clear, gradual boundary.
- B 1 x2—25 to 36 inches, mottled yellowish-brown (10YR 5/6), 5/6), pale-brown (10YR 6/3), and light brownish-gray (10YR 6/2) silt loam; moderate, medium, subangular blocky structure; yellowish-brown part is firm, compact, brittle; clay films on ped faces; few fine roots in polygonal cracks that are filled with light brownish-gray silt; strongly acid; clear, wavy boundary.
- B 1 x1 & A 2 —16 to 25 inches, mottled yellowish-brown (10YR light brownish-gray (10YR 6/2), and strong-brown (7.5YR 5/8) silt loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm, compact, brittle; clay films on ped faces; many voids; tongues of gray silt, $\frac{1}{2}$ inch to 3 inches wide, between prisms; strongly acid; clear, wavy boundary.
- IIB 1 x3—36 to 60 inches, mottled strong-brown (7.5YR 5/6), light-gray (10YR 7/1), and yellowish-brown (10YR 5/6) silt loam that has high sand content; weak, coarse, prismatic structure; firm, brittle, compact; clay films on ped faces and clay bridging on sand grains; strongly acid.

The Ap horizon is brown, dark grayish brown, or grayish brown. The B2 horizon is strong brown or yellowish brown. Between a depth of 10 inches and the top of the fragipan, clay content ranges from 20 to 30 percent. The A 2 horizon is pale-brown or light brownish-gray silt loam. In some profiles it is mixed with the B 1 horizon. The B 1 x horizon is silt loam, silty clay loam, or loam and is mottled in shades of brown, gray, and yellow. The IIB 1 x horizon is silt loam, silty clay loam, or loam and is mottled in shades of brown, yellow, and gray. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Bude soils are near Peoria and Providence soils. They are poorer drained than Providence soils. They have a fragipan, which Peoria soils lack. They lack horizons that have a high content of sodium, which are characteristic of Peoria soils.

Bude silt loam (Bu).—This soil is in broad, flat areas on uplands. Slopes are 0 to 2 percent. This soil receives excess water during periods of heavy rainfall.

Included with this soil in mapping are small areas of Peoria and Providence soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available

water capacity is medium. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is used for pasture or crops. A small acreage is woodland.

This soil is well suited to most crops commonly grown in the county and to pasture. The chief crops are cotton, corn, soybeans, and small grain. This soil can be continuously row cropped if management practices include the proper arrangement of rows and the use of grassed waterways and surface drainage. Returning crop residue to the soil helps to prevent crusting and packing and reduces erosion.

This soil is suited to southern hardwoods. It is well suited to loblolly and shortleaf pines. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIw-1; woodland suitability group 1w8.

Collins Series

The Collins series consists of moderately well drained soils on flood plains. These soils formed in loamy material that has a high content of silt. Slopes are 0 to 2 percent.

In a representative profile the surface layer is dark grayish-brown silt loam in the upper 2 inches and brown silt loam in the lower 6 inches. The underlying material, to a depth of 20 inches, is layers of brown silt loam stratified with thin layers of light brownish-gray very fine sandy loam. Below is 28 inches of silt loam or very fine sandy loam that is mottled in shades of brown and gray.

Representative profile of Collins silt loam, in an area about 30 acres in size in hardwood trees, one-fourth mile north of Mount Nebo Lake, on logging road on natural levee of Homochitto River, sec. 17, T. 4 N., R. 1 E.:

- A11—0 to 2 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; very friable; few to common, fine and medium roots; strongly acid; abrupt, smooth boundary.
- A12—2 to 8 inches, brown (10YR 5/3) silt loam; weak, fine and medium, granular structure; very friable; few medium roots; strongly acid; abrupt, smooth boundary.
- C1—8 to 20 inches, brown (10YR 5/3) silt loam and layers of light brownish-gray (10YR 6/2) very fine sandy loam; structureless; very friable; thin horizontal strata or bedding planes; many fine roots; strongly acid; clear, smooth boundary.
- C2—20 to 42 inches, mottled pale-brown (10YR 6/3), brown (10YR 5/3), light-gray (10YR 7/2), and strong-brown (7.5YR 5/6) silt loam and thin strata of very pale brown (10YR 7/3) very fine sandy loam; structureless; very friable; bedding planes; few roots; strongly acid; clear, smooth boundary.
- C3—42 to 48 inches, light brownish-gray (10YR 6/2) very fine sandy loam; common, medium, distinct mottles of brown (10YR 5/3) and yellowish brown (10YR 5/4); structureless; friable; few roots; strongly acid.

The Ap horizon, where present, is brown. The A1 horizon is dark grayish brown or brown. The C1 horizon is brown or yellowish brown; the C2 horizon is brown or yellowish brown mottled with gray or mottled in shades of brown and gray; and the C3 horizon is light brownish gray or brownish gray and has brownish mottles or mottles in shades of gray and brown. Texture throughout the profile is silt loam or very fine sandy loam. Bedding planes

are evident at depths below the plow layer. Clay content between depths of 10 and 40 inches is 12 to 18 percent. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Collins soils are near Ariel, Bruno, and Gillsburg soils. They have bedding planes, which the Ariel soils lack. They are not so sandy as the excessively drained Bruno soils. They are better drained than Gillsburg soils.

Collins silt loam (Co).—This soil is on flood plains. Slopes are 0 to 2 percent. Most areas of this soil are subject to flooding for short periods.

Included with this soil in mapping are small areas of Ariel, Bruno, and Gillsburg soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is very high. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is used for pasture and crops. A small acreage is woodland.

This soil is well suited to all crops commonly grown in the survey area and to pasture. Cotton, corn, soybeans, and small grain are the main crops. This soil is subject to flooding, and damage to crops is slight to moderate. This soil can be continuously row cropped if management practices include using proper arrangement of rows and using surface field ditches to remove excess water. Returning crop residue to the soil helps to prevent crusting and packing and reduces erosion.

This soil is well suited to southern hardwood and pine trees. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIw-2; woodland suitability group 1w8.

Gillsburg Series

The Gillsburg series consists of somewhat poorly drained soils on flood plains. These soils formed in loamy material. Slopes are 0 to 2 percent.

In a representative profile the surface layer is dark grayish-brown silt loam 4 inches thick. The subsoil, in sequence from the top, is 13 inches of mottled dark-brown and light brownish-gray silt loam and 16 inches of light-gray silt loam that has brownish mottles. Next is 32 inches of grayish-brown and light-gray silt loam that has brownish mottles.

Representative profile of Gillsburg silt loam, in a wooded area about 100 acres in size, 8 miles northeast of Liberty on State Highway No. 48, then 2.5 miles north, 0.6 mile northwest, and 200 feet north, NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 3 N., R. 5 E.:

- A1—0 to 4 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many fine, medium, and coarse roots; many fine pores; strongly acid; gradual, smooth boundary.
- B21—4 to 17 inches, mottled dark-brown (10YR 4/3) and light brownish-gray (2.5Y 6/2) silt loam; weak, fine and medium, subangular blocky structure; friable; common fine, medium, and coarse roots; many fine voids; few coatings of silt and oxides on faces of peds; few fine pores; very strongly acid; gradual, smooth boundary.
- B22—17 to 33 inches, light-gray (10YR 7/1) silt loam; many, medium, distinct, yellowish-brown (10YR 5/4) and strong-brown (7.5YR 5/6) mottles; weak, fine and medium, subangular blocky structure; friable, slightly brittle; common fine roots; few coatings of silt and oxides on faces of peds;

common fine voids; many fine pores; few black and brown concretions; very strongly acid; clear, irregular boundary.

A2b—33 to 42 inches, light-gray (10YR 7/1) silt loam; many, medium, distinct, light yellowish-brown (10YR 6/4) and yellowish-brown (10YR 5/6) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; friable; yellowish-brown part is slightly brittle and compact; few fine roots; many fine voids; gray tongues of silt loam $\frac{1}{2}$ inch to 1 inch wide between and within prisms; common black and brown concretions; strongly acid; clear, irregular boundary.

A2b&Bgb—42 to 60 inches, grayish-brown (2.5Y 5/2) silt loam; many, coarse, distinct, yellowish-brown (10YR 5/6) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; friable; yellowish-brown part is brittle and compact; few fine roots on tongues and in some brown parts; many voids; nearly continuous clay films on prism faces; gray tongues of silt loam $\frac{1}{2}$ inch to 1 inch wide between and within prisms; many black and brown concretions; very strongly acid; clear, irregular boundary.

Btgb—60 to 65 inches, light-gray (10YR 7/1) silt loam; many, coarse, distinct, yellowish-brown (10YR 5/6) and strong-brown (7.5YR 5/8) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; friable; brown part is brittle and compact; many voids; nearly continuous clay films on prism faces; gray tongues of silt loam between prisms; few black and brown concretions; very strongly acid.

The A1 horizon is dark grayish brown or has the same color as the B21 horizon. The B21 horizon is dark brown, dark yellowish brown, or brown or is mottled in shades of brown and gray. The B22 horizon is grayish brown, light brownish gray, gray, or light gray mottled in colors of gray and brown. Depth to the buried soil horizon commonly ranges from 20 to 50 inches. The texture and reaction of the buried horizon that occurs within a depth of 36 inches are similar to those of the B22 horizon. Reaction is strongly acid or very strongly acid throughout the soil except in places where the surface layer has been limed.

Gillsburg soils are near Ariel, Bruno, and Collins soils. They are poorer drained than these soils. They lack the bedding planes that are present in the Collins soils. They are not so sandy as the Bruno soils.

Gillsburg silt loam (Gb).—This soil is on flood plains. Slopes are 0 to 2 percent. Most areas of this soil are subject to flooding for short periods.

Included with this soil in mapping are small areas of Ariel, Bruno, and Collins soils.

Reaction is strongly acid or very strongly acid. Permeability is moderately slow. Available water capacity is high. Runoff is slow. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is in hardwood trees and pasture. A small acreage is used for crops.

This soil is well suited to most crops commonly grown in the county and to pasture. Cotton, corn, soybeans, and small grain are the chief crops. This soil is subject to flooding, and damage to crops is slight to moderate. The soil can be continuously row cropped if management practices include proper arrangement of rows and the use of surface field ditches to remove excess water. Returning crop residue to the soil prevents crusting and packing and reduces erosion.

This soil is suited to southern hardwoods and to loblolly pine. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIw-3; woodland suitability group 1w8.

Ora Series

The Ora series consists of moderately well drained soils on uplands. These soils formed in loamy material. They have a fragipan. Slopes are 2 to 8 percent.

In a representative profile the surface layer is about 6 inches thick. It is about 2 inches of dark grayish-brown loam underlain by 4 inches of brown loam. The subsoil is yellowish-red loam to clay loam in the upper 17 inches. Below this is a loam fragipan that extends to a depth of 68 inches. The fragipan is mottled yellowish red, strong brown, light brownish gray, and light yellowish brown in the upper part; it is red in the lower part and is mottled strong brown and brownish yellow.

Representative profile of Ora loam, 2 to 5 percent slopes, in a longleaf pine forest, about 2 miles north-east of Glading Baptist Church, on St. Regis land, NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 8, T. 2 N., R. 6 E.:

A1—0 to 2 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; friable; common fine and medium roots; strongly acid; abrupt, smooth boundary.

A2—2 to 6 inches, brown (10YR 5/3) loam; weak, fine, granular structure; friable; common fine roots; strongly acid; abrupt, smooth boundary.

B1t—6 to 9 inches, yellowish-red (5YR 5/8) loam; weak, fine, subangular blocky structure; friable; common fine roots; patchy clay films on ped faces; strongly acid; clear, smooth boundary.

B2t—9 to 23 inches, yellowish-red (5YR 5/8) clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; clay films on ped faces; strongly acid; clear, wavy boundary.

Bx1—23 to 39 inches, mottled yellowish-red (5YR 5/8), strong-brown (7.5YR 5/6), light brownish-gray (10YR 6/2), and light yellowish-brown (10YR 6/4) loam; moderate to strong, medium and coarse, subangular blocky structure; firm, brittle, compact; clay films on ped faces; polygonal cracks; strongly acid; clear, wavy boundary.

Bx2—39 to 68 inches, red (2.5YR 4/6) loam; common, medium, distinct mottles of strong brown (7.5YR 5/8) and brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; firm, hard, brittle, compact; clay films on ped faces; polygonal cracks filled with pale-brown (10YR 6/3) sandy loam; strongly acid; clear, wavy boundary.

The A horizon is dark grayish brown, very dark grayish brown, brown, yellowish brown, or strong brown. The Bt horizon is yellowish-red or red clay loam, loam, or sandy clay loam. Clay content of the upper 20 inches of the B horizon is 23 to 33 percent. The Bx horizon is loam, sandy clay loam, clay loam, or sandy loam. It is mottled in shades of red, brown, yellow, and gray. Its depth ranges from 20 to 32 inches. Reaction is strongly acid or very strongly acid throughout the soil, except in places where the surface layer has been limed.

Ora soils are near Providence and Ruston soils. They are sandier than Providence soils. They are poorer drained than Ruston soils and have a fragipan, which Ruston soils lack.

Ora loam, 2 to 5 percent slopes (OrB).—This soil is on uplands. It has the profile described as representative of the series. In a few areas are rills and places where part of the surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Providence and Ruston soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is in pasture, but a small acreage is used as woodland and for crops.

This soil is well suited to all commonly grown crops and to pasture. Cotton, corn, soybeans, and small grain (fig. 2) are the main crops. This soil can be continuously row cropped if such practices as grassing of waterways, stripcropping, and terracing are used. Returning crop residue to the soil reduces erosion and helps to prevent crusting and packing.

This soil is suited to southern hardwoods and is well suited to loblolly and shortleaf pines. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIe-3; woodland suitability group 2o7.

Ora loam, 2 to 5 percent slopes, severely eroded (OrB3).—This soil is on uplands. The surface layer is yellowish-brown or strong-brown loam about 4 inches

thick. The upper part of the subsoil is yellowish-red clay loam about 22 inches thick. Below this, and extending to a depth of 58 inches, is a clay loam to loam fragipan that is mottled with yellowish red, strong brown, and light brownish gray. In most areas the surface layer is thin because of erosion. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are some areas where the surface layer and much of the upper part of the subsoil have been removed by sheet and gully erosion. Also included are small areas of Providence and Ruston soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. In cultivated areas, runoff is medium and the hazard of erosion is severe.

Most of the acreage of this soil is in pasture. A small acreage is used for row crops and for trees.

This soil is well suited to cotton, corn, soybeans, small grain, pasture, and loblolly and shortleaf pines.



Figure 2.—Dairy cattle grazing oats in an area of Ora loam, 2 to 5 percent slopes.

It is better suited to permanent pasture or to trees than to most other uses. If terracing and farming on the contour are practiced, row crops can be grown in a cropping system that includes grasses and legumes in about 2 years out of 3. Proper use of crop residue preserves tilth. Pine stands that have an open canopy have good potential for woodland grazing. Capability unit IVE-4; woodland suitability group 2o7.

Ora loam, 5 to 8 percent slopes (OrC).—This soil is on uplands. The surface layer is about 7 inches thick. It is about 3 inches of very dark grayish-brown loam over about 4 inches of yellowish-brown loam. The upper part of the subsoil is yellowish-red clay loam about 15 inches thick. Below this is a fragipan that extends to a depth of 40 inches. It is mottled yellowish-red, yellow, and brownish-gray clay loam or sandy clay loam. Below a depth of 40 inches, and extending to a depth of 54 inches, is red loam that is mottled with gray. In a few places erosion has produced rills or places where the surface layer is thin and is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ruston and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. The hazard of erosion is moderate in cultivated fields.

Most of the acreage of this soil is used for pasture and as woodland. A small acreage, however, is cropland.

This soil is well suited to cotton, corn, soybeans, small grain, and pasture and to loblolly and shortleaf pines. If terraces, contour cultivation, and grassed waterways are used, row crops can be grown in a cropping system that includes grasses and legumes. Proper use of crop residue reduces erosion and prevents crusting and packing. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIe-5; woodland suitability group 2o7.

Ora loam, 5 to 8 percent slopes, severely eroded (OrC3).—This soil is on uplands. The surface layer is strong-brown loam about 5 inches thick. The upper part of the subsoil is yellowish-red clay loam about 20 inches thick. Below this is a fragipan that extends to a depth of 48 inches. It is mottled yellowish-red, brownish-gray, and yellowish-brown sandy clay loam. Below a depth of 48 inches is red sandy loam. In most areas the surface layer is thin because of erosion. Rills and shallow gullies are common, and there are a few deep gullies.

Included with this soil in mapping are areas where the surface layer and much of the upper part of the subsoil have been removed by sheet and gully erosion. Also included are small areas of Ruston and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium to rapid, and the hazard of the erosion is severe in cultivated areas.

Most of the acreage of this soil is used as woodland and for pasture. A small acreage, however, is used for row crops.

This soil is suited to cotton, corn, small grain, and pasture and to loblolly and shortleaf pines. It is better suited to permanent pasture or trees than to most other uses. If such practices as terracing, grassing of waterways, strip cropping, and farming on the contour are used, row crops can be grown in a cropping system that includes grasses and legumes about 2 years in 3. Proper use of crop residue improves tilth and helps to reduce erosion. Pine stands that have an open canopy have good potential for woodland grazing. Capability unit IVE-4; woodland suitability group 2o7.

Peoria Series

The Peoria series consists of poorly drained soils. These soils formed in loamy material that is high in silt. Slopes are 0 to 2 percent.

In a representative profile the surface layer is brown silt loam in the upper 2 inches and mottled brownish, yellowish, and grayish silt loam in the lower 7 inches. The subsurface layer, to a depth of 36 inches, is light-gray or light brownish-gray silt that has mottles of yellowish brown. Below this layer, to a depth of 64 inches, is dark grayish-brown silt loam that is underlain, to a depth of 72 inches, by light brownish-gray silt loam that has mottles of yellowish brown.

Representative profile of Peoria silt loam, in a wooded area about 40 acres in size, 8.5 miles south of Liberty, 0.5 mile southwest and 1,500 feet south, NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 21, T.1 N., R. 4 E.:

- A11—0 to 2 inches, brown (10YR 5/3) silt loam; weak, fine, granular structure; friable; many fine to coarse roots; very strongly acid; abrupt, smooth boundary.
- A12—2 to 9 inches, mottled pale-brown (10YR 6/3), dark yellowish-brown (10YR 4/4), light brownish-gray (10YR 6/2), and strong-brown (7.5YR 5/6) silt loam; weak, fine, granular structure; friable; many fine to coarse roots; very strongly acid; clear, smooth boundary.
- A21g—9 to 18 inches, light-gray (10YR 7/2) silt; common, medium, distinct, yellowish-brown (10YR 5/6) and light yellowish-brown (10YR 6/4) mottles; weak, platy structure; firm, slightly brittle; few fine roots; very strongly acid; clear, irregular boundary.
- A22g—18 to 36 inches, light brownish-gray (10YR 6/2) silt; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; firm, slightly brittle; common fine voids; few remnants of material from B horizon have patchy clay films; tongues of gray silt loam 1 inch to 2½ inches wide extend throughout the horizon; very strongly acid; clear, irregular boundary.
- B21tg&A2g—36 to 64 inches, dark grayish-brown (10YR 4/2) silt loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; nearly continuous clay films on ped faces; many tongues of gray silt loam 1 inch to 2 inches wide extend throughout the horizon; tongues are platy and slightly brittle and have more clayey lenses in the lower part than in the upper part; few quartz pebbles; very strongly acid; clear, irregular boundary.

B22tg&A2g—64 to 72 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky; firm; dark grayish-brown (10YR 4/2) clay films on ped faces; common tongues of gray silt loam 1 inch to 2 inches wide extend throughout the horizon; tongues are platy, slightly brittle, and have clayey lenses; very strongly acid.

The A1 horizon is brown, dark brown, and dark grayish brown or is mottled in shades of gray and brown. The A2 horizon is gray, light gray, or light brownish gray and has mottles in shades of brown and gray. The A horizon ranges from about 20 to 40 inches in thickness. The B2tg horizon is silt loam or silty clay loam. It is dark grayish brown, grayish brown, light brownish gray, or gray and has brownish mottles. The upper 15 inches of the B2tg has more than 15 percent sodium saturation. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Peoria soils are near Ariel and Bude soils. They are poorer drained than those soils. They lack the fragipan that is characteristic of Bude soils. Peoria soils have a grayer subsoil than Ariel soils. They have a horizon that has a high sodium content, which is lacking in Ariel and Bude soils.

Peoria silt loam (Pe).—This soil is on level flats. Slopes are 0 to 2 percent. Most areas of this soil are subject to flooding and ponding during periods of heavy rainfall.

Included with this soil in mapping are small areas of Ariel and Bude soils.

Reaction is strongly acid or very strongly acid. Permeability is slow. Available water capacity is high. Runoff is slow.

Most areas of this soil are used as woodland. Small areas, however, are in pasture.

This soil is suited to corn, soybeans, small grain, and pasture. It is better suited to permanent pasture and woodland than to other uses. It can be continuously row cropped if management practices include dragline ditches, the proper arrangement of rows, and the use of surface field ditches to remove excess water. Returning crop residue to the soil helps to prevent crusting and packing.

This soil is suited to hardwoods and pines that can tolerate wetness. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIw-2; woodland suitability group 3w9.

Providence Series

The Providence series consists of moderately well drained soils on uplands. These soils formed in loamy material that is high in silt. They have a fragipan. Slopes are 2 to 8 percent.

In a representative profile the surface layer is dark grayish-brown silt loam 5 inches thick. The subsoil extends to a depth of 70 inches. The upper 17 inches is strong-brown silty clay loam. The next 48 inches is a fragipan that is mottled strong-brown and light-gray silty clay loam in the upper 7 inches; mottled strong-brown, yellowish-red, and light-gray silt loam in the next 9 inches; and yellowish-red sandy loam that has mottles of yellowish brown and gray in the lower 32 inches.

Representative profile of Providence silt loam, 2 to 5 percent slopes, in a pasture, 1 mile west of Liberty on State Highway No. 24, 1 mile north and right on State Highway 567, 4 miles north and 100 feet east, NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 3 N., R. 4 E.:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B2t—5 to 22 inches, strong-brown (7.5YR 5/6) silty clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; common clay films on ped faces; patchy clay films in pores and along root channels; strongly acid; clear, wavy boundary.

Bx1—22 to 29 inches, mottled strong-brown (7.5YR 5/6) and light-gray (10YR 7/2) silty clay loam; moderate, medium, subangular blocky structure; firm, compact, brittle; many fine pores; common clay films on ped faces; few roots on prism faces; strongly acid; clear, wavy boundary.

Bx2—29 to 38 inches, mottled strong-brown (7.5YR 5/6), yellowish-red (5YR 5/6), and light-gray (10YR 7/2) silt loam; moderate, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm, compact, brittle; many fine pores; light-gray (10YR 7/2) silt in polygonal cracks that are about 1 inch to 2 inches wide; clay films on ped faces; strongly acid; clear, smooth boundary.

IIBx3—38 to 70 inches, yellowish-red (5YR 5/6) sandy loam; common, medium, distinct, yellowish-brown (10YR 5/6) and gray (10YR 6/1) mottles; weak, coarse, prismatic structure parting to weak, coarse, subangular blocky; firm, compact, brittle; few fine pores; patchy clay films on ped faces; strongly acid.

The Ap horizon is dark grayish brown, brown, dark brown, yellowish brown, or dark yellowish brown. The A1 horizon, where present, is thin and is very dark grayish brown or grayish brown. The Bt horizon is strong-brown, yellowish-brown, or yellowish-red silty clay loam or silt loam. It is 22 percent to 30 percent clay. The Bx horizon is silty clay loam or silt loam that is mottled in shades of red, brown, and gray. The IIBx horizon is yellowish red or red clay loam, loam, or sandy loam that is mottled in shades of brown, yellow, red, or gray. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Providence soils are near Bude and Ora soils. They are better drained than Bude soils, and they have a fragipan, which Bude soils lack. They are not so red as Ora soils and they are not so sandy in the upper part of the solum as those soils.

Providence silt loam, 2 to 5 percent slopes (PrB).—This soil is on uplands. It has the profile described as representative of the series. A few areas are either cut by rills or a part of the original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Bude and Peoria soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is slow to medium. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is in crops or is used for pasture. A few areas are used as woodland.

This soil is well suited to all commonly grown crops in the area and to pasture. Cotton, corn, soybeans, and small grain are the principal crops. This soil can be

continuously row cropped if management includes grassing waterways, stripcropping, and terracing. Returning crop residue to the soil helps to prevent crusting and packing and also helps to control erosion.

This soil generally is suited to southern hardwoods and to pines. It is well suited to loblolly and shortleaf pines. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIe-2; woodland suitability group 2o7.

Providence silt loam, 2 to 5 percent slopes, severely eroded (PrB3).—This soil is on uplands. The surface layer is dark grayish-brown to yellowish-brown silt loam about 4 inches thick. The upper part of the subsoil is strong-brown silty clay loam about 16 inches thick. Below, to a depth of 38 inches, is a silt loam fragipan that is mottled brown, red, and gray. Below a depth of 38 inches is mottled brown, red, gray, and yellow clay loam. In most areas of this soil, a part of the surface layer has been lost through erosion. Also, rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas of soils where the surface layer and much of the upper part of the subsoil have been removed through sheet and gully erosion. Also included are small areas of Ruston and Smithdale soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is used for pasture. A small acreage is used for row crops or trees.

This soil is well suited to cotton, corn, soybeans, small grain, and pasture and to loblolly and shortleaf pines. It is better suited to permanent pasture or to trees than to other uses. If management practices include terracing and farming on the contour, row crops can be grown in a cropping system that includes grasses and legumes in about 2 years in 3. Proper use of crop residue helps to maintain tilth. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIe-4; woodland suitability group 2o7.

Providence silt loam, 5 to 8 percent slopes (PrC).—This soil is on uplands. The surface layer is dark grayish-brown silt loam about 7 inches thick. The upper 24 inches of the subsoil is strong-brown silty clay loam; the lower part, to a depth of about 40 inches, is a silt loam fragipan that is mottled brown, red, yellow, and gray. Below a depth of 40 inches is clay loam that is mottled brown, red, gray, and yellow. In a few areas this soil is either cut by rills or a part of its original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ruston, Smithdale, and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. The hazard of erosion is moderate in cultivated areas.

Most of the acreage of this soil is used for pasture and crops. A small acreage is woodland.

This soil is well suited to cotton, corn, soybeans, and pasture and to loblolly and shortleaf pines. If management practices include terracing, farming on the contour, and grassing of waterways (fig. 3), row crops can be grown in a cropping system that includes grasses and legumes. Proper use of crop residue prevents crusting and packing and reduces erosion. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIe-3; woodland suitability group 2o7.

Providence silt loam, 5 to 8 percent slopes, severely eroded (PrC3).—This soil is on uplands. The surface layer is yellowish-brown silt loam about 4 inches thick. The upper part of the subsoil is strong-brown silty clay loam about 16 inches thick. Below this is a silt loam fragipan that extends to a depth of 40 inches. It is mottled brown, gray, and yellow. Below a depth of 40 inches is clay loam that has mottles of red, brown, gray, and yellow. In most of the acreage of this soil a part of the surface layer has been lost through erosion. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas of soils where the surface layer and much of the upper part of the subsoil have been lost through sheet and gully erosion. Also included are small areas of Ruston, Smithdale, and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is severe in cultivated areas. Most of the acreage of this soil is used for pasture. A small acreage is used for row crops and trees.

This soil is suited to cotton, corn, soybeans, small grain, and pasture and to loblolly and shortleaf pines. It is better suited to permanent pasture or to trees than to most other uses. If management practices include terracing, grassing of waterways, stripcropping, and farming on the contour, row crops can be grown in a cropping system that includes grasses and legumes about 3 years out of 4. Proper use of crop residue improves tilth and helps to reduce erosion. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IVe-3; woodland suitability group 2o7.

Ruston Series

The Ruston series consists of well-drained soils. These soils formed in loamy material. Slopes are 0 to 8 percent.

In a representative profile the surface layer is dark-gray sandy loam about 3 inches thick. The sub-surface layer is 3 inches of brown sandy loam that grades into 2 inches of mixed yellowish-brown and yellowish-red loam. The upper 22 inches of the subsoil is yellowish red and is mainly sandy clay loam. The lower part, to a depth of about 85 inches, is red sandy clay loam and sandy loam that have mottles of reddish yellow and yellowish brown.



Figure 3.—Grassed waterway in an area of Providence silt loam, 5 to 8 percent slopes.

Representative profile of Ruston sandy loam, 2 to 5 percent slopes, in a wooded area about 40 acres in size, 1 mile northeast of Glading Baptist Church on the east side of a gravel road, SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 2 N., R. 6 E.:

- A1—0 to 3 inches, dark-gray (10YR 4/1) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.
- A21—3 to 6 inches, brown (10YR 5/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.
- A22—6 to 8 inches, mixed yellowish-brown (10YR 5/4) and yellowish-red (5YR 5/6) loam; weak, fine, granular structure; very friable; many roots; strongly acid; abrupt, smooth boundary.
- B1—8 to 12 inches, yellowish-red (5YR 4/6) sandy loam; weak, fine, granular structure and weak, fine, subangular blocky; friable; many roots; strongly acid; clear, wavy boundary.
- B21t—12 to 30 inches, yellowish-red (5YR 4/8) sandy clay loam; weak and moderate, fine and medium, subangular blocky structure; friable; common roots; patchy clay films on ped faces and clay bridging on sand grains; strongly acid; gradual, wavy boundary.
- B22t&A'2—30 to 37 inches, red (2.5YR 4/8) sandy clay loam; common, coarse, distinct mottles of reddish yellow (7.5YR 6/8); moderate, fine and medium, subangular blocky structure; friable to firm; few fine roots; patchy clay films on ped faces and clay bridging on sand grains; few to common fine to coarse iron crusts; strongly acid; gradual, wavy boundary.

- B23t&A'2—37 to 54 inches, red (2.5YR 4/8) sandy loam; common, distinct mottles of reddish yellow; weak and moderate, fine and medium, subangular blocky structure; friable; clay coating and bridging on sand grains; strongly acid; clear, wavy boundary.
- B24t&A'2—54 to 65 inches, red (10R 4/8) sandy clay loam; common, medium, distinct, reddish-yellow (7.5YR 6/8) mottles; weak, medium, subangular blocky structure; friable; clay coating and bridging on sand grains; strongly acid; clear, wavy boundary.
- B3t—65 to 85 inches, red (2.5YR 4/8) sandy clay loam; few, fine, yellowish-brown mottles; weak, medium, subangular blocky structure; friable; clay coating on sand grains; strongly acid.

The Ap horizon, where present, is brown, dark grayish brown, or strong brown. The A1 horizon is very dark grayish brown or dark gray; the A2 horizon is brown or pale brown. The upper 20 to 35 inches of the Bt horizon is yellowish-red or red sandy clay loam or clay loam. The upper 20 inches of the Bt horizon is 18 to 30 percent clay. The B&A'2 horizon has colors that are similar to those in the upper part of the Bt horizon, and it has yellowish and brownish mottles. The lower part of the Bt horizon is yellowish-red or red sandy loam, sandy clay loam, or clay loam. In some places gravel makes up 15 percent of the profile. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Ruston soils are near Ora, Saffell, and Smithdale soils. They are better drained than Ora soils, and they lack the fragipan of those soils. Ruston soils have an A'2 horizon that is not present in Smithdale soils. They lack the high percentage of gravel that is present in Saffell soils.

Ruston sandy loam, 0 to 2 percent slopes (RuA).—This soil is on uplands. The surface layer is about 6

inches of brown sandy loam over about 4 inches of mottled brown and yellowish-red loam. The subsoil, to a depth of 43 inches, is yellowish-red sandy clay loam or clay loam. Below this, and extending to a depth of 84 inches, is yellowish-red sandy loam that has mottles of pale brown. In a few areas a part of the original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ora and Providence soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity and runoff are medium. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is used for crops or pasture. A small acreage is woodland.

This soil is well suited to all crops commonly grown in the county and to pasture. Cotton, corn, soybeans, truck crops, and small grain are the main crops. Under good management that uses such practices as arrangement of rows and grassed waterways, this soil can be continuously row cropped. Returning crop residue to the soil helps to control erosion and helps to prevent crusting and packing.

This soil is suited to pine trees. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit I-1; woodland suitability group 2o1.

Ruston sandy loam, 2 to 5 percent slopes (RuB).—This soil is on uplands. It has the profile described as representative of the series. A few areas have either been cut by rills or a part of the original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ora, Providence, and Smithdale soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity and runoff are medium. The hazard of erosion is slight in cultivated areas.

Most of the acreage of this soil is woodland or is used for pasture. A small acreage is cultivated.

This soil is well suited to all crops commonly grown in the county and to pasture. Cotton, corn, soybeans, small grain, and truck crops are the main crops. This soil can be continuously row cropped if management practices include grassing of waterways, stripcropping, and terracing. Returning crop residue to the soil helps to prevent crusting and packing and reduces erosion.

This soil is suited to pine trees. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIe-1; woodland suitability group 2o1.

Ruston sandy loam, 2 to 5 percent slopes, severely eroded (RuB3).—This soil is on uplands. The surface layer is strong-brown sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of 31 inches, is yellowish-red sandy clay loam or clay loam. At a depth of 31 inches is about 17 inches of mottled yellowish-red and light-brown sandy loam. Below this, and reaching to a depth of 84 inches, is red sandy

loam or sandy clay loam. In most areas of this soil, a part of the original surface layer has been lost through erosion. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas where the surface layer and much of the upper part of the subsoil have been removed by sheet and gully erosion. Also included are small areas of Ora and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is used for pasture or as woodland. A small acreage is cultivated.

This soil is well suited to cotton, corn, soybeans, small grain, and pasture and to loblolly and shortleaf pines. It is better suited to permanent pasture or to trees than to most other uses. If such management practices as terracing and farming on the contour are used, row crops can be grown in a cropping system that includes grasses and legumes about 2 years out of 3. Proper use of crop residue helps to maintain tilth. Pine stands that have an open canopy have good potential for woodland grazing. Capability unit IIIe-2; woodland suitability group 2o1.

Ruston sandy loam, 5 to 8 percent slopes (RuC).—This soil is on uplands. The surface layer is about 6 inches of brown sandy loam. The subsoil, to a depth of about 43 inches, is yellowish-red clay loam or sandy clay loam. Between depths of 34 and 56 inches it is yellowish-red sandy loam that has yellowish-brown mottles. Below this, and reaching to a depth of 88 inches, it is red sandy loam or sandy clay loam. A few areas are either cut by rills or a part of the original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ora, Providence, and Saffell soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity and runoff are medium. The hazard of erosion is moderate in cultivated areas.

Most of the acreage of this soil is used as woodland and for pasture. A small acreage is in crops.

This soil is well suited to cotton, corn, soybeans, and pasture and to loblolly and shortleaf pines. If such practices as terracing, farming on the contour, and grassing of waterways are used, row crops can be grown in a cropping system that includes grasses and legumes. Proper use of crop residue helps to prevent crusting and packing and reduces erosion. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IIIe-1; woodland suitability group 2o1.

Ruston sandy loam, 5 to 8 percent slopes, severely eroded (RuC3).—This soil is on uplands. The surface layer is about 6 inches of strong-brown sandy loam. The upper part of the subsoil is about 30 inches of yellowish-red sandy clay loam. At a depth of 36 inches is about 14 inches of yellowish-red sandy loam that has light-brown mottles. Below this, and extending to a depth of 80 inches, is red sandy loam or sandy clay

loam. In most areas of this soil a part of the original surface layer has been lost through erosion. The present surface layer is mixed with material originally in the subsoil. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas of soils where the surface layer and much of the upper part of the subsoil have been removed through sheet and gully erosion. Also included are small areas of Ora, Saffell, and Smithdale soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is used for pine trees and for pasture. A small acreage is cultivated.

This soil is suited to cotton, corn, soybeans, and pasture and to loblolly and shortleaf pines. It is better suited to permanent pasture and pine trees than to most other uses. This soil can be row cropped if management practices include terracing, grassing of waterways, stripcropping, and farming on the contour. Row crops can be grown in a cropping system that includes grasses and legumes in about 2 years out of 3. Proper use of crop residue helps to improve tilth and reduces erosion. Pine stands that have an open canopy have good potential for woodland grazing. Capability unit IIIe-2; woodland suitability group 2o1.

Saffell Series

The Saffell series consists of well-drained gravelly soils. These soils formed in loamy and sandy gravelly material. Slopes are 8 to 30 percent.

In a representative profile the surface layer is about 3 inches of dark grayish-brown gravelly sandy loam underlain by about 5 inches of yellowish-brown gravelly sandy loam. The subsoil is mainly yellowish-red gravelly sandy clay loam to a depth of 17 inches and red gravelly sandy loam between depths of 17 and 42 inches. Below this, and extending to a depth of 80 inches, is yellowish-red gravelly loamy sand.

Representative profile of Saffell gravelly sandy loam, 12 to 30 percent slopes, in a wooded area, 7 miles east of Liberty on State Highway No. 48, 200 yards north on gravel road, west of East Fork Amite River, SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 3 N., R. 5 E.:

- A1—0 to 3 inches, dark grayish-brown (10YR 4/2) gravelly sandy loam; weak, fine, granular structure; friable; common fine and medium roots; fine and medium gravel, 10 percent, by volume; strongly acid; abrupt, smooth boundary.
- A2—3 to 8 inches, yellowish-brown (10YR 5/4) gravelly sandy loam; weak, fine, granular structure; friable; fine and medium gravel, 10 percent, by volume; common fine and medium roots; strongly acid; abrupt, smooth boundary.
- B1—8 to 11 inches, yellowish-red (5YR 4/6) gravelly sandy loam; weak, fine, subangular blocky structure; friable; fine and medium gravel, 20 percent, by volume; few patchy clay films on ped faces; common fine and medium roots; strongly acid; abrupt, smooth boundary.
- B21t—11 to 17 inches, yellowish-red (5YR 4/8) gravelly sandy clay loam; weak and moderate, fine and medium, subangular blocky structure; friable; fine and medium gravel, 30 percent, by volume; few,

medium roots; patchy clay films on ped faces; strongly acid; clear, wavy boundary.

- B22t—17 to 42 inches, red (2.5YR 4/8) gravelly sandy loam; weak, fine and medium, subangular blocky structure; friable; gravel of various sizes, 45 percent, by volume; patchy clay films on ped faces; clay coatings and bridging on sand grains; few medium roots; strongly acid; clear, wavy boundary.

- B3—42 to 80 inches, yellowish-red (5YR 5/6) gravelly loamy sand; structureless; very friable; gravel of various sizes, 45 percent, by volume; strongly acid.

The A horizon is dark grayish brown, brown, and yellowish brown. The Bt horizon is yellowish-red or red gravelly sandy clay loam, gravelly clay loam, or gravelly sandy loam. The B3 horizon in most places is gravelly loamy sand. The percentage of gravel in each horizon ranges from 10 to 70 percent, by volume; generally the highest percentage is in the B3 horizon. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Saffell soils are near Ruston, Smithdale, and Susquehanna soils. Unlike Ruston, Smithdale, and Susquehanna soils, Saffell soils have a high percentage of gravel in the B horizon. Saffell soils have better drainage and are coarser textured than Susquehanna soils.

Saffell gravelly sandy loam, 8 to 12 percent slopes (SaD).—This soil is on uplands. The surface layer is about 4 inches of dark grayish-brown gravelly sandy loam over about 8 inches of pale-brown gravelly sandy loam. The subsoil is yellowish-red gravelly sandy clay loam to a depth of 38 inches, and it is yellowish-red to red gravelly loamy sand below a depth of 38 inches. A few areas have either been cut by rills or a part of the original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ruston, Smithdale, and Susquehanna soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate to a depth of about 38 inches and rapid below. Available water capacity is medium. Runoff is medium, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is used as woodland. A small acreage is used for pasture.

This soil is suited to pasture and to trees. It is better suited to permanent pasture or woodland than to other uses because of its slopes and its high content of gravel. The high gravel content interferes with cultivation. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IVe-2; woodland suitability group 4f2.

Saffell gravelly sandy loam, 12 to 30 percent slopes (SaE).—This soil is on uplands. It has the profile described as representative of the series. In a few areas this soil has either been cut by rills or a part of its surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ruston, Smithdale, and Susquehanna soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate in the upper part of the profile and rapid below a depth of about 42 inches. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is woodland; a few small areas are used for pasture.

This soil is well suited to pine trees. It is suitable for pasture if proper grazing techniques are used. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit VIIe-3; woodland suitability group 4f2.

Smithdale Series

The Smithdale series consists of well-drained soils. These soils formed in loamy material. Slopes are 8 to 35 percent.

In a representative profile the surface layer is about 9 inches thick. It is about 5 inches of dark grayish-brown sandy loam underlain by about 4 inches of brown sandy loam. The subsoil is mainly yellowish-red sandy clay loam to a depth of 46 inches and red sandy loam between depths of 46 and 84 inches.

Representative profile of Smithdale sandy loam, 12 to 35 percent slopes, in a wooded area about 40 acres in size, 1 mile northeast of Mount Vernon Baptist Church, then 200 feet south, NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 1 N., R. 5 E.:

- A1—0 to 5 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.
- A2—5 to 9 inches, brown (10YR 5/3) sandy loam; weak medium, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.
- B1—9 to 12 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, subangular blocky structure; friable; common fine roots; few patchy clay films; strongly acid; clear, wavy boundary.
- B21t—12 to 31 inches, yellowish-red (5YR 5/8) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; patchy clay films on ped faces; strongly acid; clear, wavy boundary.
- B22t—31 to 46 inches, yellowish-red (5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine roots; patchy clay films on ped faces, clay coatings on sand grains; strongly acid; clear, wavy boundary.
- B23t—46 to 63 inches, red (2.5YR 4/8) sandy loam; few, fine, distinct mottles of reddish yellow; weak, medium, subangular blocky structure; friable; few clay films on some ped faces, clay coatings on sand grains; strongly acid; clear, wavy boundary.
- B24t—63 to 84 inches, red (2.5YR 4/6) sandy loam; weak, fine and medium, subangular blocky structure; friable; few patchy clay films, clay coatings and bridging on sand grains, few pockets of uncoated sand grains; strongly acid.

The A1 horizon ranges from dark grayish brown to brown; the Ap and A2 horizons range from brown to reddish yellow. The upper part of the Bt horizon is yellowish-red or red sandy clay loam or clay loam, and the lower part is red or yellowish red and has mottles in shades of yellow and brown. The upper 20 inches of the Bt horizon is 22 to 30 percent clay. Reaction is strongly acid or very strongly acid throughout the profile, except in places where the surface layer has been limed.

Smithdale soils are near the Ruston, Saffell, and Susquehanna soils. They lack the gravel that is present in Saffell soils. They lack the A'2 horizon that is in the Ruston soils and are less clayey in the lower part of the Bt horizon than Ruston soils. Smithdale soils are better drained than Susquehanna soils, and they have a coarser textured B horizon.

Smithdale sandy loam, 8 to 12 percent slopes (SmD).—This soil is on uplands. The surface layer is about 6 inches thick. It is about 2 inches of dark grayish-

brown sandy loam over about 4 inches of brown sandy loam. The upper part of the subsoil is strong-brown sandy loam 5 inches thick. The next layer, extending to a depth of 46 inches, is yellowish-red sandy clay loam. Below 46 inches, and extending to a depth of 85 inches, is red sandy loam. In a few areas this soil has either been cut by rills or a part of its original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Providence, Ruston, Saffell, and Susquehanna soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is severe in cultivated areas.

Most of the acreage of this soil is used as woodland and for pasture, but small areas are cultivated.

This soil is suited to most crops commonly grown in the county, to pasture, and to trees. It is better suited to permanent pasture and to woodland than to other uses. If management practices include grassing of waterways, stripcropping, and farming on the contour, row crops can be grown in a cropping system that includes grasses and legumes in about 3 years out of 4. Proper use of crop residue maintains tilth and helps to reduce erosion. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit IVE-1; woodland suitability group 2o1.

Smithdale sandy loam, 8 to 12 percent slopes, severely eroded (SmD3).—This soil is on uplands. The surface layer is reddish-yellow sandy loam about 4 inches thick. The upper 30 inches of the subsoil is yellowish-red sandy clay loam. Below this, and extending to a depth of 86 inches, is yellowish-red to red sandy loam. In most areas of this soil a part of the surface layer has been lost through erosion. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas of soils where the surface layer and much of the upper part of the subsoil have been removed by sheet and gully erosion. Also included are small areas of Providence, Ruston, Saffell, and Susquehanna soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is very severe in cultivated areas.

Most of the acreage of this soil is used for pine trees and permanent pasture. This soil is well suited to pasture and pine trees. Pine stands that have an open canopy have good potential for woodland grazing. Capability unit VIe-1; woodland suitability group 2o1.

Smithdale sandy loam, 12 to 35 percent slopes (SmE).—This soil is on uplands. It has the profile described as representative of the series. In a few areas this soil has either been cut by rills or a part of its original surface layer has been lost through erosion, and the present surface layer is mixed with material from the subsoil.

Included with this soil in mapping are small areas of Ruston, Saffell, and Susquehanna soils.

Reaction is strongly acid to very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is very severe in cultivated areas.

Most of the acreage of this soil is used as woodland. A few acres are in permanent pasture.

This soil is well suited to loblolly and shortleaf pines. It is suited to some kinds of pasture. Pine stands that have an open canopy have excellent potential for woodland grazing. Capability unit VIIe-1; woodland suitability group 2o1.

Smithdale sandy loam, 12 to 35 percent slopes, severely eroded (SmE3).—This soil is on uplands. The surface layer is about 4 inches of reddish-yellow sandy loam. The upper part of the subsoil is yellowish-red sandy clay loam about 27 inches thick. Below this the subsoil is yellowish-red to red sandy loam and has mottles of light brown. In most areas of this soil, a part of the surface layer has been lost through erosion. Rills and shallow gullies are common, and a few deep gullies have formed.

Included with this soil in mapping are areas of soils where the surface layer and much of the upper part of the subsoil have been removed through sheet and gully erosion. Also included are small areas of Ruston, Saffell, and Susquehanna soils.

Reaction is strongly acid or very strongly acid. Permeability is moderate. Available water capacity is medium. Runoff is rapid, and the hazard of erosion is very severe in cultivated areas.

This soil is well suited to loblolly and shortleaf pine trees. Pine stands that have an open canopy have fair to good potential for woodland grazing. Capability unit VIIe-2; woodland suitability group 2o1.

Susquehanna Series

The Susquehanna series consists of somewhat poorly drained soils. These soils formed in clayey material. They have slopes of 8 to 30 percent.

In a representative profile the surface layer is 2 inches of very dark grayish brown silt loam over 5 inches of brown silt loam. Below this, the upper 19 inches of the subsoil is red clay that has brownish and grayish mottles. The lower part of the subsoil, which extends to a depth of 80 inches, is mottled red, brown, and gray clay that is grayer with increase in depth.

Representative profile of a Susquehanna silt loam from an area of Susquehanna-Smithdale association, hilly, in an area about 800 acres in size used for pine trees, 1 mile north of Stephenson Fire Tower on Forest Service Road 165, NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 25, T. 4 N., R. 2 E.:

- A1—0 to 2 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, fine and medium, granular structure; very friable; few to common fine roots; strongly acid; abrupt, smooth boundary.
- A2—2 to 7 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure and weak, fine, subangular blocky; friable; few fine roots; strongly acid; abrupt, smooth boundary.
- B21t—7 to 26 inches, red (2.5YR 4/8) clay; common fine, prominent mottles of light brownish gray and pale brown; moderate, fine and medium, angular blocky structure; firm; clay films on ped faces,

pressure faces; few fine roots; strongly acid; clear, wavy boundary.

B22t—26 to 48 inches, mottled red (2.5YR 5/6), light brownish-gray (10YR 6/2), and pale-brown (10YR 6/3) clay; moderate, medium, angular blocky structure; very sticky and plastic, hard; pressure faces, clay films on ped faces; strongly acid; clear, gradual boundary.

B23t—48 to 68 inches, mottled light brownish-gray (2.5Y 6/2) and red (2.5YR 5/6) clay; moderate to strong, medium, angular blocky structure; very sticky and plastic, hard; pressure faces on peds, clay films on ped faces; strongly acid; clear, smooth boundary.

B3g—68 to 80 inches, light brownish-gray (2.5Y 6/2) clay; few, fine, prominent mottles of strong brown; massive; very sticky and plastic; shiny grooved ped faces, some slickensides; strongly acid.

The A horizon is very dark grayish brown or brown. The Bt horizon, in the upper part, is yellowish red to red and is mottled with shades of yellow, brown, and gray; in the lower part, it has a gray matrix or is mottled with shades of gray, red, brown, and yellow. The upper 20 inches of the Bt horizon is 35 to 60 percent clay. Reaction is strongly acid or very strongly acid throughout the soil.

Susquehanna soils are near Saffell and Smithdale soils. They are poorer drained and finer textured than Saffell or Smithdale soils. They lack the high percentage of gravel of Saffell soils.

Susquehanna-Smithdale association, hilly (SsE).—This mapping unit consists of somewhat poorly drained, acid soils that have a clayey subsoil and of well-drained, acid, loamy soils. These soils are in rough, hilly uplands in the northwestern part of the county. Slopes are 8 to 30 percent.

The areas of this mapping unit shown on the detailed soil maps are larger, more generalized, and more inclusive than the areas of other detailed mapping units shown on the maps, but the composition of this unit has been controlled well enough for the expected uses of the soils.

Susquehanna soils make up about 43 percent of this mapping unit, and Smithdale soils make up about 31 percent. The rest consists of Providence soils, Collins soils, and excessively drained sandy soils.

The somewhat poorly drained Susquehanna soils are commonly on the lower part of side slopes. A Susquehanna silt loam in this association has the profile described as representative of the series.

Susquehanna soils are strongly acid or very strongly acid. Available water capacity is high. Permeability is very slow. Runoff is rapid because of the steepness of the slopes.

The well-drained Smithdale soils are on the middle and upper parts of the side slopes or on the narrow ridgetops. The Smithdale soils have a dark grayish-brown to brown sandy loam surface layer about 10 inches thick. The subsoil is yellowish-red sandy clay loam that extends to a depth of about 35 inches. Below this, it is yellowish-red or red sandy loam.

Smithdale soils are strongly acid or very strongly acid. Available water capacity is medium. Permeability is moderate. Runoff is medium to rapid because of the steepness of the slopes.

Most areas of this mapping unit are wooded. Because of the steep slopes and severe hazard of erosion, these soils are not suited to cultivated crops or pasture. Areas of these soils on uplands are well

suited to loblolly and shortleaf pine trees. Narrow areas on bottom lands are well suited to yellow-poplar, water oak, and other hardwoods. Pine stands that have an open canopy have excellent potential for woodland grazing. Susquehanna part in capability unit VIIe-4, woodland suitability group 3c2; Smithdale part in capability unit VIIe-1, woodland suitability group 2o1.

Use and Management of the Soils

General practices of good soil management for cultivated crops and pasture are suggested in the pages that follow. In addition, the capability grouping used by the Soil Conservation Service is explained, and the capability units in the survey area are defined.

Suggested use and management of each soil and its classification by capability unit can be found in the mapping unit description of the specified soil in the section "Descriptions of the Soils." Estimated yields of the principal crops grown, under high-level management, are shown in table 2.

This section also provides information concerning the suitability of the soils in Amite County for woodland, for wildlife habitat, and for engineering. It also contains information on the use of the soils for community development.

Crops and Pasture

About one-third of the acreage in Amite County is used for crops and pasture. The major crops are cotton, corn, and soybeans, but truck crops are grown in a few areas. The acreage used for beef cattle and dairy farming is increasing.

Maintaining fertility and controlling erosion are the main concerns in management.

Most crops need a fertilizer that contains nitrogen, but some need one that also contains phosphorus and potassium. Legumes and some other crops need lime. Information about the kind and amount of fertilizer needed can be obtained from the local county agent or from the Mississippi Agricultural Experiment Station.

The hazard of erosion is severe on most cultivated soils. The degree of the hazard depends on the steepness of slope, on the texture, structure, and permeability of the soil, and on the amount of plant cover. Practices that help to control water erosion are terracing, strip farming on the contour, grassing waterways in drainage outlets and in exposed areas, and using diversion ditches to intercept runoff. Other management practices that help to control erosion are using crop residue, keeping tillage to a minimum, and installing drains and other water-control structures where needed.

The main grasses and legumes used for permanent pasture are bahiagrass, bermudagrass, annual lespedeza, dallisgrass, and tall fescue. The tall fescue is used for cool-season grazing. Temporary pasture such as millet, sudangrass, ryegrass, and small grain is used for supplemental grazing. The principal clovers are white, ball, crimson, and arrowleaf.

High forage yield can be produced if good pasture management is used. The soil should be limed if needed, and the proper kind and amount of fertilizer should be applied. Grazing should be regulated to maintain proper plant height, and weeds should be controlled by use of approved herbicides or by mowing.

Capability grouping

Some readers, particularly those who farm on a large scale, may find it practical to use and manage alike some of the different kinds of soil on their farm. These readers can make good use of the capability classification system, a grouping that shows, in a general way, the suitability of soils for most kinds of farming.

The grouping is based on permanent limitations of soils when used for field crops, the risk of damage when they are farmed, and the way the soils respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations for pasture, for forest trees, or for engineering.

In the capability system, all kinds of soil are grouped at three levels: the class, the subclass, and the unit. The broadest grouping, the capability class, is designated by Roman numerals I to VIII. In class I are the soils that have the fewest limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and land forms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclass indicates major kinds of limitations within the classes. Within most of the classes there can be up to 4 subclasses. The subclasses are indicated by adding a small letter, e, w, s, or c, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c* indicates that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses w, s, and c, because the soils are subject to little or no erosion but have other limitations that confine their use largely to pasture and range or to wildlife.

Subclasses are further divided into groups called capability units. These are groups of soils that are so much alike that they are suited to the same crops and pasture plants, they require about the same management, and have generally similar productivity and other responses to management. Capability units are generally identified by numbers assigned locally, for example, IIw-2 or IIIe-4. The unit designation for each soil in the county is given in the "Guide to Mapping Units."

The classes in the capability system and the subclasses and units represented in Amite County are described in the list that follows:

Class I. Soils that have few limitations that restrict their use.

(No subclass)

Unit I-1. Well-drained loamy soils that have slopes of 0 to 2 percent; on uplands.

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

Subclass IIe. Soils that are subject to moderate erosion if they are not protected.

Unit IIe-1. Well-drained loamy soils that have slopes of 2 to 5 percent.

Unit IIe-2. Moderately well drained loamy soils that are high in silt, have a fragipan, and have slopes of 2 to 5 percent.

Unit IIe-3. Moderately well drained loamy soils that have a fragipan and have slopes of 2 to 5 percent.

Subclass IIw. Soils that are moderately limited because of excess water.

Unit IIw-1. Well-drained loamy soils that are high in silt; on flood plains.

Unit IIw-2. Moderately well drained loamy soils; on flood plains.

Unit IIw-3. Somewhat poorly drained loamy soils that are high in silt; on flood plains.

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

Subclass IIIe. Soils that are subject to severe erosion if they are cultivated and not protected.

Unit IIIe-1. Well-drained loamy soils that have slopes of 5 to 8 percent.

Unit IIIe-2. Well-drained, severely eroded loamy soils that have slopes of 2 to 8 percent.

Unit IIIe-3. Moderately well drained loamy soils that are high in silt and that have a fragipan and slopes of 5 to 8 percent.

Unit IIIe-4. Moderately well drained, severely eroded loams that are high in silt and that have a fragipan and slopes of 2 to 5 percent.

Unit IIIe-5. Moderately well drained loamy soils that have a fragipan and slopes of 5 to 8 percent.

Subclass IIIw. Soils severely limited because of excess water.

Unit IIIw-1. Somewhat poorly drained loamy soils that are high in silt, and that have a fragipan and slopes of 0 to 2 percent; on uplands.

Unit IIIw-2. Poorly drained loamy soils that are high in silt; on flood plains.

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

Subclass IVe. Soils that are subject to very severe erosion if they are not protected.

Unit IVe-1. Well-drained loamy soils that have slopes of 8 to 12 percent.

Unit IVe-2. Well-drained gravelly and loamy soils that have slopes of 8 to 12 percent.

Unit IVe-3. Moderately well drained, severely eroded loamy soils that are high in silt and that have a fragipan and slopes of 5 to 8 percent.

Unit IVe-4. Moderately well drained, severely eroded loamy soils that have a fragipan and slopes of 2 to 8 percent.

Class V. Soils that are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.

Subclass Vw. Soils that have limitations because of excess water.

Unit Vw-1. Excessively drained sandy soils; on flood plains.

Class VI. Soils that have severe limitations that make them generally unsuited to cultivation and limit their use to pasture or range, woodland, or wildlife habitat.

Subclass VIe. Soils that are severely limited, chiefly by risk of erosion, if protective cover is not maintained.

Unit VIe-1. Well-drained, severely eroded loamy soils that have slopes of 8 to 12 percent.

Class VII. Soils that have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or food and cover for wildlife.

Subclass VIIe. Soils very severely limited, chiefly by risk of erosion, if protective cover is not maintained.

Unit VIIe-1. Well-drained loamy soils that have slopes of 8 to 35 percent.

Unit VIIe-2. Well-drained, severely eroded loamy soils that have slopes of 12 to 35 percent.

Unit VIIe-3. Well-drained gravelly and loamy soils that have slopes of 12 to 30 percent.

Unit VIIe-4. Somewhat poorly drained soils that have a clayey subsoil and slopes of 8 to 30 percent.

Class VIII. (None in Amite County). Soils and landforms that have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, and water supply, or to use for esthetic purposes.

Estimated yields

Table 2 shows estimated yields per acre of the principal crops and pasture grown in Amite County under a high level of management. The estimates are based on nonirrigated crops in years of average rainfall. They are based on long-term yields obtained by farmers who participated in studies made by the Mississippi Agricultural Experiment Station, on experience in working with the soils in the county, and on information provided by the Soil Conservation Service and other agricultural agencies in the State. Data obtained from experimental plantings were adjusted to reflect the combined effect of slope, weather, and level of management.

Under a high level of management, the following practices are needed to obtain the yields listed in table 2: (1) Applying lime and fertilizer as recommended by the Mississippi Agricultural Experiment Station; (2) planting well-suited crop varieties and hybrids; (3) preparing suitable seedbeds; (4) planting or seeding by suitable methods at recommended rates and at

optimum times; (5) inoculating legumes; (6) shallow plowing of row crops; (7) controlling weeds, insects, and diseases; (8) using cropping systems that maintain soil structure and fertility; (9) controlling erosion by land smoothing, sodding of waterways, and cultivating and stripcropping on the contour; and (10) protecting pasture from overgrazing.

Woodland²

This section describes the woodland of Amite County. It lists the soils, by groups, according to their suitability for various kinds of trees. It also explains factors that affect the productivity and management of wood crops and of forage in woodland. This information can be used by foresters, owners of woodland, and others in planning tree plantings, in conserving and improving existing stands, and in managing commercial woodlots.

² T. D. ALLEN, forester, Soil Conservation Service, and DAVID W. SANDERS, range conservationist, Soil Conservation Service, assisted in preparing this section.

TABLE 2.—Estimated acre yields of crops and pasture plants under high-level management
[Absence of a yield figure means data are not available or that the crop is not commonly grown on the soil]

Soil	Cotton (lint)	Corn	Soybeans	Pasture			
				Coastal bermuda-grass	Fescue	Bahia-grass	Common bermuda-grass
	Lb	Bu	Bu	Animal-unit-month ¹	Animal-unit-month ¹	Animal-unit-month ¹	Animal-unit-month ¹
Ariel silt loam.....	850	95	40	10.5	8.5	9.5	8.0
Bruno soils.....				3.5		3.5	2.5
Bude silt loam.....	625	85	25	9.0	8.0	8.0	7.0
Collins silt loam.....	800	95	35	10.0	9.0	9.0	8.0
Gillsburg silt loam.....	650	100	40	10.5	8.6	8.0	7.5
Ora loam, 2 to 5 percent slopes.....	750	85	40	8.5	8.0	9.0	8.0
Ora loam, 2 to 5 percent slopes, severely eroded.....	600	70	30	8.0	7.5	8.5	7.0
Ora loam, 5 to 8 percent slopes.....	600	70	30	8.0	7.5	8.5	7.5
Ora loam, 5 to 8 percent slopes, severely eroded.....	500	60	25	7.0	7.0	8.0	6.5
Peoria silt loam.....		50	25		8.5	6.0	6.5
Providence silt loam, 2 to 5 percent slopes.....	750	75	35	9.5	8.5	9.0	8.0
Providence silt loam, 2 to 5 percent slopes, severely eroded.....	600	65	30	9.0	7.0	8.5	5.0
Providence silt loam, 5 to 8 percent slopes.....	600	70	30	9.0	7.0	8.5	5.0
Providence silt loam, 5 to 8 percent slopes, severely eroded.....	500	60	25	9.0	6.5	8.0	5.0
Ruston sandy loam, 0 to 2 percent slopes.....	650	65	30	10.5	10.0	10.5	6.0
Ruston sandy loam, 2 to 5 percent slopes.....	600	60	30	10.0	9.0	9.5	5.0
Ruston sandy loam, 2 to 5 percent slopes, severely eroded.....	500	55	25	9.5	8.0	8.0	5.0
Ruston sandy loam, 5 to 8 percent slopes.....	500	55	25	9.5	8.0	8.0	5.0
Ruston sandy loam, 5 to 8 percent slopes, severely eroded.....	400	50	25	9.5		7.0	5.0
Saffell gravelly sandy loam, 8 to 12 percent slopes.....				5.0		5.0	4.0
Saffell gravelly sandy loam, 12 to 30 percent slopes.....							
Smithdale sandy loam, 8 to 12 percent slopes.....	400	50	25	9.0		8.5	5.0
Smithdale sandy loam, 8 to 12 percent slopes, severely eroded.....				7.5		7.0	4.0
Smithdale sandy loam, 12 to 35 percent slopes.....				7.0		5.5	4.5
Smithdale sandy loam, 12 to 35 percent slopes, severely eroded.....						5.5	4.5
Susquehanna-Smithdale association, hilly.....							

¹ Animal-unit-month is a term used to express the carrying capacity of pasture. It is the number of animal units carried per acre, multiplied by the number of months the pasture is grazed during a single grazing season without injury to the sod. An acre of pasture that provides 2 months of grazing for two cows has a carrying capacity of 4 animal-unit-months.

About 68 percent, or 319,000 acres, of Amite County is classified as commercial forest land. This acreage is divided into the following ownership classes (5): 143,700 acres, miscellaneous private; 99,100 acres, farmer; 34,500 acres, national forest; 33,100 acres, forest industry; and 8,600 acres, other public. The 34,500 acres of national forest in Amite County is in the Homochitto National Forest.

The 319,000 acres of commercial forest land is divided into forest types, as follows (5): loblolly-shortleaf pine, 165,000 acres; oak-pine, 88,000 acres; oak-gum-cypress, 33,000 acres; oak-hickory, 27,500 acres; and long leafslash pine, 5,500 acres. Longleaf pine is the dominant species of the longleaf-slash pine forest type.

Production of wood crops

Table 3 contains information that is based on detailed plot studies, on measurements of species that occupy various kinds of soil, on published and unpublished records, and on the experience and judgement of technicians who work with tree crops.

Management of woodland can be planned more effectively if soils are grouped according to those characteristics that affect the growth of trees and the management of stands. The soils of Amite County have been assigned to 7 woodland suitability groups (7, 8). These groups are listed in table 3. To find the woodland suitability group to which a specific soil has been assigned, refer to the "Guide to Mapping Units" at the back of this survey. Each group consists of soils that have about the same suitability for wood crops, potential productivity, and management requirements. Soils are grouped according to such characteristics as depth; arrangement of layers in the profile; texture, drainage, color, reaction, and consistency of each layer; content of humus and minerals; and the degree of erosion. Also considered in grouping are slope and exposure.

Following are explanations of some of the columns in table 3.

Potential productivity for important tree species is rated according to average site index. Site index is the average height of the dominant trees in a stand at 30 years of age for cottonwood trees and at 50 years of age for other species. In comparison, a higher site index figure indicates a higher potential productivity of the soil for wood crops.

Hazards and limitations that relate to soils include erosion hazard, equipment restrictions, and seedling mortality.

Erosion hazard refers to the potential loss of soil that can be expected in areas following the cutting of trees and in areas where the soil is exposed along roads, trails, and firebreaks and in log yards. The potential erosion hazard is based on slope, kind of soil, soil depth, erodibility, and soil loss tolerance. The hazard is *slight* if expected soil losses are small; *moderate* if some soil losses are expected and if care is needed to reduce soil losses during logging and other woodland operations; and *severe* if intensive treatment, special methods of operation, and special equipment are needed to prevent excessive soil losses.

Equipment restrictions are rated on the basis of soil characteristics that restrict or prohibit the use of such equipment as trucks and tractors that are commonly used in harvesting and logging operations, in constructing roads, and in controlling brush, weeds, and fires. In Amite County, soil characteristics that have the most limiting effect are seasonal wetness, poor drainage, seasonal high water table, steep slopes, and unsuited texture of the surface layer. *Slight* means there is little or no restriction in the kind of equipment or in the time of year it is used; *moderate* means the use of equipment is restricted seasonally because of wetness, flooding, poor drainage, or other hazards; and *severe* means that special equipment is needed.

Seedling mortality refers to the expected degree of mortality of planted or natural seedlings, excluding losses caused by plant competition, during the first two seasons of growth. Considered in the ratings are depth to the water table, hazard of flooding, drainage, soil depth and structure, droughtiness, and degree of erosion. In tree planting, normal rainfall, good planting stock, and proper planting and protection are presupposed. In natural seeding, such factors as proper site preparation, adequate sunlight, normal rainfall, and protection from fire, insects, and livestock are presupposed. A rating of *slight* indicates an expected loss of less than 25 percent of the planted seedlings; *moderate*, a loss of 25 to 50 percent of the seedlings; and *severe*, a loss of more than 50 percent of the seedlings. Special preparation of the site is needed before planting on soils that are rated severe and on most of the soils that are rated moderate.

Species suitable for planting refers to the species of trees to be chosen for planting in establishing a stand. Species were selected on the basis of their growth and of the quality, value, and marketability of the products obtained from each.

Production of forage

Many areas of woodland are suited to grazing. The grasses, legumes, and forbs and many of the woody plants in the understory of woodland can be used as forage. Grazing should be controlled so that desirable tree seedlings are not damaged and the main forage plants are not overgrazed.

The amount of forage produced in a woodland area varies with the kind of soil, the age of the trees, the density of the canopy, and the forage value of the vegetation. For the purposes of this survey, four canopy classes are recognized—open canopy, sparse canopy, medium canopy, and dense canopy. An *open* canopy shades as much as 20 percent of the ground at midday; a *sparse* canopy shades 21 to 35 percent; a *medium* canopy shades 36 to 55 percent; and a *dense* canopy shades 56 to 70 percent. The potential yield of forage, by canopy classes, for each woodland suitability group are shown in table 3.

The principal forage plants listed in table 3 are those that are present when at least 70 percent of the understory is made up of high-value plants and the canopy is 45 percent or less. As the canopy closes, these plants are replaced by shade-tolerant, woody species and forage yields become progressively lower.

Wildlife³

The kind of vegetation and the use of the soils determine the kinds and numbers of wildlife that live in an area. Some kinds of wildlife are adapted to woodland, some to marshland, and some to farmland, but most species need a combination of these. The kinds of soil in an area affect the kinds and abundance of vegetation and, thus, the habitat for wildlife.

All of the soils in Amite County support plants that are suitable for some kind of native wildlife. Some soils are better than other soils in supporting one kind or group of plants.

The information in this section is intended to guide the landowner in providing wildlife habitat. For further information in planning a wildlife program suited to the soils and land use patterns of Amite County, see a local representative of the Soil Conservation Service.

In table 4, each of the soils of Amite County is rated according to its potential for six elements of wildlife habitat and for three kinds of wildlife. These ratings refer only to the suitability of the soil and do not take into account climate, present use of the soil, or distribution of wildlife and human populations. The potential of individual sites should be determined by onsite inspection.

The meanings of the ratings in table 4 are as follows: *Good* means that habitats are easily improved, maintained, or created. There are few or no soil limitations in habitat management, and satisfactory results can be expected. *Fair* means that habitats can be improved, maintained, or created on these soils, but moderate soil limitations affect habitat management or development. A moderate intensity of management and fairly frequent attention may be required to ensure satisfactory results. *Poor* means that habitats can be improved, maintained, or created on these soils, but the soil limitations are severe. Habitat management may be difficult and expensive and require intensive effort. Results are questionable. *Very poor* indicates that under the prevailing soil conditions, it is impractical to attempt to improve, maintain, or create habitats. Unsatisfactory results are probable.

Grain and seed crops.—These are domestic grains or seed-producing annual plants that provide food for wildlife. Examples are corn, proso millet, browntop millet, wheat, and oats. The rating reflects the suitability of the soil, under good management, to produce these crops.

Grasses and legumes.—These are domestic perennial grasses and herbaceous legumes that furnish food and cover for wildlife. Examples are fescue, clover, shrub lespedeza, annual lespedeza, soybeans, ryegrass, lovegrass, and kudzu. The rating reflects the suitability of the soil to produce the various grasses and legumes.

Wild herbaceous plants.—Native or introduced perennial grasses, forbs, or weeds that furnish food and cover to game species. Examples are pokeweed, tick-clover, ragweed, and dove weed. The rating reflects

the suitability of the soil to grow these plants under natural conditions with little or no management.

Hardwood trees and shrubs.—Hardwood trees, shrubs, and vines that produce fruit, buds, nuts, and foliage and are used by wildlife for both food and cover. Examples are oak, hickory, grapes, autumn-olive, pyracantha, dogwood, poplar, and multiflora rose. The rating reflects the suitability of the soil to grow plants of this type. Management is not reflected in the rating, although it may be needed and applied.

Wetland food and cover plants.—Annual and perennial wild herbaceous plants and tree species, excluding submerged or floating aquatic plants, that are commonly associated with wetland areas. Examples are rushes, sedges, smartweed, cattails, water tupelo gum, swamp tupelo gum, cypress, and Carolina ash. The rating reflects the suitability of the soil to produce these plants under natural conditions.

Shallow water developments.—This refers to the suitability of the soil for development of shallow ponds (figs. 4 and 5) or flooded areas. A water supply is necessary. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, wildlife ponds, and livestock ponds. In most cases, a great deal of management is required to create or improve this habitat.

Open-land wildlife.—Birds and mammals that are generally associated with cropland, pasture, meadow, lawns, or otherwise open areas. Examples are mourning dove, quail, foxes, cottontail rabbits, and many species of songbird. Open-land areas are also very important to woodland wildlife, and this interrelationship must be considered when planning a management program of any type.

Woodland wildlife.—Birds and mammals of wooded areas containing either hardwood or coniferous trees and shrubs, or a mixture of both. Examples are deer, bear, swamp rabbits, bobcats, and squirrels.

Wetland wildlife.—Birds and mammals that commonly are found in wetland communities such as swamps, marshes, or ponds. Examples are muskrat, mink, raccoon, redwing blackbirds, snipe, and ducks.

Use of the Soils in Engineering⁴

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, water storage facilities, erosion control structures, and drainage systems. Among the soil properties most important in engineering are permeability, compressibility, consolidation characteristics, shear strength, shrink-swell potential, available water capacity, plasticity, and reaction.

Information concerning these and related properties is given in tables 5, 6, and 7. The estimates and interpretations in these tables can be used to—

1. Make studies that will aid in selecting and developing sites for industrial, commercial, residential, and recreational uses.

³ EDWARD G. SULLIVAN, biologist, Soil Conservation Service, prepared this section.

⁴ PAUL A. CALHOUN, agricultural engineer, Soil Conservation Service, assisted in preparing this section.

TABLE 3.—*Productivity and management*

Woodland suitability group, description of the soils, soil series, and map symbols	Potential productivity		Hazards and limitations	
	Tree species	Average site index	Erosion hazard	Equipment restrictions
Group 1w8: Somewhat poorly drained to well-drained soils on flood plains and uplands: moderate to slow permeability; very high to medium available water capacity. Ariel: Ar. Bude: Bu. Collins: Co. Gillsburg: Gb.	Eastern cottonwood..... Cherrybark oak..... Loblolly pine..... Sweetgum.....	110 100 100 100	Slight.....	Moderate.....
Group 2o1: Well-drained loamy soils on uplands: moderate permeability; medium available water capacity. Ruston: RuA, RuB, RuB3, RuC, RuC3. Smithdale: SmD, SmD3, SmE, SmE3. Susquehanna: SsE, Smithdale part. For Susquehanna part, see group 3c2.	Loblolly pine..... Longleaf pine..... Slash pine.....	90 70 90	Slight.....	Slight.....
Group 2o7: Moderately well drained loamy soils that have a fragipan; on uplands: moderate permeability to the depth of the fragipan and moderately slow in the fragipan; medium available water capacity. Ora: OrB, OrB3, OrC, OrC3. Moderately well drained soils that have a fragipan; on uplands: moderate permeability to the depth of the fragipan and moderately slow in the fragipan; medium available water capacity. Providence: PrB, PrB3, PrC, PrC3.	Loblolly pine..... Longleaf pine..... Slash pine..... Sweetgum..... Yellow-poplar..... Cherrybark oak..... Loblolly pine..... Longleaf pine..... Slash pine..... Sweetgum.....	90 70 90 90 100 80 90 70 90 90	Slight.....	Slight.....
Group 2s5: Excessively drained, sandy soils on flood plains: moderately rapid permeability; low available water capacity. Bruno: Br.	Water oak..... Willow oak..... Sweetgum.....	105 90 90	Slight.....	Moderate.....
Group 3c2: Somewhat poorly drained soils that have a clayey subsoil; on uplands: very slow permeability; high available water capacity. Susquehanna: SsE. For Smithdale part, see group 2o1.	Loblolly pine..... Longleaf pine..... Slash pine.....	80 70 80	Slight.....	Moderate.....
Group 3w9: Poorly drained soils on flood plains: slow permeability; high available water capacity. Peoria: Pe.	Loblolly pine..... Slash pine..... Sweetgum.....	85 85 85	Slight.....	Severe.....
Group 4f2: Well-drained, gravelly soils on uplands: moderate permeability in the upper part of the profile and rapid in the lower part; medium available water capacity. Saffell: SaD, SaE.	Loblolly pine..... Longleaf pine..... Shortleaf pine..... Slash pine.....	70 50+ 60 70	Slight.....	Moderate.....

¹ No forage plants listed or yield data given for group 2s5. These are areas of hardwoods and are not suited to grazing.

2. Make preliminary evaluations that will aid in selecting locations for highways and airports and in planning detailed surveys of the soils at the site.
3. Develop information that will aid in designing drainage systems, farm ponds, diversion terraces, and other structures that are used for soil and water conservation.
4. Locate probable sources of sand and gravel.
5. Correlate performance of engineering struc-

tures with soil mapping units to develop information that can be useful in designing and maintaining such structures.

6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.
7. Supplement information obtained from published maps and reports and aerial photographs for the purpose of making maps and reports that can be used readily by engineers.

of soils for wood crops and forage

Hazards and limitations—Continued	Species suitable for planting	Understory vegetation used as forage	
		Principal plants of high forage value	Estimated yield
Seedling mortality			<i>Lbs of air-dry forage per acre</i>
Slight.....	Green ash, white ash, eastern cottonwood, cherrybark oak, loblolly pine, slash pine, sweetgum, yellow-poplar.	Pinehill bluestem, switchgrass, switch cane, longleaf uniola, grassleaf gold-aster, and honeysuckle.	Open canopy, 2,500 to 3,500. Sparse canopy, 1,500 to 3,000. Medium canopy, 800 to 1,800. Dense canopy, 200 to 1,000.
Slight.....	Loblolly pine, slash pine.....	Pinehill bluestem, indiagrass, big bluestem, grassleaf goldaster, and perennial lespedeza.	Open canopy, 2,000 to 2,800. Sparse canopy, 1,000 to 2,600. Medium canopy, 500 to 1,000. Dense canopy, 0 to 500.
Slight.....	Cherrybark oak, loblolly pine, slash pine, yellow-poplar.	Pinehill bluestem, longleaf uniola, indiagrass, grassleaf goldaster, beaked panicum, and tick clover.	Open canopy, 1,500 to 2,200. Sparse canopy, 1,000 to 2,000. Medium canopy, 500 to 1,000. Dense canopy, 0 to 500.
Slight.....	Cherrybark oak, white oak, loblolly pine, slash pine, sweetgum.	Pinehill bluestem, switch cane, longleaf uniola, beaked panicum, perennial lespedeza, and tick clover.	Open canopy, 3,000 to 4,000. Sparse canopy, 1,800 to 3,100. Medium canopy, 1,000 to 1,900. Dense canopy, 500 to 1,000.
Moderate.....	Cherrybark oak, water oak, willow oak, sweetgum, yellow-poplar.	(¹)	(¹).
Slight to moderate...	Loblolly pine, longleaf pine, slash pine.	Pinehill bluestem, longleaf uniola, indiagrass, beaked panicum, grassleaf goldaster, and tick clover.	Open canopy, 1,500 to 2,200. Sparse canopy, 1,000 to 2,000. Medium canopy, 500 to 1,000. Dense canopy, 0 to 500.
Moderate to severe..	Loblolly pine, slash pine, sweetgum..	Pinehill bluestem, switchgrass, switch cane, longleaf uniola, perennial lespedeza, and honeysuckle.	Open canopy, 2,500 to 3,500. Sparse canopy, 1,500 to 3,000. Medium canopy, 800 to 1,800. Dense canopy, 200 to 1,000.
Moderate.....	Loblolly pine, slash pine.....	Pinehill bluestem, slender bluestem, low panicums, and pineywoods dropseed.	Open canopy, 1,200 to 1,600. Sparse canopy, 800 to 1,400. Medium canopy, 300 to 800. Dense canopy, 0 to 400.

8. Develop other preliminary estimates for construction purposes pertinent to a particular area.

With the soil map for identification of soil areas, the engineering interpretations reported here can be useful for many purposes. It should be emphasized, however, that these interpretations do not eliminate the need for sampling and testing at the site of specific engineering works, especially works that involve

heavy loads and excavations deeper than the depth of layers here reported.

Some terms used by soil scientists have a different meaning in soil science than in engineering. The Glossary defines many of these terms as they are commonly used in soil science.

Engineering classification systems

Two systems of soil classification are in general use by engineers. They are the AASHO system (1),



Figure 4.—Catfish ponds for commercial use in an area of Providence silt loam, 5 to 8 percent slopes.

adopted by the American Association of State Highway Officials, and the Unified system (16), used by SCS engineers, the Department of Defense, and others.

The AASHTO system is used to classify soils according to those properties that affect use in highway construction. In this system, a soil is classified in one of seven principal groups. The groups range from A-1, which consists of soils that have the highest bearing strength and are the best soils for subgrade, to A-7, which consists of soils that have low strength when wet and are the poorest soils for subgrade. Within each group, the relative engineering value of a soil material can be indicated by a group index number. Group indexes range from 0, for the best material, to 20, for the poorest. AASHTO classifications for tested soils, with group index numbers in parentheses, are shown in table 5. The estimated classification, without group index numbers, is given in table 6 for all soils mapped in the survey area.

In the Unified system soils are classified as coarse grained, fine grained, or organic, according to particle-size distribution, plasticity, liquid limit, and organic-matter content. Soils are classified in 15 groups. Eight groups are coarse-grained soils in which more than half of the particles are larger than 0.074 millimeter. Symbols for these groups consist of the letters G for gravel or S for sand combined with the letters

W for well graded, P for poorly graded, M for silty, or C for clayey. Six groups are fine-grained soils. More than half of the particles in these soils are smaller than 0.074 millimeter. These groups are designated by the letter M for silts, C for clays, or O for organic, combined with the letters L for low liquid limit or H for high liquid limit. Highly organic or peaty soils are designated by the symbol Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, ML-CL.

Engineering test data

Table 5 contains engineering test data for two major soil series in Amite County. Tests were made by the Mississippi State Highway Department in accordance with standard procedures to help evaluate the soils for engineering purposes. The engineering classifications given are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods. Some terms used in table 5 are explained in the following paragraphs.

In a moisture-density, or compaction test, a sample of soil material is compacted several times at the same compactive force, but each time at a higher moisture content. The dry density, unit weight, of the soil material increases until the *optimum moisture content* is



Figure 5.—Farm pond used for recreation and for livestock water.

TABLE 4.—Potential for wildlife habitat and kinds of wildlife

Soil series and map symbols	Elements of wildlife habitat						Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees and shrubs	Wetland food and cover plants	Shallow-water development	Open-land	Woodland	Wetland
Ariel: Ar.....	Good.....	Good.....	Good.....	Good.....	Poor.....	Very poor.....	Good.....	Good.....	Very poor.....
Bruno: Br.....	Poor.....	Poor.....	Fair.....	Poor.....	Very poor.....	Very poor.....	Poor.....	Poor.....	Very poor.....
Bude: Bu.....	Fair.....	Good.....	Good.....	Good.....	Fair.....	Fair.....	Good.....	Good.....	Fair.....
Collins: Co.....	Good.....	Good.....	Good.....	Good.....	Poor.....	Poor.....	Good.....	Good.....	Poor.....
Gillsburg: Gb.....	Fair.....	Good.....	Good.....	Good.....	Fair.....	Fair.....	Good.....	Good.....	Fair.....
Ora: OrB, OrB3, OrC, OrC3.....	Good.....	Good.....	Good.....	Good.....	Poor.....	Poor.....	Good.....	Good.....	Poor.....
Peoria: Pe.....	Fair.....	Fair.....	Fair.....	Fair.....	Good.....	Good.....	Fair.....	Fair.....	Good.....
Providence: PrB, PrB3, PrC, PrC3.....	Good.....	Good.....	Good.....	Good.....	Poor.....	Very poor.....	Good.....	Good.....	Very poor.....
Ruston:									
RuA, RuB, RuB3.....	Good.....	Good.....	Good.....	Good.....	Poor.....	Very poor.....	Good.....	Good.....	Very poor.....
RuC, RuC3.....	Fair.....	Good.....	Good.....	Good.....	Very poor.....	Very poor.....	Good.....	Good.....	Very poor.....
Saffell:									
SaD.....	Fair.....	Fair.....	Fair.....	Fair.....	Very poor.....	Very poor.....	Fair.....	Fair.....	Very poor.....
SaE.....	Poor.....	Fair.....	Fair.....	Fair.....	Very poor.....	Very poor.....	Fair.....	Fair.....	Very poor.....
Smithdale:									
SmD, SmD3.....	Fair.....	Good.....	Good.....	Good.....	Very poor.....	Very poor.....	Good.....	Good.....	Very poor.....
SmE, SmE3.....	Poor.....	Fair.....	Good.....	Good.....	Very poor.....	Very poor.....	Fair.....	Good.....	Very poor.....
Susquehanna: SsE.....	Fair.....	Good.....	Good.....	Good.....	Very poor.....	Very poor.....	Good.....	Good.....	Very poor.....

TABLE 5.—Engineering
 (Tests made by Mississippi State Highway

Soil name and location	Parent material	Report No.	Depth	Moisture density ¹	
				Maximum dry density	Optimum moisture
Ariel silt loam: 1.5 mile N. of East Fork Church and 0.5 mile W. on gravel road, SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 3 N., R. 5 E. Modal.	Shallow loess and coastal plain material.	9013481 9013482	<i>In</i>	<i>Lb per cu ft</i>	<i>Pct</i>
			8-21 39-54	108 108	16 16
Ora loam: NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 8, T. 2 N., R. 6 E. Modal.	Coastal plain loamy material that has a fragipan.	551976 551977 551978	9-23	107.1	18.3
			23-39	118.6	12.7
			39-68	108.3	17.6

¹ Based on AASHO Designation T 99-57, Method A (1).

² Mechanical analyses according to the AASHO Designation T 88-57 (1). Results by this procedure may differ somewhat from the results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2

reached. After that, the dry density decreases as the moisture content increases. The highest dry density obtained is the *maximum dry density*. Moisture density data are important in earthwork because, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately optimum moisture content.

Mechanical analysis shows the percentage, by weight, of soil particles that pass sieves of specified sizes. Sand and coarser materials do not pass the No. 200 sieve, but silt and clay do. In the AASHO system, silt is identified as material finer than 0.074 millimeter yet coarser than 0.005 millimeter. Clay is material finer than 0.005 millimeter. The distribution of material that passed the No. 200 sieve was determined by the hydrometer method.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The *plastic limit* is the moisture content at which the soil passes from a semisolid to a plastic state. The *liquid limit* is the moisture content at which the material changes from a plastic to a liquid state. The *plasticity index* is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Estimated soil properties

Table 6 provides estimates of soil properties significant in engineering. The estimates are based on field observations and descriptions, on physical and chemical tests of selected representative samples, on test data from comparable soils in adjacent areas, and on experience in working with the soils in Amite County.

Soil series are listed in alphabetical order. The map symbols follow the name of the soil series. Ratings apply only to the depths indicated. The depth to bedrock is not given, because bedrock is below the depths indicated. Following are explanations of some of the columns in table 6.

Depth to seasonal high water table is distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Soil texture is described in table 6 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, as for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classification are defined in the Glossary of this soil survey.

Permeability indicates the rate at which water moves downward through undisturbed soil material. The rate depends largely on texture, porosity, and structure of the soil. A rate of less than 0.2 inches per hour is slow; 0.2 to 0.63, moderately slow; 0.63 to 2, moderate; 2 to 6.3, rapid; and more than 6.3, very rapid. The rating in table 6 should not be confused with the coefficient of permeability, *k*-value, used by engineers.

Available water capacity refers to the capacity of a soil to hold water available for use by most plants. It is commonly defined as the difference between the amount of water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. Available water capacity is affected by the texture, structure, and organic-matter content of the soil.

test data

Department, Testing Division, Jackson, Miss.]

Mechanical analysis ²							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—						AASHO ³	Unified ⁴
No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm				
100	100	94	79	43	22	18	<i>Pet</i>			
100	97	85	80	53	18	13	28	5	A-4(9)	ML-CL
							25	3	A-4(9)	ML
100	99	95	65	47	26	22	38	17	A-6(11)	CL
100	98	88	49	37	20	17	29	12	A-6(5)	CL
100	99	86	45	43	35	32	43	25	A-7(8)	CL

millimeters in diameter is excluded from calculations of the grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

³ Based on AASHO Designation M 145-49 (1).

⁴ Based on the Unified soil classification system (17).

Reaction refers to the degree of acidity or alkalinity of a soil, expressed as a pH value. A pH value of 7.0 is neutral. Lower values indicate acidity and higher values indicate alkalinity.

Shrink-swell potential indicates the volume change to be expected in soil material with changes in moisture content. Shrinking and swelling of soils cause much damage to roads, building foundations, and other structures. A *high* shrink-swell potential indicates a hazard to the maintenance of structures that are constructed in, on, or of material that has this rating.

Engineering interpretations

Table 7 contains information useful to engineers and others who plan to use soil material in the construction of highways, farm facilities, and buildings. Detrimental or undesirable features are emphasized, but very important desirable features also are listed. The ratings and other interpretations in this table are based on the estimated engineering properties of the soils shown in table 6; on available test data, including those in table 5; and on field experience. The information applies to a depth of 6 feet or less. The terms used in table 7 are explained in the following paragraphs.

Topsoil refers to soil material used to topdress lawns, roadbanks, and the like. The ratings indicate suitability for such use and are based mainly on fertility and organic-matter content.

Ratings for sand and for gravel are based on the probability that areas of the soil contain deposits of sand, material 0.074 millimeter to 2.0 millimeters in diameter, or deposits of gravel, material 2.0 millimeters to 3 inches in diameter. Sand and gravel commonly are used as filter for drains, as aggregate for concrete, and as granular subbase for roads. The ratings do not indicate the quality or size of deposits.

Road fill is material used to build embankments that support the subbase, base, or surface course of roads. The ratings are based on the performance of soil material removed from borrow areas and used for highway subgrade. Sandy material that contains adequate binder is generally the best road fill, and organic soil material and plastic clay that has a high shrink-swell potential are the poorest. Bruno and Saffell soils are generally the best sources of road fill in Amite County.

Highway location is affected mainly by ponding, flooding, seasonal high water table, and other hazards that affect the construction and maintenance of highways. In table 7, the soil features that affect highway location are for the entire profile of undisturbed soil. On soils that are ponded, roads must be constructed on high embankments or on areas that are provided with surface and subsurface drains. On soils that have a hazard of flooding, such as Ariel, Collins, Gillsburg, and Peoria soils, roads must be constructed on continuous embankments that are several feet above the usual level of floodwater.

Farm ponds supply water for livestock and offer opportunities for recreation. They are affected mainly by soil features that influence the rate of seepage. Soils that have moderate or slow permeability, and consequently have slow seepage, can be used as reservoir areas. Embankments are earth-filled dams constructed to impound water. Features that affect the use of soil as embankment are those that influence the strength and stability of the disturbed and compacted soil material.

Agricultural drainage is affected mainly by soil permeability, depth to the water table, and depth to a cemented layer, sand, or other material that impedes or accelerates the movement of water through the soil. Slope is also an important factor. Most nearly level soils in the county require drainage for crops, but the

gently sloping to strongly sloping soils generally do not.

Irrigation systems are affected by such features as slope, erodibility, permeability, and drainage.

Terraces and diversions are essential in places to

help control erosion and to help protect downslope areas from runoff. Shallowness of the soils and irregular and steep topography are among the unfavorable features.

Waterways for agricultural drainage and control of

TABLE 6.—*Estimates of soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such to other series that appear in the first column

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	USDA texture	Classification	
				Unified	AASHO
Ariel: Ar.....	About 24 inches in winter and in spring.	<i>Inches</i> 0-30 30-65	Silt loam Silt loam	ML or ML-CL ML or CL	A-4 A-4 or A-6
Bruno: Br.....	More than 40 inches.	0-8 8-16 16-22 22-58	Loamy fine sand Silt loam and very fine sandy loam. Loamy fine sand Loamy sand, sand, silt loam, and very fine sandy loam.	SM ML SM SM, ML	A-2 A-4 A-2 A-2, A-4
Bude: Bu.....	Less than 12 inches to a perched water table during a period of high rainfall.	0-5 5-16 16-36 36-60	Silt loam Silt loam Silt loam Silt loam	ML or CL ML or CL ML or CL ML or CL	A-4 A-6 A-4 A-4
Collins: Co.....	About 30 inches in winter and early spring.	0-42 42-48	Silt loam Very fine sandy loam	ML or ML-CL ML	A-4 A-4
Gillsburg: Gb.....	About 20 inches in winter and in spring.	0-42 42-65	Silt loam Silt loam	ML or CL ML-CL	A-4 A-4
Ora: OrB, OrB3, OrC, OrC3.	About 23 inches to a perched water table during prolonged rainfall.	0-9 9-23 23-39 39-68	Loam Clay loam Loam and clay loam Loam	SM CL CL CL	A-4 A-6 A-6 A-7, A-6
Peoria: Pe.....	At or near the surface in winter and in spring.	0-18 18-36 36-72	Silt loam and silt Silt and silt loam Silt loam	ML ML or CL ML or CL	A-4 A-4 A-4
Providence: PrB, PrB3, PrC, PrC3.	About 22 inches to perched water table during a wet period.	0-5 5-22 22-38 38-70	Silt loam Silty clay loam Silty clay loam and silt loam Sandy loam	ML CL CL SC	A-4 A-7 or A-6 A-6 A-4
Ruston: RuA, RuB, RuB3, RuC, RuC3.	More than 60 inches.	0-12 12-37 37-54 54-85	Sandy loam Sandy clay loam Sandy loam Sandy clay loam and sandy loam.	SM or ML SC or CL SM SC or CL	A-4 or A-2 A-6 A-2 or A-4 A-6 or A-4
Saffell: SaD, SaE.....	More than 60 inches.	0-11 11-17 17-42 42-80	Gravelly sandy loam Gravelly sandy clay loam Gravelly sandy loam Gravelly loamy sand	SM or ML GC GM or SM GM or SM	A-2 or A-4 A-2 or A-4 A-2 A-2
Smithdale: SmD, SmD3, SmE, SmE3.	More than 60 inches.	0-12 12-46 46-84	Sandy loam Sandy clay loam Sandy loam	SM, ML CL, SC SM	A-4 or A-2 A-6 A-4 or A-2
*Susquehanna: SsE..... For Smithdale part, see Smithdale series.	More than 30 inches. ²	0-7 7-80	Silt loam Clay	ML or CL CH	A-4 or A-6 A-7

¹ The ratings in this column should not be construed to be the coefficient of permeability, *k*-value, used by engineers.

erosion are generally required for soils on flood plains and for nearly level soils on uplands. The erodibility of the soil affects shaping, seeding, and establishing waterways, and a seasonal high water table limits the use of equipment.

Use of the Soils for Town and Country Planning

The proximity of Amite County to Baton Rouge, Louisiana, and the easy access to all parts of the county by State and U.S. Highways have contributed

significant in engineering

mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring of this table. The sign < means less than]

Percentage passing sieve--				Permeability ¹	Available water capacity	Reaction	Shrink-swell potential
No 4 (4.7 mm)	No 10 (2.0 mm)	No 40 (0.42 mm)	No 200 (0.074 mm)				
		100	90-100	<i>Inches per hour</i> 0.63-2.0	<i>Inches per inch of soil</i> 0.20-0.22	<i>pH</i> 4.5-5.5	Low
	100	95-100	85-100	0.2-0.63	0.16-0.20	4.5-5.5	Low.
	100	80-95	10-30	2.0-6.3	0.05-0.10	5.1-7.3	Low.
	100	100	90-100	2.0-6.3	0.15-0.20	5.1-7.3	Low.
	100	80-95	10-30	2.0-6.3	0.05-0.10	5.1-7.3	Low.
	100	80-90	10-60	2.0-20	0.05-0.10	5.1-7.3	Low.
	100	95-100	85-100	0.63-2.0	0.20-0.23	5.1-5.5	Low.
	100	95-100	85-100	0.63-2.0	0.18-0.20	4.5-5.5	Low.
	100	95-100	85-95	0.2-0.63	0.05-0.10	4.5-5.5	Low.
	100	95-100	70-80	0.2-0.63	0.05-0.10	4.5-5.5	Low.
		100	90-100	0.63-2.0	0.20-0.23	4.5-5.5	Low.
		100	85-95	0.63-2.0	0.18-0.20	4.5-5.5	Low.
		100	90-100	0.63-2.0	0.19-0.22	4.5-5.5	Low.
		100	90-100	0.2-0.63	0.14-0.17	4.5-5.5	Low.
	100	70-85	36-45	2.0-6.3	0.10-0.13	4.5-5.5	Low.
	100	80-100	50-95	0.63-2.0	0.12-0.18	4.5-5.5	Low.
	100	80-100	50-90	0.2-0.63	0.05-0.10	4.5-5.5	Low.
	100	90-100	50-90	0.2-0.63	0.05-0.10	4.5-5.5	Low to moderate.
	100	95-100	90-100	0.2-0.63	0.18-0.22	4.5-5.5	Low.
	100	100	90-100	0.06-0.2	0.18-0.20	4.5-5.5	Low.
	100	90-100	85-95	0.06-0.2	0.12-0.16	4.5-5.5	Low.
		100	85-100	0.63-2.0	0.20-0.22	4.5-5.5	Low.
	100	95-100	85-100	0.63-2.0	0.20-0.22	4.5-5.5	Moderate.
	100	90-100	70-90	0.2-0.63	0.05-0.10	4.5-5.5	Low.
100	90-100	60-70	36-50	0.2-0.63	0.05-0.10	4.5-5.5	Low.
	100	70-95	30-60	0.63-2.0	0.10-0.15	4.5-5.5	Low.
	100	80-90	35-75	0.63-2.0	0.15-0.17	4.5-5.5	Low.
	100	70-95	30-50	0.63-2.0	0.10-0.15	4.5-5.5	Low.
	100	75-95	36-55	0.63-2.0	0.14-0.18	4.5-5.5	Low.
75-90	75-85	40-60	20-55	2.0-6.3	0.10-0.12	4.5-5.5	Low.
40-65	40-60	40-55	25-45	0.63-2.0	0.10-0.15	4.5-5.5	Low.
35-60	30-55	30-50	15-30	2.0-6.3	0.10-0.12	4.5-5.5	Low.
35-60	30-50	30-45	15-25	6.3-20	0.04-0.06	4.5-5.5	Low.
	100	70-95	25-55	2.0-6.3	0.10-0.15	4.5-5.5	Low.
	100	80-90	40-55	0.63-2.0	0.15-0.17	4.5-5.5	Low.
	100	70-95	25-45	2.0-6.3	0.10-0.15	4.5-5.5	Low.
	100	85-100	70-90	0.63-2.0	0.16-0.18	4.5-5.5	Low.
	100	80-100	75-90	<0.06	0.15-0.20	4.5-5.5	High.

² This soil is saturated by water in some seasons.

TABLE 7.—*Engineering*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. carefully the instructions for referring to other

Soil series and map symbols	Suitability as source of—				Soil features affecting—
	Topsoil	Sand	Gravel	Road fill	Highway location
Ariel: Ar.....	Good.....	Not suited.....	Not suited.....	Fair: fair traffic-supporting capacity.	Hazard of flooding---
Bruno: Br.....	Poor: surface layer too sandy.	Good: excess of fines; needs washing.	Not suited.....	Good.....	Hazard of flooding---
Bude: Bu.....	Fair to good: limited thickness of suitable material in some places.	Not suited.....	Not suited.....	Fair: easily eroded; wetness; fair traffic-supporting capacity.	Fair traffic-supporting capacity; wetness.
Collins: Co.....	Good.....	Not suited.....	Not suited.....	Fair wetness; fair traffic-supporting capacity.	Hazard of flooding---
Gillsburg: Gb.....	Good.....	Not suited.....	Not suited.....	Fair: wetness; fair traffic-supporting capacity.	Hazard of flooding---
Ora: OrB, OrB3, OrC, OrC3.	Fair: limited thickness of suitable material.	Not suited.....	Not suited.....	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; wetness.
Peoria: Pe.....	Poor: wetness; seasonal high water table.	Not suited.....	Not suited.....	Poor: wetness; seasonal high water table.	Hazard of flooding; wetness.
Providence: PrB, PrB3, PrC, PrC3.	Fair: limited thickness of suitable material.	Fair: sand below a depth of 4 feet.	Not suited.....	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; moderate erodibility.
Ruston: RuA, RuB, RuB3, RuC, RuC3.	Fair: limited thickness of suitable material.	Not suited.....	Not suited.....	Good.....	All features favorable.
Saffell: SaD, SaE.....	Poor: coarse fragments.	Fair to poor: excess of fines and coarse fragments.	Fair: excess of fines.	Good.....	Slope.....
Smithdale: SmD, SmD3, SmE, SmE3.	Fair: limited thickness of suitable material.	Not suited.....	Not suited.....	Good.....	Slope.....
*Susquehanna: SsE... For Smithdale part, see Smithdale series.	Poor: clayey at a depth of 7 inches.	Not suited.....	Not suited.....	Poor: high shrink-swell potential.	High shrink-swell potential.

interpretations

The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow series that appear in the first column of this table]

Soil features affecting—Continued					
Farm ponds		Drainage for crops and pasture	Irrigation	Terraces and diversions	Waterways
Reservoir areas	Embankments				
Moderately slow permeability.	Fair stability; medium compressibility.	Needs surface drainage; hazard of flooding.	Moderate intake rate; high available water capacity.	Nearly level.....	High available water capacity; good for sod.
Moderately rapid permeability below a depth of 16 inches.	Poor resistance to piping and erosion.	Not needed; excessively drained; hazard of flooding.	Rapid intake rate; low available water capacity.	Nearly level.....	Low available water capacity; sod difficult to establish.
Slow seepage; moderately slow permeability.	Fair to good stability; medium compressibility.	Needs surface drainage; high water table during a prolonged period of rainfall.	Moderate intake rate; medium available water capacity.	Nearly level.....	Medium available water capacity; good for sod.
Moderate permeability.	Medium compressibility; fair resistance to piping and erosion.	Needs surface drainage; hazard of flooding.	Moderate intake rate; very high available water capacity.	Nearly level.....	Very high available water capacity; good for sod.
Moderately slow permeability.	Medium compressibility; fair resistance to piping and erosion.	Needs surface drainage; hazard of flooding; seasonal high water table.	Moderate intake rate; high available water capacity.	Nearly level.....	High available water capacity; good for sod.
Moderately slow permeability.	Medium compressibility; good to fair resistance to piping and erosion.	Not needed; moderately well drained; slope.	Moderate intake rate; medium available water capacity.	All features favorable.	Medium available water capacity; good for sod.
Slow permeability.....	Fair to poor stability; poor to good resistance to piping and erosion.	Needs surface drainage and dragline ditches; high water table.	Slow permeability; wetness.	Nearly level.....	High available water capacity; sod difficult to establish; wetness.
Moderately slow permeability; shallow over permeable material in places.	Medium compressibility; fair resistance to piping and erosion.	Moderately well drained.	Moderate intake rate; fragipan restricts permeability.	All features favorable.	Medium available water capacity; good for sod.
Excessive seepage in places.	Moderate permeability if compacted.	Well drained.....	Moderate intake rate; medium available water capacity.	All features favorable.	Medium available water capacity; good for sod.
Moderate to rapid permeability; excessive seepage in places.	Fair stability.....	Well drained.....	Moderate intake rate; medium available water capacity.	Steep slopes.....	Medium available water capacity; severe hazard of erosion.
Excessive seepage in places.	Moderate permeability if compacted.	Well drained.....	Slopes.....	All features favorable, except severe to very severe hazard of erosion if slope is more than 8 percent.	Medium available water capacity; severe hazard of erosion where steep; sod difficult to establish.
Very slow permeability.	Moderate stability; high compressibility.	Steep slopes.....	Very slow permeability.	Severe hazard of erosion; high shrink-swell potential.	Very slow permeability; high shrink-swell potential; sod difficult to establish.

to the steadily increasing demand for sites for housing subdivisions, vacation cottages, and recreational facilities in the county.

This section provides information that can be used by planners, builders, developers, landscape architects, and others interested in nonfarm uses of the soils.

Table 8 lists slight, moderate, and severe degrees of limitation for dwellings, sewage lagoons, septic tank

absorption fields, camp areas, picnic areas, playgrounds, and paths and trails. Among the kinds of limitation considered are wetness, texture, slope, permeability, depth to the water table, bearing strength, and the hazard of flooding. The information in table 8 does not eliminate the need for onsite investigation, but it can be used as a guide in the selection of sites for a given use.

TABLE 8.—Degree and kind of limitation

Soil series and map symbols	Dwellings without basements ¹	Sewage lagoons	Septic tank absorption fields
Ariel: Ar.....	Severe: hazard of flooding.....	Severe: seasonal high water table; hazard of flooding.	Severe: moderately slow permeability; hazard of flooding.
Bruno: Br.....	Severe: hazard of flooding.....	Severe: moderately rapid permeability.	Severe: hazard of flooding; moderately rapid permeability.
Bude: Bu.....	Severe: seasonal high water table; wetness; moderately slow permeability.	Severe: seasonal high water table.	Severe: seasonal high water table; moderately slow permeability in fragipan.
Collins: Co.....	Severe: hazard of flooding.....	Severe: seasonal high water table; hazard of flooding.	Severe: hazard of flooding; seasonal high water table.
Gillsburg: Gb.....	Severe: hazard of flooding; seasonal high water table.	Severe: hazard of flooding; seasonal high water table.	Severe: hazard of flooding; seasonal high water table.
Ora: OrB, OrB3, OrC, OrC3.....	Moderate: wetness; medium bearing strength.	Moderate where slopes are 2 to 5 percent. Severe where slopes are more than 5 percent.	Severe: moderately slow permeability.
Peoria: Pe.....	Severe: wetness; hazard of flooding.	Severe: seasonal high water table; hazard of flooding.	Severe: slow permeability; seasonal high water table; hazard of flooding.
Providence: PrB, PrB3, PrC, PrC3..	Moderate: wetness; medium bearing strength.	Moderate where slopes are 2 to 5 percent. Severe where slopes are more than 5 percent.	Severe: moderately slow permeability.
Ruston:			
RuA.....	Slight.....	Moderate: moderate permeability.	Slight.....
RuB, RuB3.....	Slight.....	Moderate: slope; moderate permeability.	Slight.....
RuC, RuC3.....	Moderate: slope.....	Severe: slope.....	Moderate: slope.....
Saffell:			
SaD.....	Moderate: slope.....	Severe: slope.....	Moderate: slope.....
SaE.....	Severe: slope.....	Severe: slope.....	Severe: slope.....
Smithdale:			
SmD, SmD3.....	Moderate: slope.....	Severe: slope.....	Moderate: slope.....
SmE, SmE3.....	Severe: slope.....	Severe: slope.....	Severe: slope.....
Susquehanna: SsE.			
Susquehanna part.....	Severe: high shrink-swell potential; wetness; slope.	Severe: slope.....	Severe: very slow permeability; slope.
Smithdale part.....	Severe: slope.....	Severe: slope.....	Severe: slope.....

¹ Engineers and others should not apply specific values to the estimates for bearing strength given in this column.

Dwellings without basements refer to houses and other buildings not more than three stories high. The type of sewage disposal system is not considered in the evaluation. Intensive site preparation generally is required.

Soils that have *slight* limitation for dwellings have slopes that are less than 8 percent, have low shrink-swell potential, are free from flooding, and have a

water table below a depth of 30 inches all year. Soils that have *moderate* limitation have features that are generally favorable, except for one or more of the following: slopes that are 8 to 12 percent, a seasonal high water table between depths of 20 and 30 inches, or moderate shrink-swell potential. Soils that have *severe* limitation have slopes that are more than 12 percent, have high shrink-swell potential, are frequently

for town and country planning

Camp areas	Picnic areas	Playgrounds	Paths and trails
Severe: hazard of flooding.....	Moderate: hazard of flooding..	Severe: hazard of flooding....	Slight.
Severe: hazard of flooding.....	Moderate: hazard of flooding; loamy fine sand surface texture.	Severe: hazard of flooding....	Moderate: hazard of flooding; loamy fine sand surface texture.
Moderate: wetness; moderately slow permeability.	Moderate: wetness.....	Moderate: wetness; moder- ately slow permeability.	Moderate: wetness.
Severe: hazard of flooding.....	Moderate: hazard of flooding..	Severe: hazard of flooding....	Moderate: hazard of flooding.
Severe: wetness.....	Moderate: wetness.....	Severe: wetness.....	Moderate: wetness.
Moderate: moderately slow permeability.	Slight.....	Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 5 percent. Severe where slopes are more than 5 percent: moderately slow permeability.	Slight.
Severe: wetness; hazard of flooding.	Severe: wetness.....	Severe: wetness; hazard of flooding.	Severe: wetness.
Moderate: moderately slow permeability.	Slight.....	Moderate: moderately slow permeability.	Slight.
Slight.....	Slight.....	Slight.....	Slight.
Slight.....	Slight.....	Moderate: slope.....	Slight.
Slight.....	Slight.....	Severe: slope.....	Slight.
Moderate: slope..... Severe: slope.....	Moderate: slope..... Severe: slope.....	Severe: slope..... Severe: slope.....	Slight. Moderate where slopes are 12 to 25 percent. Severe where slopes are more than 25 percent.
Moderate: slope..... Severe: slope.....	Moderate: slope..... Severe: slope.....	Severe: slope..... Severe: slope.....	Slight. Moderate where slopes are 12 to 25 percent. Severe where slopes are more than 25 percent.
Severe: very slow permeability; wetness; slope.	Moderate where slopes are less than 15 percent: wetness. Severe where slopes are more than 15 percent.	Severe: very slow perme- ability; slope; wetness.	Moderate where slopes are less than 25 percent: wetness. Severe where slopes are more than 25 percent.
Severe: slope.....	Severe: slope.....	Severe: slope.....	Severe: slope.

flooded, or have a seasonal high water table above a depth of 20 inches.

Wastewater lagoons are embankment ponds used to hold sewage long enough for bacterial decomposition of the solids. Properties that affect the pond floor and the stability of the embankment are considered. Among them are soil texture, erodibility, permeability, organic-matter content, slope, and flood hazard.

Septic tank absorption fields are subsurface systems of tile that distribute effluent from a septic tank into the natural soil. The soil material between depths of 18 and 72 inches is evaluated. Permeability, depth to a water table, hazard of flooding, slope, and other properties that affect the absorption of effluent and the construction and operation of the tile system are considered.

Camp areas are for temporary outdoor living in tents, pickup-campers, or camping trailers. Site preparation normally includes the clearing of areas for tents and trailers and for parking cars. Soils as camp areas should be well suited to limited vehicular traffic and heavy pedestrian traffic from May through September.

Soils that have *slight* limitation for camp areas have slopes that are less than 8 percent, have good traffic-supporting capacity, are free from flooding, and have slight inherent erodibility. Soils that have *moderate* limitation have features that are generally favorable, except for one or more of the following: a water table below a depth of 20 inches during the camping season, moderately slow or slow permeability, or slopes that are 8 to 12 percent. Soils that have *severe* limitation have slopes that are more than 12 percent, have poor traffic-supporting capacity, are frequently flooded, or have very slow permeability.

Picnic areas for outdoor eating are used to some degree throughout the year. The soil used as picnic area should support heavy pedestrian traffic. Site preparation is required for the placement of picnic tables and grills.

Soils that have *slight* limitation have slopes that are less than 8 percent, have good traffic-supporting capacity, are free of flooding, and have slight erodibility. Soils that have *moderate* limitation have features that are generally favorable, except for one or more of the following: moderate traffic-supporting capacity, flooding once or twice during the season of use, or slopes that are 8 to 12 percent. Soils that have *severe* limitation have slopes that are more than 12 percent, have poor traffic-supporting capacity, are frequently flooded, or have poor drainage.

Playgrounds are areas used for children's activities or for baseball, softball, tennis, archery, target and skeet shooting, and other group or competitive sports. Site preparation that includes clearing, grading, shaping, and draining are needed in some places where relatively large areas are used as playgrounds.

Soils that have *slight* limitation have slopes that are less than 2 percent, have good traffic-supporting capacity, and have good drainage. Soils that have *moderate* limitation have features that are generally favorable, except for one or more of the following: a water table below a depth of 20 inches during the

season of use, flooding once in 2 years during the season of use, moderately slow or slow permeability, or slopes that are 2 to 5 percent. Soils that have *severe* limitation have slopes that are more than 5 percent, are subject to flooding, have very slow permeability, have poor traffic-supporting capacity, or are wet.

Paths and trails are used for hiking, horseback riding, and bicycling. Selection of sites for these activities is largely influenced by the natural condition of the soils. However, sites commonly need some clearing and minor cuts and fills.

Soils that have *slight* limitation have slopes that are less than 12 percent, have good traffic-supporting capacity, are free of flooding, and have slight erodibility. Soils that have *moderate* limitation have features that are generally favorable, except for one or more of the following: a water table within a depth of 20 inches for a short period, flooding 2 or 3 times during the season of use, slopes that are 12 to 25 percent, or fair traffic-supporting capacity. Soils that have *severe* limitation have slopes that are more than 25 percent, have poor traffic-supporting capacity, or are frequently flooded.

Formation and Classification of Soils

This section tells how the major factors of soil formation have affected the soils in Amite County and describes how soil horizons have developed. It explains the current system of soil classification and shows the classification of each soil series in the county. It also gives laboratory data for selected soils.

Factors of Soil Formation

Soil is the product of soil-forming processes acting on accumulated or deposited geologic material. The five major factors in soil formation are parent material, climate, plants and animals, relief, and time (9). Climate and living organisms are the active forces of soil formation. Their effect on parent material is modified by relief and by length of time the parent material has been in place. The relative importance of each factor differs from place to place, but normally all the factors affect the formation of soil.

Parent material

Parent material is the unconsolidated geologic material in which a soil develops. It largely determines the chemical and mineralogical composition of the soil. In Amite County, the parent material of most soils is coastal plain sediment and loess, but some of the soils formed in alluvium.

The soils that formed in shallow loess occur throughout the county, except in the southeastern part. These soils range from nearly level to steeply sloping. The loess ranges from 2 to 4 feet in thickness. It is fine textured and has particles of irregular shape. If unweathered, it is uniform in physical and chemical composition. Most soil scientists believe that the loess

was first deposited on the flood plains and was then redeposited by wind on the older coastal plain.

The soils that formed in coastal plain sediment are in the southeastern part of the county. These are nearly level to steep, sandy soils. They formed in place in the Citronelle Formation. This formation was laid down by the sea during the Pliocene.

The soils along the larger streams in the county formed in alluvium. Much of the alluvium along East Fork Amite, West Fork Amite, and Tangipahoa Rivers originated from silty material. The alluvium along the Homochitto River originated from sandy coastal plain sediment. The sources from which this alluvium originated are referred to as the Hattiesburg Clay and the Pascagoula Clay Formations. They are of Miocene age.

The soils that formed in alluvium on old, high stream terraces and benches have been in place long enough to have a developed profile. The soils that formed in alluvium on flood plains have a weakly developed profile, because they receive additional deposits of soil material when flooded. The narrow strips of local alluvium, along drainageways throughout the county, have been modified very little, if any, by the soil-forming processes.

Climate

Climate, as a genetic factor of soil formation, affects physical, chemical, and biological relationships in the soil, mainly through the influence of precipitation and temperature. Water dissolves mineral and organic residue that is in the soil profile. Water that percolates through a broad area of soil is dependent mainly upon rainfall, relative humidity, and length of the frost-free period. Water that percolates downward at a given point is affected by physiographic position and by permeability of the soil.

Temperature influences the kind and growth of organisms in the soil, and it affects the speed of physical and chemical reactions. These reactions are also influenced by the warm, moist weather that prevails most of the year in Amite County. Water from the relatively high amount of precipitation leaches bases and other soluble material and carries downward colloidal matter and other less soluble material. The mature soils in this county have been leached. Leaching is active in the young soils.

Plants and animals

Micro-organisms, earthworms, plants, and animals that live on and in the soil are important in the formation of soil. Bacteria, fungi, and other micro-organisms help to disintegrate rock and to decompose organic matter. Most micro-organisms are in the uppermost few inches of the soil. Earthworms and other small invertebrates are mostly in the surface layer, where they continually mix the soil material.

Plants alter the soil microclimate, supply organic matter, and transfer minerals from the subsoil to the surface layer. Except on the bottom lands, the main native trees in Amite County are oak, hickory, and pine; on bottom lands that have good drainage, they are yellow-poplar, sweetgum, ash, oak, and other hard-

woods; and on bottom lands that have poor drainage, they are water-tolerant cypress, water tupelo, beech, and oak.

Relief

Topography, or relief, affects soil formation through its influence on drainage, erosion, vegetation, and soil temperature. Slopes in Amite County range from nearly level to steep. Differences in slope affect the characteristics of the soils. In upland areas the Ora, Providence, Ruston, and some other soils have a thick, well-developed profile where slopes are less than 17 percent. In contrast to these soils, Saffell soils that have slopes that are more than 17 percent have a shallow, weakly developed profile. The level or nearly level soils that formed in recent alluvium also have a weakly developed profile, but this does not reflect the influence of relief.

Time

The time required for the formation of a soil depends largely on the other four factors of soil formation. Less time is generally required for a soil to develop in humid, warm regions that have luxuriant vegetation than is required in dry or cold regions that have scanty vegetation. Also, other things being equal, less time is required if the parent material is coarse textured than if it is fine textured.

Geologically, the soils of Amite County are comparatively young. The coastal plain material was laid down by the sea during the Pliocene Period. In the northwestern part of the county, this coastal plain material was later covered with a thin mantle of loess during the ice age.

The ages of the soils of Amite County vary considerably. The older soils generally show a greater degree of horizon differentiation than the younger ones. For example the soils are mature on the smoother parts of the uplands and on the older stream terraces. In some areas, as the result of slope, geologic erosion has removed so much of the soil material that the horizons are less distinct than on mature soils. On the flood plains and in areas of local alluvium, the soil material has been in place too short a time to allow the soil profile to reach maturity.

Processes of Soil Formation

Several processes were involved in forming horizons in the soils of Amite County. These processes are accumulation of organic matter; leaching of calcium carbonate and bases; liberation, reduction, and transfer of iron; and formation and translocation of silicate clay minerals. In most soils one or more of these processes have been active.

The accumulation of organic matter in the upper part of the profile has been important in the formation of the A1 horizon. The organic-matter content of soils in the county ranges from low to very low.

Leaching of carbonates and bases has occurred in nearly all of the soils in the county. Most of the soils are moderately leached to strongly leached. Soil scientists generally agree that leaching of bases from the

upper horizons of a soil usually precedes translocation of silicate clay minerals, and, thus, leaching contributes to the development of soil horizons.

The reduction and transfer of iron, or gleying, is evident in the poorly drained Peoria soils. The gray color in the subsoil of Peoria soils indicates the reduction and loss of iron. Some horizons of the Bude, Ora, and Providence soils contain brown mottles and concretions, which indicate the segregation of iron.

In some soils of this county, the translocation of silicate clay minerals has contributed to the development of horizons. The eluviated A2 horizon has a platy structure. It is lower in content of clay and is generally lighter in color than the B horizon. The B horizon commonly has clay accumulations or clay films in pores and on the surfaces of peds. The translocation of silicate clays is among the more important processes in the formation of horizons in the soils in the county. The Ora, Providence, Ruston, and Smithdale soils and some other soils are examples of soils that have films of translocated clay in the B horizon.

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to a larger geographic area.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (3) and revised later (11). The system currently used by the National Cooperative Soil Survey was developed in the early sixties (10) and was adopted in 1965 (13). It is under continual study.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the

subgroup, the family, and the series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 9 shows the classification of each soil series of Amite County in some categories of the current system.

ORDER.—Ten orders are recognized in the current system. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The four orders represented in Amite County are Entisols, Inceptisols, Alfisols, and Ultisols.

Entisols are recent soils; they have no genetic horizons or have only the beginning of such horizons. In this county Entisols include many, but not all, of the soils previously classified as Alluvial soils.

Inceptisols are most commonly on young, but not recent, land surfaces. Their name is derived from the Latin "inceptum," for beginning. In Amite County Inceptisols include some soils that were formerly classified as Alluvial soils.

Alfisols are soils that have a clay-enriched B horizon that is high in base saturation. In this county Alfisols include soils that were previously classified as Red-Yellow Podzolic soils.

Ultisols have a clay-enriched B horizon and have a base saturation that is less than 35 percent and that decreases as depth increases. In this county Ultisols include soils that were previously classified as Planosols and Red-Yellow Podzolic soils.

SUBORDER.—Each order is divided into suborders, primarily on the basis of those soil characteristics that seem to produce classes having the greatest genetic similarity. The soil properties used to separate suborders mainly reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation. The names of suborders have two syllables. The last syllable indicates the order. An example is *Fluvent*; *Fluv* meaning flood plain, and *ent*, from Entisol.

GREAT GROUP.—Soil suborders are separated into great groups on the basis of uniformity in the kinds

TABLE 9.—Classification of soil series

Series	Family	Subgroup	Order
Ariel	Coarse-silty, mixed, thermic	Fluventic Dystrachrepts	Inceptisols.
Bruno	Sandy, mixed, thermic	Typic Udifluvents	Entisols.
Bude	Fine-silty, mixed, thermic	Glossaquic Fragiudalfs	Alfisols.
Collins	Coarse-silty, mixed, acid, thermic	Aquic Udifluvents	Entisols.
Gillsburg	Coarse-silty, mixed, acid, thermic	Aeric Fluvaquents	Entisols.
Ora	Fine-loamy, mixed, thermic	Typic Fragiudults	Ultisols.
Peoria	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Providence	Fine-silty, mixed, thermic	Typic Fragiudalfs	Alfisols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Saffell	Loamy, skeletal, siliceous, thermic	Typic Hapludults	Ultisols.
Smithdale	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Susquehanna	Fine, montmorillonitic, thermic	Vertic Paleudalfs	Alfisols.

and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated, or those that have a fragipan that interferes with the growth of roots or movement of water. The features used are self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), and the like. The names of great groups have three or four syllables and are made by adding a prefix to the name of the suborder. An example is Udifluent; *Udi* meaning humid, *fluv* for flood plain, and *ent* from Entisols.

SUBGROUP.—Great groups are divided into subgroups, one representing the central (typic) segment of a group, and others, called intergrades, that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside the range of another great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group. An example is Typic Udifluent, a typical Udifluent.

FAMILY.—Families are separated within a subgroup primarily on the basis of properties important to the growth of plants or on the behavior of soils when used for engineering. Among properties considered are texture, mineralogy, reaction, permeability, and consistence. A family name consists of a series of adjectives that precede the subgroup name. An example is the sandy, mixed, thermic family of Typic Udifluents.

SERIES.—The series is a group of soils that have major horizons that, except for the texture of the surface layer, are similar in important characteristics and arrangement in the profile. The soil series generally is given the name of a geographic location near the place where a soil of that series was first observed and mapped.

Physical and Chemical Analyses

Physical and chemical data are used by the soil scientist to classify soils. In table 10 results of laboratory analyses of samples of the Ariel and Gillsburg soils are given. These samples were taken from selected sites in Amite County. The profiles of these soils are described in the section "Descriptions of the Soils." The samples were analyzed in the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural Experiment Station. The methods and procedures that were used in the analyses are explained in the following paragraphs.

Particle-size distribution was determined by the hydrometer method as described by Day (4). Soil reaction, or pH value, was measured with a glass electrode in a 1:1 ratio soil-water suspension. Organic carbon in the sample was analyzed by the Walkley-Black method (6), a process of sulfuric acid-potassium dichromate digestion. The organic-matter content was determined by multiplying the percentage of organic carbon by the conversion factor, 1.72.

The cation exchange capacity was determined by saturating the sample with calcium and then replacing the calcium by leaching the sample with neutral, normal ammonium acetate. The amount of exchangeable calcium was determined by atomic absorption. Exchangeable cations were extracted from samples by neutral, normal ammonium acetate (2, 14). The exchangeable sodium and potassium were measured by the use of a flame-spectrophotometer, and the exchangeable calcium and magnesium were measured by atomic absorption. Extractable hydrogen was analyzed by the barium chloride-triethanolamine method (2, 14). Base saturation was calculated as the sum of exchangeable bases divided by the sum of exchangeable bases plus extractable hydrogen and multiplied by 100.

General Nature of the County

This section discusses the settlement and development of Amite County. It also describes the physiography, drainage, relief, climate, and trends in farming. Population and farm data are based mainly on reports of the U.S. Bureau of the Census.

Settlement and Development

The area that is now Amite County was organized in 1809 and was named from the Amite River. Liberty has been the county seat since Amite County was organized.

The early settlers of Amite County were of English descent. They were farmers, traders, and industrialists who came from Georgia, North Carolina, and South Carolina. They settled in areas near the present towns of Gloster and Liberty, but the largest settlements were near Zion Hill and Smithdale and in areas east of Centreville.

The early settlers depended on streams, rivers, and roads for travel and for transportation of freight. Later, the Yazoo and Mississippi Valley Railroad and the Liberty-White Railroad were used for travel and for transportation of farm products.

In 1970 the population of Amite County was 13,763 and the population of Liberty was 612.

Physiography, Drainage, and Relief

Amite County is in the southwestern part of Mississippi. Most of the county is in the Thin Loess physiographic region, but the southeastern part is in the Lower Coastal Plain.

The county is a plain, 400 to 500 feet above sea level, that has been cut by several broad, shallow valleys and numerous small drainageways. In the northwestern part is a rough, broken, hilly area. The rest of the county is undulating, rolling, and hilly and is broken by wide gently sloping ridges and level strips along the rivers and creeks.

Six major streams and numerous tributaries drain the county. The central and largest part of the county is drained by the East Fork Amite River and the West

TABLE 10.—

[Analyzed by the Soil Genesis and Morphology Laboratory of the

Soil	Horizon	Depth from surface	Particle-size distribution					
			Total clay (<0.002 mm)	Total silt (0.05 to 0.002 mm)	Total sand (2.0 to 0.05 mm)	Very fine sand (0.10 to 0.05 mm)	Fine sand (0.25 to 0.10 mm)	Medium sand (0.5 to 0.25 mm)
		<i>Inches</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Ariel silt loam.	Ap1	0-5	12.9	74.1	13.0			
	Ap2	5-8	14.2	75.0	10.8			
	B21	8-25	15.8	74.4	9.8			
	B22	25-30	14.9	74.7	10.4			
	A2b	30-39	13.7	72.5	13.8			
	B21b	39-54	12.8	73.5	13.7			
	B22b	54-65	17.7	74.6	7.7			
Gillsburg silt loam.	A1	0-4	14.3	72.3	13.4			
	B21	4-17	19.0	71.5	9.5	3.4	3.2	2.8
	B22	17-33	15.7	74.4	9.9	3.9	3.7	2.3
	A2b	33-42	16.2	74.4	9.4	2.9	3.1	3.4
	A2b&Bgb	42-60	18.7	67.6	13.7	2.9	5.6	5.2
	Btgb	60-65	16.3	64.0	19.7	2.5	10.5	6.7

Fork Amite River. A small part of the northeastern part is drained by the Tangipahoa River; the southeastern part by the Tickfaw River; the southwestern part by Beaver Creek and Comite Creek; and the northwestern part by the Homochitto River and its tributaries, Brushy Creek and Foster Creek. Many branches extend from each of these streams and form a broken pattern of narrow valleys and ridges. In many places the ridgetops are 100 feet higher than the valley floors.

The surface drainage in most of the county is approaching maturity, but there are a few areas in the uplands that do not have surface drainage channels. Floods occur on the flood plains, but the water does not stand on the surface for long periods. Small areas on the bottom lands, however, are under water for long periods. These areas need small dragline ditches and V-type and W-type ditches for drainage.

The relief of Amite County ranges from nearly level areas on flood plains to very steep areas on uplands. Elevation ranges from 136 feet above sea level along the Homochitto River to 500 feet in the northeastern part of the county. Elevation at Liberty is 315 feet, and at Gloster it is 434 feet.

Climate⁵

Amite County is in the Southwest Division of Mississippi. This division is an agricultural grouping of 10 counties that generally are similar in climate. Temperature and precipitation data that are applicable to Amite County are given in table 11.

Subtropical and humid conditions prevail in Amite County. Alternately, warm moist air moves northward

⁵ E. J. SALTSMAN, climatologist for Mississippi, National Weather Service, U.S. Department of Commerce, helped to prepare this section.

from the Gulf of Mexico, and cold dry air moves southward from Canada. The transition from one air-mass to another frequently brings abrupt weather changes. In winter, the weather cycle is generally rain; a few relatively warm, balmy days; and finally more rain. Cold weather is generally of short duration. In some years there is no measurable snowfall in Amite County, but in other years, 2 to 4 inches or more of snow falls in January, February, or March. The ground freezes occasionally, but it generally thaws rapidly.

The winds from the Gulf of Mexico bring warm, moist air that is favorable to the sporadic development of thundershowers. During summer, local peak accumulation of rain results where thunderstorms occur in the same area for several days. Occasionally during summer, a change in the pressure distribution brings westerly to northerly winds. When this change is extended, it results in a period of drier hot weather. If prolonged, it may result in droughty conditions that affect farming and that increase the danger of forest fire. There have been periods when no rain has fallen at Liberty for as much as a month or more.

Late in fall, in winter, and early in spring, thunderstorms that are generally associated with the passing weather systems are likely to occur at any hour, and these storms are more apt to be accompanied by strong winds. Heavy rains of more than one-fourth of an inch in 5 minutes may fall in any season. More than 3 inches of rain a day is likely any month and can cause local flash flooding. Occasionally, torrential rain occurs.

On December 22, the winter solstice, the sun is above the horizon in Amite County for about 10 hours and 8 minutes. After that, the length of the day increases until June 21, the summer solstice, when the sun is above the horizon about 14 hours and 11 min-

Laboratory data

Mississippi Agricultural Experiment Station. The symbol < means less than]

Reaction (1:1 H ₂ O)	Organic matter	Cation exchange capacity by ammonium acetate	Exchangeable cations (Milliequivalents per 100 grams of soil)					Base saturation by sum of cations
			Calcium	Magnesium	Potassium	Sodium	Hydrogen	
<i>pH</i>	<i>Percent</i>	<i>Milliequivalents per 100 grams of soil</i>						<i>Percent</i>
	1.98							
	1.05							
5.3	.70	10.0	0.6	0.3	0.2	0.1	8.8	12
5.1	.62	8.0	.4	.3	.2	.2	6.9	14
5.1	.46	6.2	.1	.3	.2	.1	5.5	13
5.3	.55	5.7	.1	.3	<.1	.2	5.1	10
5.3	.46	11.9	.1	.5	.1	.7	10.5	13
	2.08							
5.0	.55	9.3	.3	.4	.1	<.1	8.7	8
4.9	.55	8.3	.1	.4	.1	.1	7.7	7
5.2	.55	9.8	.1	.8	.1	.2	8.4	12
5.0	.46	12.4	.1	1.6	<.1	.6	10.1	19

TABLE 11.—Temperature and precipitation

[All data from Liberty Station, Amite County]

Month	Temperature				Average number of days with—		Precipitation			Average snowfall
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Maximum tempera- ture of 90° F or above	Minimum tempera- ture of 32° F or below	Average total	One year in 10 will have—		
			Maximum tempera- ture equal to or higher than—	Minimum tempera- ture equal to or lower than—				Less than—	More than—	
	^{°F}	^{°F}	^{°F}	^{°F}			<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
January	60	37	76	18	0	13	4.7	1.9	8.2	0.1
February	64	39	77	23	0	9	5.2	2.3	8.8	.3
March	69	44	81	28	0	5	4.8	1.4	9.1	.3
April	78	54	86	39	(¹)	(¹)	5.2	1.3	10.3	(²)
May	85	61	92	49	5	0	4.9	2.0	8.3	0
June	90	67	97	59	18	0	5.2	1.7	9.5	0
July	91	70	97	64	23	0	6.3	3.0	10.2	0
August	91	69	96	63	23	0	4.0	1.4	7.5	0
September	88	64	95	54	14	0	4.0	.8	7.2	0
October	80	52	90	36	2	1	2.8	.3	6.3	0
November	70	43	81	27	0	6	3.4	.9	6.8	(³)
December	62	38	76	22	0	12	5.8	2.9	9.4	(³)
Year	77	53	³ 98	⁴ 15	85	46	56.3	40.8	70.4	.7

¹ Less than one-half day.

² Trace.

³ Average annual highest temperature.

⁴ Average annual lowest temperature.

utes. In a typical year the county receives slightly less than two-thirds of the possible sunshine.

Table 12 gives probabilities of specified temperatures occurring in spring and in fall in Amite County. These data are based on records from May 1949 to December 1970 and have been adjusted, where necessary, for seasons that did not have temperatures as low as the indicated threshold. Temperatures were measured in a standard Weather Service instrument shelter in which a thermometer was placed 4½ feet above the ground. On a clear, calm night, shelter-level temperature generally is several degrees warmer than the air temperature near the ground. Under these conditions, frost could form on the vegetation at ground level, even though the temperature in the shelter is warmer than 32° F. The freeze-free period between the last 32° temperature in spring and the first in fall is the growing season. The effect of temperature varies according to the kind of vegetation, but the data in table 12 are applicable to most farming in Amite County.

At Liberty the earliest fall temperature of 32° or below was recorded on October 20, 1964 (30°), and the latest in spring was March 15, 1950 (31°). The number of days in a year that have temperatures of 32° or lower averages 46 and ranges from more than 75 to less than 25. The earliest spring temperature of 90° or higher was recorded on April 12, 1963 (90°), and the latest in fall was October 29, 1963 (90°). The number of days in a year that have temperatures of 90° or higher averages 85 and ranges from more than 120 to less than 50.

Windspeed is generally less than 10 miles an hour. Winds that are stronger than 10 miles per hour occur with passing fronts, thunderstorms, or squall lines and with intense, slow-moving, low-pressure disturbances that advance from the west. Generally, hurricanes that pass inland and close by cause only minor wind damage, but the attendant rain results in much damage and lowlands are flooded.

Farming

The early settlers in Amite County found a heavy growth of virgin trees, mainly pine, and a few areas along the streams that had been cleared by the Indians for corn, melons, and beans. For sustenance, the settlers depended mainly on fish and game, supplemented with corn grown in small fields and vegetables grown in gardens.

Since the settlement of this county, farming has been the major industry. The first crops of importance were cotton, corn, and rice. By 1909 cotton was the principal cash crop. It continued as the main crop for many years, but by 1969 only 1,045 acres was in cotton (15).

As cotton declined in importance, greater emphasis was placed on improved pasture and the production of beef cattle and dairying. In 1969, 61,444 acres was used for pasture or grazing.

In 1969 the farms in the county reported 42,699 cattle, 3,691 hogs and pigs, 1,186 horses and ponies, 60 sheep and lambs, and 16,937 chickens. In 1969 corn was grown on 3,992 acres, soybeans on 5,428 acres, small grain for silage, hay, or dry forage on 203 acres, cotton on 1,045 acres, and vegetables harvested for sale on 158 acres.

The number of farms in Amite County decreased from 3,868 in 1939 to 1,105 in 1969. In the same period, the acreage used for farms decreased from 302,865 acres to 226,164 acres. The average farm was 204.6 acres in 1969, compared with 78.3 acres in 1939.

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TABLE 12.—Probability of last freezing temperature in spring and first in fall

[All data from Liberty Station, Amite County]

Probability	Dates for given probability and temperature				
	24° F or lower	28° F or lower	32° F or lower	36° F or lower	40° F or lower
Spring:					
1 year in 10 later than.....	March 21	March 30	April 6	April 16	May 3
2 years in 10 later than.....	March 7	March 19	April 1	April 11	April 28
5 years in 10 later than.....	February 8	February 26	March 22	April 2	April 18
Fall:					
1 year in 10 earlier than.....	November 16	November 1	October 23	October 17	October 9
2 years in 10 earlier than.....	November 22	November 7	October 27	October 21	October 14
5 years in 10 earlier than.....	December 4	November 18	November 3	October 28	October 22

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Glossary

Acidity, soil. See Reaction, soil.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed 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 capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Buried soil. A developed soil, once exposed but now overlain by more recently formed soil.

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 clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Complex, soil. A mapping unit consisting of different kinds of soils that occur in such small individual areas or in such an intricate pattern that they cannot be shown separately on a publishable soil map.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium

carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Contour farming. Plowing, cultivating, planting, and harvesting in rows that are at right angles to the natural direction of the slopes or that are parallel to terrace grade.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, 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 different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Diversion ditch. A broad-bottom ditch that is built to divert runoff from its natural course and, thus, to protect areas downslope from the effects of such runoff.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil

horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Leaching. The removal of soluble materials from soils or other material by percolating water.

Loess. Fine-grained material, dominantly of silt-sized particles, that has been deposited by wind.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineralogical, and biological properties of the various horizons, and their thickness and arrangement in the soil profile.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of 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 these: *fine*, less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium*, ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse*, more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Permanent pasture. Pasture that is on the soil for a long time, in contrast to rotation pasture, which is on the soil only a year or two because it is grown in rotation with other crops.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow*, *slow*, *moderately slow*, *moderate*, *moderately rapid*, *rapid*, and *very rapid*.

Phase, soil. A subdivision of a soil series or other unit in the soil classification system made because of differences in the soil that affect its management but do not affect its classification in the natural landscape. A soil series may be divided into phases because of differences in slope, stoniness, thickness, or some other characteristic that affects its management but not its behavior in the natural landscape.

Podzolization. The process by which a soil is depleted of bases, becomes more acid, and develops a leached surface layer.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff (hydraulics). The part of the precipitation upon a drainage area that is discharged from the area in stream channels. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called groundwater runoff or seepage flow from ground water.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. 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 together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Type, soil. A subdivision of the soil series that is made on the basis of differences in the texture of the surface layer.

Upland (geology). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

GUIDE TO MAPPING UNITS

For a complete description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. The suitability of the soils for use as cropland is discussed under "Crops and Pasture" and in the description of each mapping unit. The capability classification system is described on pages 19 to 20. For information on managing the soils for woodland, see pages 21 to 22; for wildlife, see page 23. Other information is given in tables as follows:

Acresage and extent, table 1, page 6.
 Estimated yields, table 2, page 21.
 Engineering uses of the soils, tables 5, 6,
 and 7, pages 28 through 33.

Town and country planning,
 table 8, page 34.
 Laboratory data, table 10,
 page 40.

Map symbol	Mapping unit	De-scribed on page	Capability unit	Woodland suitability group
			Symbol	Symbol
Ar	Ariel silt loam-----	6	IIw-1	1w8
Br	Bruno soils-----	7	Vw-1	2s5
Bu	Bude silt loam-----	7	IIIw-1	1w8
Co	Collins silt loam-----	8	IIw-2	1w8
Gb	Gillsburg silt loam-----	9	IIw-3	1w8
OrB	Ora loam, 2 to 5 percent slopes-----	9	IIe-3	2o7
OrB3	Ora loam, 2 to 5 percent slopes, severely eroded-----	10	IVe-4	2o7
OrC	Ora loam, 5 to 8 percent slopes-----	11	IIIe-5	2o7
OrC3	Ora loam, 5 to 8 percent slopes, severely eroded-----	11	IVe-4	2o7
Pe	Peoria silt loam-----	12	IIIw-2	3w9
PrB	Providence silt loam, 2 to 5 percent slopes-----	12	IIe-2	2o7
PrB3	Providence silt loam, 2 to 5 percent slopes, severely eroded-----	13	IIIe-4	2o7
PrC	Providence silt loam, 5 to 8 percent slopes-----	13	IIIe-3	2o7
PrC3	Providence silt loam, 5 to 8 percent slopes, severely eroded-----	13	IVe-3	2o7
RuA	Ruston sandy loam, 0 to 2 percent slopes-----	14	I-1	2o1
RuB	Ruston sandy loam, 2 to 5 percent slopes-----	15	IIe-1	2o1
RuB3	Ruston sandy loam, 2 to 5 percent slopes, severely eroded-----	15	IIIe-2	2o1
RuC	Ruston sandy loam, 5 to 8 percent slopes-----	15	IIIe-1	2o1
RuC3	Ruston sandy loam, 5 to 8 percent slopes, severely eroded-----	15	IIIe-2	2o1
SaD	Saffell gravelly sandy loam, 8 to 12 percent slopes-----	16	IVe-2	4f2
SaE	Saffell gravelly sandy loam, 12 to 30 percent slopes-----	16	VIIe-3	4f2
SmD	Smithdale sandy loam, 8 to 12 percent slopes-----	17	IVe-1	2o1
SmD3	Smithdale sandy loam, 8 to 12 percent slopes, severely eroded-----	17	VIe-1	2o1
SmE	Smithdale sandy loam, 12 to 35 percent slopes-----	17	VIIe-1	2o1
SmE3	Smithdale sandy loam, 12 to 35 percent slopes, severely eroded-----	18	VIIe-2	2o1
SsE	Susquehanna-Smithdale association, hilly-----	18	-----	---
	Susquehanna part-----	--	VIIe-4	3c2
	Smithdale part-----	--	VIIe-1	2o1

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