Series 1961, No. 21 Issued March 1965

SOIL SURVEY

Suwannee County, Florida

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
UNIVERSITY OF FLORIDA AGRICULTURAL EXPERIMENT STATIONS

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY will serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; aid foresters in managing woodlands; and add to our knowledge of soil science. This survey will also help in rural planning and land appraisal and will assist buyers in selecting the proper soil for the intended use.

Locating soils

Use the index to map sheets at the back of this report to locate areas on the detailed soil map. The index is a small map of the county that shows what part of the county is represented on each sheet of the detailed map. On the detailed map, the boundaries of the soils are outlined, and each soil is identified by a symbol. For example, the symbol BfB identifies Blanton fine sand, high, 0 to 5 percent slopes. The symbol is inside the area if there is enough room; otherwise, it is outside the area and a pointer shows where the symbol belongs. All of the soils shown on the detailed map are described in the section "Descriptions of the Soils."

Finding information

The "Guide to Mapping Units" at the back of this report can help readers in using the map and the report. This guide lists each soil mapped in the county and the page where each is described. It also lists, for each soil, the capability unit and the woodland suitability group in which the soil has been placed, and the pages where each of these groupings are described. Readers will want to refer to different parts of the report, according to their special interests.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of the Soils." In the section "Use of the Soils for Agriculture," they can learn about management and yields. In that section the soils are placed in capability units, groups of soils that need about this same management and respond in about the same way. For example, Blanton fine sand, high, 0 to 5 percent slopes, is in capability unit IIIse-2, and management suitable for this soil is discussed in the description of that unit.

Foresters and others interested in woodland can refer to the section "Use of the Soils for Woodland," where the soils are grouped according to their suitability for specified kinds of trees and the factors affecting management of woodland are explained.

Sportsmen and others interested in wildlife can find in the section "Use of the Soils for Wildlife" information about the food and habitat preferences of the more common kinds of wildlife in the county.

Engineers and builders will want to refer to the section "Engineering Characteristics of the Soils."

People interested in science will find information about how the soils were formed and how they are classified in the section "Formation and Classification of Soils."

Students, teachers, and others will find information about soils and their management in various parts of the report, depending on their particular interest.

Newcomers in Suwannee County and others who are not familiar with the county will be interested in the sections "General Soil Map," where broad patterns of soils are described, and "General Nature of the County," which discusses climate, settlement, agriculture, industry, transportation, and related topics.

* * * * * *

Fieldwork for this survey was completed in 1961. Unless otherwise indicated, all statements in the report refer to conditions in Suwannee County at that time. This soil survey was made cooperatively by the Soil Conservation Service and the University of Florida Agricultural Experiment Stations. This survey is the basis for part of the technical assistance the Soil Conservation Service furnishes to the Suwannee River Soil Conservation District, which was organized in 1942.

COVER PICTURE

The Suwannee River borders Suwannee County on three sides. Soils of the adjoining Blanton-Kalmia-Swamp soil association are flooded every 5 to 10 years and are used as woodland.

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SOIL SURVEY OF SUWANNEE COUNTY, FLORIDA

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF FLORIDA AGRICULTURAL EXPERIMENT STATIONS

SUWANNEE COUNTY is in the northern part of Florida (fig. 1). Live Oak, the county seat, is on U.S. Highway No. 90 about midway between Tallahassee and Jacksonville. Figure 1 shows distances by air from Live Oak to other cities in Florida. The Suwannee River is the boundary of the county on the north, west, and southwest; the Ichetucknee and Santa Fe Rivers, on the southeast; and Columbia County, on the east. The county is approximately 34 miles long and 27 miles wide. It has a land area of 433,280 acres, or 677 square miles.

Suwannee County is one of the major agricultural counties in the State; it ranks second in number of farms and farmers. The principal crops are bright tobacco, watermelons, corn, peanuts, and small grains. Tobacco is the main cash crop. Livestock raising is also a major enterprise in the county.

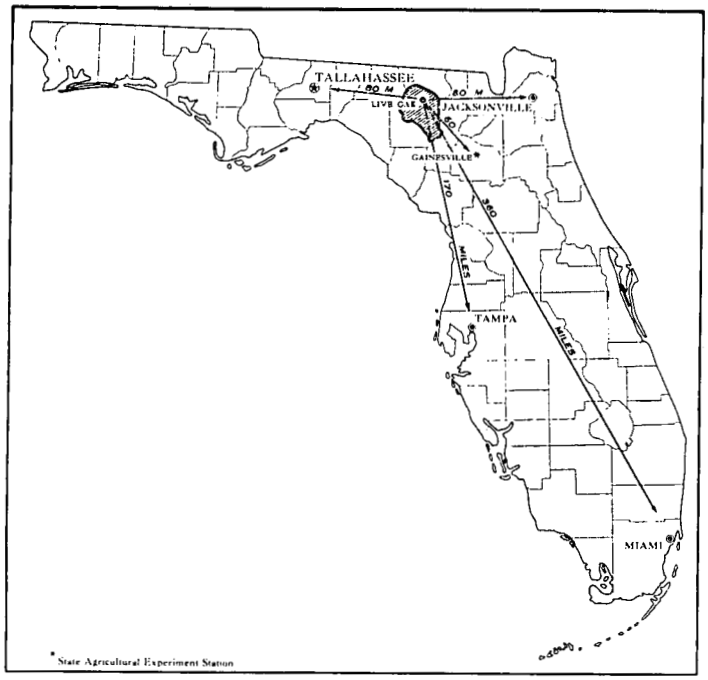

Figure 1.—**Location of Suwannee County in Florida.**

How Soils are Mapped and Classified

Soil scientists made this survey to learn what kinds of soils are in Suwannee County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; 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 roots of plants.

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. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

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. Blanton and Gainesville, 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 go with their behavior in the natural, untouched landscape. Soils of one series can differ somewhat in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man.

Many soil series contain soils that differ in texture of their surface layer. According to such differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. All of the soils in the

[1] Others participating in the field survey were W. T. JACOBS, JR., University of Florida Agricultural Experiment Stations, and O. E. CRUZ, E. H. RAWLS, and C. H. YOUNG, Soil Conservation Service.

Gainesville series, for example, that have a surface layer of loamy fine sand belong to one soil type—Gainesville loamy fine sand.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into phases. The name of a soil phase indicates a feature that affects management. For example, Gainesville loamy fine sand, 2 to 5 percent slopes, is one of several phases of Gainesville loamy fine sand, a soil type that ranges from nearly level to sloping.

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 greatly help in drawing boundaries accurately. The soil map in the back of this report 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 management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. 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 type or soil phase.

In preparing some detailed maps, the soil scientists have a problem of delineating areas where different kinds of soils are so intricately mixed and occur in individual areas of such small size that it is not practical to show them separately on the map. Therefore, they show this mixture of soils as one mapping unit and call it a soil complex. Ordinarily, a soil complex is named for the major kinds of soil in it, for example, Bowie-Blanton complex. Two or more different kinds of soils may also be mapped as a single unit—an undifferentiated group—if the differences between them are too small to justify separate recognition. For example, in this county the mapping unit Grady, Bladen, and Coxville soils is an undifferentiated group. Also, on most soil maps, areas are shown that are so rocky, so shallow, or so frequently worked by wind and water that they scarcely can be called soils. These areas are shown on a soil map like other mapping units, but they are given descriptive names, such as Local alluvial land, and are called land types rather than soils.

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 soils in other places are 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 soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in a way that it is readily useful to different groups of readers, among them farmers, ranchers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil survey reports. On basis of the yield and practice tables and other data, the soil scientists set up trial groups and test them by further study and by consultation with farmers, agronomists, engineers, and others. Then, the scientists adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

In mapping a county or other large tract, it is fairly easy to see many differences as one travels from place to place. Some of the differences are in shape, steepness, and length of slopes; in the course, depth, and speed of streams; in the width of the bordering valleys; in the kinds of wild plants; and in the kinds of agriculture. With these more obvious differences there are other less easily noticed differences in the patterns of soils. The soils differ along with the other parts of the environment.

By drawing lines around the different patterns of soils on a small-scale map, one may obtain a map of the general soil areas, or, as they are sometimes called, soil associations. Such a map is useful to those who want to compare different parts of the county, or who want to locate large areas suitable for some particular kind of agriculture or other broad land use.

Described in the pages following, and shown on the colored map at the back of this report, are the nine soil associations in this county.

1. *Blanton (high)-Lakeland association*

Well-drained to excessively drained, acid sands more than 30 inches deep to fine-textured material

This association occurs as a wide band parallel to the Suwannee River along the northern, western, and southern boundaries. Smaller areas are scattered on higher ridges. This association is the most extensive in the county; it makes up about 33 percent of the county's acreage.

The soils in this association are gently undulating. Shallow depressions are common. No definite stream pattern is evident, but water drains rapidly through the highly permeable soils and porous substrata.

Blanton soils, high, make up about 88 percent of this association, and Lakeland soils, about 8 percent. Arredondo soils, Blanton soils, low, and Local alluvial land make up the rest.

The surface layer of Blanton soils, high, and that of the Lakeland soils, is gray to light-gray sand. It overlies a layer of light-gray, very pale brown, pale-brown, or yellow sand that extends to a depth of 30 inches or more.

These soils are strongly acid, low in organic-matter content, and very low in natural fertility. They have a very low available moisture capacity.

Good stands of longleaf pine originally covered much of the acreage, but scrub oak, small shrubs, and wiregrass now are the dominant vegetation.

About half of the acreage has been cleared for general farming. Tobacco, watermelons, corn, hairy indigo, and small grain are principal crops. Droughts, which are common late in spring, greatly reduce yields. In years when rainfall is adequate throughout the growing season, crop yields are fair to good. Slash pine grows moderately well on these soils. Many formerly cultivated fields and cutover areas that supported scrubby vegetation have been planted to pine.

The soils in this association are rated good as homesites; they are suitable as drainage fields for septic tanks. They would be rated excellent as homesites, but they are somewhat droughty and need to be watered frequently during dry periods. Landscape plants for these soils should be carefully selected. Except for the steeper ones, these soils are favorable to very favorable for industrial and transportation uses. They are favorable to most favorable for recreational uses, such as for golf courses, campsites, and nature trails.

2. *Blanton-Chiefland association*

Well-drained to excessively drained, acid to neutral sands 30 to 72 inches deep to fine-textured material or limestone

This association occurs as a large, nearly level area in the southern part of the county. It makes up about 5 percent of the county's acreage.

There are no streams within the area; water drains through the soils into porous substrata. The underlying limestone is responsible for the numerous small sinks and shallow depressions in the area.

Dominant in this association are Blanton and Chiefland soils as they occur in the complex, Blanton-Chiefland fine sands. This complex makes up 96 percent of the association. Jonesville, Hernando, and Archer soils make up the rest.

The surface layer of both Blanton fine sand and Chiefland fine sand is gray to very dark gray; it overlies pale-brown, very pale brown, or light-gray fine sand. Limestone is generally at a depth of 36 to 120 inches. In most places a few inches of fine-textured material overlies the limestone.

Jonesville soils are similar to Chiefland soils but have a brighter colored subsurface layer. Archer and Hernando soils are also similar to Chiefland soils but their fine-textured subsoil begins at a depth of less than 30 inches.

The soils in this association are low in natural fertility and in organic-matter content. Their available moisture capacity is low.

Originally the area was covered with hardwoods and pines, but now most of it has been cleared for cultivation. Corn, tobacco, peanuts, watermelons, small grain, and other farm crops are grown. Hairy indigo and bahiagrass are grown for pasture. In years of well-distributed rainfall, the soils produce good yields if well managed. In years when rainfall is low during the growing season, the soils are droughty and produce poor yields. The soils are well suited to pine. In recent years, many formerly cultivated fields have been reforested with pine trees.

Several pits have been developed to mine the high-grade limestone.

The soils in this association are suitable as sites for the subdivision type of housing. Because they are shallow to bedrock, in places they are somewhat less suitable as sites for the estate type of housing that requires septic tanks. Each site where a septic tank is to be installed should be investigated individually. These soils range from favorable to somewhat unfavorable for industrial and transportation uses. They are favorable for natural recreation purposes and very favorable to most favorable as improved recreation sites.

3. *Arredondo-Kanapaha association*

Well-drained to somewhat poorly drained, slightly acid to neutral sands more than 30 inches deep to fine-textured material and derived from phosphatic material

This association occurs in an irregular pattern across the northern part of the county. A few small areas occur in the east-central and west-central parts. The total acreage is about 4 percent of the county.

Although most of the slopes are gentle, some of the steepest in the county occur within this association. Most of the few small streams in this county occur within or partly within this association.

Arredondo fine sand is the dominant soil; it makes up about 70 percent of the association. Kanapaha, Gainesville, Zuber, Blanton, Fort Meade, and Fellowship soils make up the rest.

Arredondo fine sand is deep, gently sloping, and well drained. Its 6- to 8-inch surface layer is dark-gray to very dark grayish-brown fine sand. It overlies a layer of brown or yellowish-brown fine sand or loamy fine sand that extends to a depth of more than 30 inches. The minor soils, for the most part, have a sandy clay loam to clay loam subsoil at a depth of less than 30 inches. The steeper soils are shallower to fine-textured strata than the gently sloping ones. Occasionally seepage occurs in places on the steeper soils.

The soils are dominantly moderate to high in natural fertility and medium in organic-matter content. Their available moisture capacity is moderate.

Originally this association was covered with hardwoods and a few pines, but now most of it has been cleared for cultivation. The soils on the more gentle slopes are among the best in the county; they are used extensively for growing general farm crops. Those on steeper slopes are well suited to improved pasture and to pine trees.

Except for those somewhat poorly drained soils on the steeper slopes and those in areas where weathered rock is near the surface, the soils in this association are most favorable as sites for both the estate and subdivision types of residences. They range from somewhat unsuitable to most suitable for industrial and transportation uses. They are suitable as natural sites for recreation and most suitable as improved sites for recreation.

4. *Blanton (low) association*

Moderately well drained, acid sands more than 30 inches deep to fine-textured material

This association occurs as large areas in the southern and eastern parts of the county and as smaller areas across the northern part. Its acreage is about 27 percent of the county.

The areas are nearly level or gently undulating. The variation in relief is caused by solution of the underlying limestone rather than by surface erosion. There is no well-defined stream pattern; water drains through the rapidly permeable sand into the porous substrata. The ground water normally is at 3 to 5 feet below the surface.

Blanton fine sand, low, is the dominant soil. It makes up about 80 percent of the association. Blanton, high; Klej, Plummer, Rutlege, Leon, and Scranton soils make up the rest.

The dominant soil, the Blanton, has a gray or dark-gray sandy surface layer 6 to 8 inches thick. It overlies light-gray to pale-brown sand that extends to a depth of more than 30 inches. Fine-textured substrata occur at a depth of 30 to 42 inches in some places and at a depth of more than 60 inches in others.

Forests of longleaf pine originally covered this association. Now, the vegetation consists of second-growth pine, scrub oak, and wiregrass. Most of the acreage has been cleared, however, and is used extensively for growing corn, tobacco, watermelons, small grain, and improved pasture grasses. Because the soils are low in natural fertility and leach rapidly, complete fertilizers and soil-building crops are needed continuously for good yields. In recent years many acres have been planted to slash pine, which grows well on these soils.

Blanton fine sand, low, ranges from favorable to somewhat unfavorable as a site for estate-type housing. It is very favorable as a site for the subdivision type of housing that does not require septic tanks. It ranges from favorable on sloping areas to most favorable on gently sloping or nearly level areas for industrial and transportation uses and for natural and improved recreation purposes.

Because the minor soils occur as small areas in this association, they cannot be rated other than individually in a given area.

5. *Blanton (low)-Susquehanna-Bowie association*

Moderately well drained, nearly level, acid sands more than 30 inches deep to fine-textured material, and interspersed sands that are less deep

This association covers an extensive area in the central part of the county. It takes in about 13 percent of the county's acreage.

The area is gently undulating because underlying limestone has been dissolved by water. There are no streams within the area. Water drains through numerous sand pockets and sinks into porous limestone.

Blanton fine sand, low, is the dominant soil. It makes up about 70 percent of the association. Bowie soils make up about 15 percent; Susquehanna soils, about 10 percent; and Bayboro, Weston, Plummer, and Rutlege make up the rest.

The principal soils consist of light-colored fine sand overlying finer textured material at a depth of more than 30 inches. Interspersed with these deep sandy areas, in a rather intricate pattern, are numerous areas in which the fine sand is less than 30 inches deep and the finer textured underlying material consists of very slowly permeable to moderately permeable sandy clay or clay.

These soils are low in natural fertility and low to medium in organic-matter content. They have a low to moderate available moisture capacity.

The original vegetation consisted predominantly of longleaf pine. The stands of pine were cut, and the vegetation now consists of scattered second-growth pine trees, scrub oaks, and wiregrass.

Much of the acreage has been cleared for cultivation. Crops grown include corn, tobacco, watermelons, cowpeas, and small grains. Considerable acreage is used as improved pasture, and some formerly cultivated fields have been planted to slash pine.

Because of the complexity of this association, its suitability for some uses can be estimated only in general terms. Sites on these soils for houses requiring a septic tank should be closely examined and carefully chosen. Ordinarily, the soils are favorable for transporation uses, and they range from favorable to somewhat unfavorable for industrial uses. They are most favorable as natural or improved sites for recreation.

6. *Susquehanna-Bowie association*

Well-drained to somewhat poorly drained, acid soils that have a sandy surface layer 8 inches to more than 3 feet deep over a clayey subsoil

This association occurs in the central part of the county, and it takes in about 8 percent of the county's acreage.

The soils that make up this association are so intricately mixed that they were not mapped separately. Most areas are gently undulating, but a few small areas are steep. There is no definite pattern of surface drainage.

Susquehanna fine sand and Bowie fine sand are the dominant soils. Blanton fine sand, low, is intricately mixed with these soils in a few places.

The dominant soils have a surface layer of light-colored fine sand and a subsoil of sandy clay loam to clay. The two soils differ mainly in thickness of their surface layer and in texture and color of their subsoil. Within short distances, the soils grade from one to the other and the sandy surface layer ranges from less than 8 inches to more than 36 inches in thickness. The subsoil ranges from slightly mottled, brownish-yellow sandy clay loam to brown clay prominently mottled with red and light gray. The Bowie soil has a coarser textured, less prominently mottled, and more permeable subsoil than the Susquehanna soil.

Blanton fine sand, low, has a fine sand surface layer that extends to a depth of more than 30 inches.

The original vegetation consisted of forests of longleaf pine. Most of the pine trees were cut, and the vegetation now consists of second-growth pine trees, scrub oaks, and wiregrass.

The soils are moderately well suited to general farming. Consequently, much of the acreage has been cleared for cultivation. Corn, small grains, tobacco, watermelons, and bahiagrass are grown successfully if the soils are well managed. The soils are well suited to pine trees, and many formerly cultivated fields have been planted to slash pine in recent years.

In the shallower areas of the Susquehanna soil, the slowly permeable, sticky clay subsoil creates management problems because it is near enough to the surface to affect tillage and crop roots.

Most of the soils in this association are very sticky, plastic, and impermeable. They are unfavorable sites for houses requiring a septic tank. If sewage lines are installed, they are favorable sites. They are somewhat unfavorable for industrial uses, favorable for transportation uses, and very favorable for natural recreation purposes, including hunting, camping, hiking, and studying nature.

7. *Leon-Plummer association*

Somewhat poorly drained, nearly level, very strongly acid sands that have a pan stained with organic matter within 30 inches of the surface, and interspersed very poorly drained sandy soils

This association occurs in the east-central and northern parts of Suwannee County. Its acreage is about 4 percent of the county.

Leon fine sand is the dominant soil. It makes up about 60 percent of the association; Plummer fine sand and Rutlege fine sand together make up about 15 percent; and Scranton fine sand and Blanton fine sand, low, make up the rest.

The dominant soil, the Leon, occurs on low, nearly level flats. It is somewhat poorly drained, strongly acid, deep, and highly leached. It is a typical "flatwoods" soil. It has a thin surface layer of gray to dark-gray fine sand that overlies a layer of light-gray or nearly white fine sand. A dark-brown to black pan stained with organic matter is at a depth between 12 and 30 inches. In most places 2 feet or more of light-colored sand underlies the pan, but in some places fine-textured substrata are beneath the pan. The ground water normally fluctuates between 12 and 36 inches below the surface.

Plummer fine sand and Rutlege fine sand occur in low, wet areas. They are very poorly drained. Scranton fine sand occupies only a few areas. It is somewhat poorly drained. It has a thicker and darker surface layer than Leon fine sand and does not have a pan stained with organic matter. Blanton fine sand, low, occurs on a few isolated knolls. It is moderately well drained.

The original vegetation was typical "flatwoods" growth of longleaf pine, saw-palmetto, and wiregrass. The wetter areas produced a dense growth of swamp hardwoods, vines, and shrubs. The present vegetation is second-growth pine, saw-palmetto, and wiregrass. Since most of the soils are poorly suited to cultivation, few areas have been cultivated. The soils are best suited to pine trees and pasture.

The soils in this association are somewhat unfavorable sites for houses requiring a septic tank but favorable for those connected to sewage lines. They are very favorable for industrial and transportation uses because they occur mostly on broad, level flats. They are very favorable for recreation purposes, including small-game hunting, camping, hiking, and studying nature.

8. *Blanton-Kalmia-Swamp association*

Somewhat poorly drained to very poorly drained soils on flood plains of the Suwannee and Santa Fe Rivers

This association occurs as low, nearly level areas that border the Suwannee and Santa Fe Rivers. The areas range from a few feet to nearly a mile in width. They cover about 4 percent of the county.

The soils in this association are deep, but they vary in thickness of their surface layer. In some places the fine sand surface layer extends to a depth of more than 30 inches, and in others the sticky clay subsoil is near the surface.

The major soils are Blanton fine sand, low, and Kalmia fine sand. Also included are many areas of very poorly drained Swamp and a few isolated areas of poorly drained Leaf fine sand. The Blanton, Kalmia, and Leaf soils, as they occur in this association, are so intricately mixed that they were mapped as a soil complex.

Almost all of this association is covered by trees. Good stands of pine grow on the better drained soils, and a variety of swamp hardwoods on the lower, swampy soils. The dense growth of vines, shrubs, and noncommercial trees give a junglelike appearance to many areas.

Since most of the soils are in a low position and are flooded at 5- to 10-year intervals, they are best suited to use as woodland, but they are also suitable for recreational purposes. Wild turkey, gray squirrel, and other wildlife are plentiful.

9. *Alluvial land-Swamp association*

Very poorly drained soils in depressions

This association consists of several small ponded areas in the northeastern part of the county and a narrow wet strip next to a stream south of Wellborn. The total acreage is about 2 percent of the county.

Alluvial land makes up about 60 percent of the association, and Swamp makes up most of the rest.

The vegetation is predominantly cypress, bay, gum, and other wetland hardwoods. None of the areas have been cleared. Much of the acreage is covered with several inches of water for most of the year.

The soils in this association are not suitable sites for housing or industry. They are favorable for fresh-water fishing and small-game hunting, but otherwise they are somewhat unfavorable for recreational purposes.

Descriptions of the Soils

This section describes the soil series (groups of soils) and the mapping units (single soils) in Suwannee County. The procedure is to describe first each soil series, and then the mapping units in that series. Thus, to get full information on any one mapping unit, it is necessary to read the description of that unit and also the description of the soil series to which it belongs.

The first mapping unit that follows a description of a soil series contains a description of the soil profile, the major layers from the surface downward. This profile is considered typical, or representative, for all the soils in the series. If the profile for a given mapping unit

differs from this typical profile, the differences are stated in the description of the mapping unit, or they are apparent in the name of the mapping unit. Some technical terms are used in describing soil series and mapping units, simply because there are no nontechnical terms that convey precisely the same meaning. Many of the more commonly used technical terms are defined in the Glossary.

The acreage and proportionate extent of the mapping units are shown in table 1. Detailed technical descriptions of soil series are given in the section "Formation and Classification of Soils."

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

Map symbol	Soil	Area	Extent	Map symbol	Soil	Area	Extent
		Acres	*Percent*			*Acres*	*Percent*
Al	Alluvial land	8,390	2.0	BxC	Bowie-Blanton complex, 5 to 8 percent slopes	754	0.2
AhA	Archer-Susquehanna fine sands, 0 to 2 percent slopes	133	(1)	ChB	Chiefland fine sand, 0 to 5 percent slopes	2,571	.6
AhB	Archer-Susquehanna fine sands, 2 to 5 percent slopes	1,106	.3	ChC	Chiefland fine sand, 5 to 8 percent slopes	269	.1
AhC	Archer-Susquehanna fine sands, 5 to 8 percent slopes	205	(1)	FfB	Fellowship loamy fine sand, 2 to 5 percent slopes	302	.1
AnA	Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes	227	.1	FfC	Fellowship loamy fine sand, 5 to 8 percent slopes	305	.1
AnB	Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes	1,014	.2	FfD	Fellowship loamy fine sand, 8 to 12 percent slopes	302	.1
AnC	Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes	111	(1)	FmC	Fort Meade loamy fine sand, 5 to 8 percent slopes	157	(1)
ArB	Arredondo fine sand, 0 to 5 percent slopes	9,428	2.2	GaB	Gainesville loamy fine sand, 2 to 5 percent slopes	479	.1
ArC	Arredondo fine sand, 5 to 8 percent slopes	2,168	.5	GaC	Gainesville loamy fine sand, 5 to 8 percent slopes	164	(1)
ArD	Arredondo fine sand, 8 to 12 percent slopes	288	.1	GfB	Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes	138	(1)
AsB	Arredondo fine sand, moderately shallow, 0 to 5 percent slopes	531	.1	Gr	Grady fine sandy loam, thick surface	1,293	.3
AsC	Arredondo fine sand, moderately shallow, 5 to 8 percent slopes	539	.1	Gx	Grady, Bladen, and Coxville soils	887	.2
Bb	Bayboro fine sandy loam	303	.1	HdB	Hernando fine sand, 2 to 5 percent slopes	1,555	.4
BfB	Blanton fine sand, high, 0 to 5 percent slopes	113,879	26.3	HdC	Hernando fine sand, 5 to 8 percent slopes	359	.1
BfC	Blanton fine sand, high, 5 to 8 percent slopes	8,883	2.0	KaB	Kanapaha fine sand, 0 to 5 percent slopes	950	.2
BfD	Blanton fine sand, high, 8 to 12 percent slopes	956	.2	KaC	Kanapaha fine sand, 5 to 8 percent slopes	287	.1
BfE	Blanton fine sand, high, 12 to 35 percent slopes	267	.1	KfB	Klej fine sand, 0 to 5 percent slopes	551	.1
BhB	Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes	553	.1	LaB	Lakeland fine sand, 0 to 5 percent slopes	11,368	2.6
BmB	Blanton fine sand, low, 0 to 5 percent slopes	98,835	23.0	LaC	Lakeland fine sand, 5 to 8 percent slopes	529	.1
BmC	Blanton fine sand, low, 5 to 8 percent slopes	2,947	.7	LdB	Lakeland and Jonesville fine sands, 0 to 5 percent slopes	237	.1
BmD	Blanton fine sand, low, 8 to 12 percent slopes	176	(1)	LfA	Leon fine sand, 0 to 2 percent slopes	12,846	3.0
BnB	Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes	9,950	2.3	LmA	Leon fine sand, loamy substratum, 0 to 5 percent slopes	862	.2
BnC	Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes	853	.2	Ln	Leon and Ona fine sands	1,629	.4
BoB	Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes	49,546	11.4	Lo	Local alluvial land	2,169	.5
BoC	Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes	2,031	.5	Lp	Local alluvial land, phosphatic	280	.1
BtB	Blanton-Chiefland fine sands, 0 to 5 percent slopes	17,493	4.0	Mp	Mine pits and dumps	650	.1
BtC	Blanton-Chiefland fine sands, 5 to 8 percent slopes	398	.1	Pa	Peat	89	(1)
BuA	Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes	126	(1)	PdA	Plummer fine sand, 0 to 2 percent slopes	3,558	.8
BuB	Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes	3,288	.8	PdB	Plummer fine sand, 2 to 5 percent slopes	629	.1
BvB	Bowie fine sand, 2 to 5 percent slopes	366	.1	Pf	Plummer fine sand, depressions	521	.1
BvC	Bowie fine sand, 5 to 8 percent slopes	105	(1)	Ph	Plummer fine sand, high	3,553	.8
BwB	Bowie fine sand, thick surface, 2 to 5 percent slopes	1,565	.4	Pm	Plummer fine sand, moderately shallow	428	.1
BwC	Bowie fine sand, thick surface, 5 to 8 percent slopes	213	(1)	PrD	Plummer, Bladen, and Rains soils, 5 to 17 percent slopes	677	.2
BxB	Bowie-Blanton complex, 2 to 5 percent slopes	9,152	2.1	Ps	Pomello fine sand	437	.1
				Ru	Rutlege fine sand	1,395	.3
				SaB	Sandy and clayey land, gently sloping	4,972	1.1
				ScC	Sandy and clayey land, sloping	809	.2
				Sd	Scranton fine sand	1,629	.4

See footnote at end of table.

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

Map symbol	Soil	Area	Extent
		Acres	*Percent*
SfB	Susquehanna fine sand, 2 to 5 percent slopes	2,099	0.5
SfC	Susquehanna fine sand, 5 to 8 percent slopes	936	.2
SfC2	Susquehanna fine sand, 5 to 8 percent slopes, eroded	260	.1
SfD	Susquehanna fine sand, 8 to 12 percent slopes	166	(1)
ShB	Susquehanna fine sand, thick surface, 2 to 5 percent slopes	231	.1
SnB	Susquehanna-Blanton complex, 2 to 5 percent slopes	12,436	2.9
SnC	Susquehanna-Blanton complex, 5 to 8 percent slopes	1,405	.3
SnD	Susquehanna-Blanton complex, 8 to 12 percent slopes	133	(1)
Sw	Swamp	7,904	1.8
Wf	Weston fine sand, dark subsoil variant	534	.1
ZuB	Zuber loamy fine sand, 2 to 5 percent slopes	163	(1)
ZuC	Zuber loamy fine sand, 5 to 8 percent slopes	132	(1)
ZuC2	Zuber loamy fine sand, 5 to 8 percent slopes, eroded	169	(1)
ZuE	Zuber loamy fine sand, 8 to 35 percent slopes	97	(1)
	Total	433,280	100.0

[1] Less than 0.1 percent.

Alluvial Land (Al)

This level to nearly level land type consists of sediment from many different kinds of soils. It occurs on first bottoms and is frequently flooded. It varies widely in drainage and permeability, and in texture and color also, because amount and kind of sediment both differ from area to area and even within one area. The soil material deposited along stream channels is predominantly sand and loamy sand. The deposits away from the stream channels are finer textured material. In the more poorly drained areas, the soil material is gray and light gray.

Associated with Alluvial land are Plummer and Blanton soils and the Blanton-Kalmia-Leaf complex.

Frequent flooding and variable drainage generally make Alluvial land unsuitable for agriculture. Consequently, only a small acreage is cultivated. If the better drained areas are cleared and properly managed, they can produce favorable yields of improved pasture and trees. (Capability unit VIIws–1; woodland group 11.)

Archer Series

The soils in this series were derived from thin layers of acid marine sand, sandy clay, and clay overlying and influenced by limestone. They are nearly level to sloping. Depressions and knolls occur where the underlying limestone is near the surface. The soils are moderately well drained. There is no definite stream pattern. Surface water drains through the soil into the porous limestone.

The surface layer of Archer soils is gray to dark-gray fine sand, in most places 4 to 7 inches thick. It overlies grayish-brown loamy fine sand less than 24 inches thick that, in turn, overlies the subsoil. The upper 6 inches of subsoil is yellowish-red or yellowish-brown sandy clay or clay; the lower part is yellowish-brown clay prominently mottled with red and gray. Soft or hard limestone normally is at a depth of less than 48 inches.

Archer soils are closely associated with Susquehanna, Hernando, and Blanton soils. Their upper profile is similar to that of Susquehanna soils, but they are less acid than Susquehanna soils and are underlain by limestone. They are browner and more prominently mottled than Hernando soils and have a subsoil of finer texture. They lack a deep, sandy profile like that of Blanton soils.

The vegetation is forest of pine and oak and an undergrowth of wiregrass, sedges, and briers. The gentle slopes are well suited to cultivated crops, pasture, and pine trees.

Archer soils occur in the southern part of the county as areas so small and so closely associated with Susquehanna soils that they are not mapped separately. They are mapped only with Susquehanna soils as a soil complex.

Archer-Susquehanna fine sands, 2 to 5 percent slopes (AhB).—The soils that make up this complex are intricately mixed. The proportion varies over short distances, but in most areas it is about 45 percent Archer fine sand, 40 percent Susquehanna fine sand, and 15 percent minor inclusions of Blanton, Hernando, and Chiefland soils.

A profile description of Susquehanna fine sand is on page 26. Following is a profile description of Archer fine sand.

0 to 7 inches, gray fine sand.
7 to 12 inches, grayish-brown loamy fine sand.
12 to 17 inches, yellowish-red, firm clay.
17 to 62 inches, brownish-yellow to gray, plastic, sticky clay with yellowish-brown and light reddish-brown mottles; some soft limestone nodules in lower part.
62 to 72 inches +, limestone and marl.

The soils of this complex have a surface layer ranging from fine sand to loamy fine sand and from 6 to 18 inches in thickness. In a few places the fine-textured subsoil is exposed. In some areas of the Archer soil, the underlying limestone and marl or calcareous clay is only 2 feet from the surface. The degree of base saturation is higher and the acidity of the soil is less in these areas than in areas of deeper soil.

These soils are low in organic-matter content and in natural fertility. They are moderately well drained to somewhat poorly drained. Permeability is moderately rapid in the surface layer and slow in the subsoil. The available moisture capacity is low.

This soil complex generally occurs on gentle slopes, but a few areas are nearly level. In a few places that are eroded the yellowish-red, clayey subsoil is exposed. In an area about 2 miles northeast of Branford, the subsoil is directly over white, soft limestone. Many iron or manganese concretions are scattered throughout the profile.

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Most areas have been cleared for cultivation or for pasture. If properly managed, this complex produces good yields of many crops. Pine trees grow rapidly on these soils. (Capability unit IIIse–5; woodland group 4.)

Archer-Susquehanna fine sands, 0 to 2 percent slopes (AhA).—This complex occurs as small areas adjacent to areas of Archer-Susquehanna fine sands, 2 to 5 percent slopes. Because slopes are smoother, runoff is less rapid and erosion is less a hazard than on the more sloping complex. If properly managed, this complex is well suited to general cultivated crops and to improved pasture. (Capability unit IIse–1; woodland group 4.)

Archer-Susquehanna fine sands, 5 to 8 percent slopes (AhC).—These soils have a slightly thinner surface layer than do Archer-Susquehanna fine sands, 2 to 5 percent slopes, and, because they are more strongly sloping, they are more susceptible to erosion. A few areas in which moderate erosion has occurred, and also some areas where slopes are steeper than 8 percent, were mapped with this complex.

The soils are fairly well suited to all the locally grown cultivated crops and to grasses for improved pasture. Because of the erosion hazard, they should be used only occasionally for cultivated crops. (Capability unit IVes–1; woodland group 4.)

Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes (AnA).—The surface layer of these soils normally is 18 to 30 inches thick. Because of this thick layer, these soils have a deeper root zone than Archer-Susquehanna fine sands, 2 to 5 percent slopes, but they have a lower available moisture capacity, since more of their profile consists of fine sand. These soils are well suited to pasture, to woods, and to most crops grown in the county. (Capability unit IIse–1; woodland group 4.)

Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes (AnB).—The surface layer of these soils normally is 18 to 30 inches thick. This thick layer gives the soils a deeper root zone than that of Archer-Susquehanna fine sands, 2 to 5 percent slopes. They are well suited to a wide variety of crops grown in the county and if well managed produce good yields. They are also well suited to pasture and to pine trees. (Capability unit IIIse–5; woodland group 4.)

Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes (AnC).—The surface layer of these soils is 18 to 30 inches thick. Because they are more strongly sloping than Archer-Susquehanna fine sands, 2 to 5 percent slopes, they are more susceptible to erosion. A few areas in which erosion has been moderate, and also some areas where slopes are steeper than 8 percent, were mapped with this complex. These soils are fairly well suited to all the locally grown cultivated crops and to grasses for improved pasture. They should be used only occasionally for cultivated crops, because of the erosion hazard. (Capability unit IVes–1; woodland group 4.)

Arredondo Series

The Arredondo series consists of deep, well-drained, sandy soils of the Central Florida Ridge. These soils developed from thick deposits of sand interbedded with sandy clay and phosphatic material.

The surface layer is dark-gray to grayish-brown fine sand or loamy fine sand 4 to 7 inches thick. Below this is a layer of pale-brown to brownish-yellow fine sand or loamy fine sand that extends to a depth of more than 30 inches. Small phosphatic pebbles are common on the surface and throughout the profile.

Arredondo soils are most commonly associated with Zuber, Gainesville, Fellowship, Blanton, and Lakeland soils. They are similar to Zuber soils in that both have a sandy surface and subsurface layer of approximately the same color and texture. The subsurface layer, however, is more than 30 inches thick in Arredondo soils and about 12 to 20 inches thick in Zuber soils. Arredondo soils are not so brown nor so red as Gainesville soils. They have a lighter colored surface layer than the Fellowship soils, and they lack a slowly permeable, plastic, fine-textured subsoil less than 30 inches from the surface like that of Fellowship soils. They are not so light colored as the nonphosphatic Blanton soils, and they differ from Lakeland soils in being affected by phosphatic material.

The vegetation consisted principally of loblolly pine, longleaf pine, and some oak and hickory trees. Because the soils are well suited to many cultivated crops, much of their acreage has been cleared and cultivated. Reforestation with slash pine, which grows well on these soils, has been extensive in recent years.

Arredondo soils occur most commonly on gentle upland slopes or hillsides in association with other soils of similar origin. Small areas are widely scattered throughout most of the county except the southern and western parts. The soils are most common in a band across the northern part between U.S. Highway No. 90 and the Suwannee River.

Arredondo fine sand, 0 to 5 percent slopes (ArB).—This is a deep, well-drained, sandy soil affected by phosphatic material. The major horizons are—

0 to 6 inches, dark grayish-brown, loose fine sand; few small phosphatic pebbles; crumb structure.
6 to 60 inches, brownish-yellow, loose fine sand; few small phosphatic pebbles.

The surface layer ranges from gray to dark grayish brown in color and from 4 to 7 inches in thickness. The subsurface layer ranges from pale brown to brownish yellow; its texture usually is fine sand but is loamy fine sand in a few places. In a few small areas, the phosphatic pebbles are much more numerous than described. Strata of fine-textured or gravelly material are at a depth of 48 to 60 inches in some places.

The surface layer is slightly acid and is low in organic-matter content. It is in good tilth and is easily plowed. The subsurface layer is thick, rapidly permeable, and easily penetrated by roots, and it has moderate available moisture capacity.

This soil has a low supply of all plant nutrients except phosphorus, but it responds well to fertilization. It is well suited to improved pasture, to pine forest, and to a wide variety of cultivated crops if it is well managed.

The principal management problem is maintaining the organic-matter content. Erosion is a minor hazard. (Capability unit IIIse–3; woodland group 1.)

Arredondo fine sand, 5 to 8 percent slopes (ArC).—The surface layer of this soil normally is only 3 to 5 inches thick. It contains more phosphatic pebbles than does that of Arredondo fine sand, 0 to 5 percent slopes. The

depth to strata of fine-textured or gravelly material is more variable in this soil but is usually less than 60 inches. Because it is steeper, this soil is more susceptible to erosion. It requires more intensive management if cultivated. (Capability unit IVse–5; woodland group 1.)

Arredondo fine sand, 8 to 12 percent slopes (ArD).—This soil occurs as small areas, usually adjacent to sinks or draws. It has more phosphatic pebbles on the surface and throughout the profile than does Arredondo fine sand, 0 to 5 percent slopes. Strata of fine-textured or gravelly material are normally at a depth of 30 to 60 inches. This soil is well suited to improved pasture and to pine forest. (Capability unit VIse–2; woodland group 1.)

Arredondo fine sand, moderately shallow, 0 to 5 percent slopes (AsB).—This soil occurs only as small isolated areas, most of them in fields of deeper Arredondo soils. Its uppermost 30 inches is similar to the corresponding part of Arredondo fine sand, 0 to 5 percent slopes. But at a depth between 30 and 42 inches, this soil has a thin layer of brown, faintly mottled fine sandy loam that grades into a layer of yellowish-brown, faintly mottled fine sandy clay loam. This last-mentioned layer extends to a depth of about 60 inches and grades into a layer of plastic sandy clay that contains lenses and individual pebbles of angular, soft, phosphatic sandstone gravel.

This soil has a higher available moisture capacity than Arredondo fine sand, 0 to 5 percent slopes, and under similar management it usually produces slightly higher yields. (Capability unit IIIse–3; woodland group 2.)

Arredondo fine sand, moderately shallow, 5 to 8 percent slopes (AsC).—This is not an extensive soil; it occurs as small isolated areas within larger areas of similar soils. The surface and subsurface layers of this soil generally are thinner than those of Arredondo fine sand, moderately shallow, 0 to 5 percent slopes. In some small areas these layers extend to a depth of less than 30 inches. Because it is steeper than the shallow phase on slopes of 0 to 5 percent, this soil is more susceptible to erosion. It is moderately eroded in some places. This soil is well suited to cultivated crops and to pasture but requires intensive erosion control practices. (Capability unit IVse–5; woodland group 2.)

Bayboro Series

This series consists of deep, strongly acid, very poorly drained soils that developed from thick beds of acid marine clay and sandy clay.

The surface layer of these soils is very dark gray to black fine sandy loam 8 to 18 inches thick. It grades into the subsoil, which is dark-gray to dark grayish-brown silty clay loam about 24 inches thick. At a depth of about 36 inches occur layers of dark-gray or very dark gray silty clay or silt loam with patches of dark-gray clay or silty clay.

Bayboro soils are most closely associated with Grady soils. They have a thicker, darker colored surface layer and a better developed profile than Grady soils, and they are less stratified. They are also associated with Rutlege soils. They are shallower to fine-textured material than are Rutlege soils.

The native vegetation consists of cypress, water-tolerant grasses, and buttonwood. These soils are not important agriculturally. They are in small areas scattered throughout the northeastern and east-central parts of the county. Their acreage is small.

Bayboro fine sandy loam (0 to 2 percent slopes) (Bb).—This is a poorly drained soil that stays wet most of the time. The major horizons are—

0 to 13 inches, very dark gray, friable fine sandy loam; crumb structure.
13 to 48 inches, gray to very dark gray, firm silty clay or clay.

The surface layer ranges from dark gray to black in color and from 7 to 18 inches in thickness. In a few places the texture ranges from loamy fine sand to clay loam.

This soil is moderate in natural fertility. It has moderate to high available moisture capacity. Permeability is moderate in the surface layer and slow to very slow in the subsoil. Aeration in the subsoil is poor.

The kinds of plants that can grow are limited. Excess water, which is difficult to remove, is the dominant limitation. A shallow root zone and periodic flooding further limit the suitability of this soil for cultivation. Under intensive management, including the use of properly designed water control systems, this soil is well suited to crops, pasture, and trees. Many areas, however, are too small, and drainage outlets too difficult to establish, to justify the cost of proper water control. (Capability unit IIIws–1; woodland group 9.)

Bladen Series

The soils in this series are poorly drained and strongly acid. They formed from beds of marine sand and clay, and they occur on flats and in depressions.

The surface layer of these soils ranges from gray to very dark gray and is 3 to 6 inches thick. The subsoil, which begins at a depth of less than 14 inches, is brown, yellowish-brown, and gray firm sandy clay.

Bladen soils are closely associated with Grady and Coxville soils. The clayey subsoil of Bladen soils is more plastic than that of Grady soils, and it lacks red mottles like those in the subsoil of Coxville soils.

The vegetation is chiefly wiregrass, carpetgrass, gallberry, slash pine, longleaf pine, blackgum, sweetgum, deerstongue, and an occasional saw-palmetto.

Bladen soils are not extensive in Suwannee County. They were mapped only with Grady and Coxville soils as an undifferentiated soil group and with Plummer and Rains soils, also as an undifferentiated soil group. As they occur in these groups, they are used as pasture or as woodland. See Grady, Bladen, and Coxville soils, page 17.

Blanton Series

The Blanton series consists of deep, light-colored, sandy soils, principally on gentle slopes, that developed from thick beds of marine sand very low in silt and clay. These soils are moderately well drained to excessively drained.

Their surface layer is light-gray to dark-gray fine sand 3 to 7 inches thick. It grades into the underlying layer of light-gray to pale-yellow or pale-brown fine sand that extends to a depth of more than 30 inches. Below that is a layer, or layers, of finer textured material. In some

places, however, the sandy layers extend to a depth of more than 10 feet.

These soils are strongly acid, low in natural fertility, and low in organic-matter content.

Blanton soils are closely associated with Lakeland, Bowie, Susquehanna, Leon, Scranton, and Plummer soils. They are lighter colored than Lakeland soils and not so yellow. The uppermost 30 inches of their profile consists of fine sand, whereas Bowie and Susquehanna soils have fine-textured material at a depth of less than 30 inches. Blanton soils are better drained than Leon, Scranton, and Plummer soils. They lack an organic pan, a characteristic of Leon soils, and do not have a thick, very dark gray surface layer like that of Scranton soils.

The vegetation ranges from scrub oak and wiregrass to good stands of longleaf pine and slash pine (fig. 2). Some areas have been cultivated, but now many formerly cultivated areas have been reforested with slash pine.

Blanton soils are the most extensive in Suwannee County; they make up more than half the county's acreage. A wide band of these soils runs parallel to the Suwannee River, and other large areas are scattered throughout the county.

Blanton fine sand, high, 0 to 5 percent slopes (BfB).—This is a deep, excessively drained, light-colored, sandy soil on knolls and ridges well above the ground-water level. The major horizons are—

0 to 3 inches, gray, loose fine sand.
3 to 84 inches, light-gray to very pale brown fine sand.
84 to 116 inches, white fine sand mottled with yellow.

The surface layer is gray or light gray and 3 to 7 inches thick. The subsurface layers range from pale brown to white and are several feet thick.

This soil is very strongly acid, low in natural fertility, and low in organic-matter content. Permeability is rapid, and the available moisture capacity is low. The water table is normally at a depth below 48 inches and does not affect most crops. The soil is in good tilth and is easily plowed a few hours after intensive rainfall.

This soil is especially well suited to bright tobacco and to watermelons but poorly suited to peanuts. It is fair for pine trees. If it is irrigated, fertilized, and otherwise well managed, it will produce fair to good yields of most crops, including grass for pasture.

Figure 2.—**Scrub oak and a few scattered pines on Blanton fine sand, high, 0 to 5 percent slopes.**

Wind erosion is a hazard in cultivated fields that are not protected. Water erosion is not a serious hazard. (Capability unit IIIse–2; woodland group 1.)

Blanton fine sand, high, 5 to 8 percent slopes (BfC).—In the southern part of the county, most areas of this soil have about 60 inches of fine sand and do not have a fine-textured substratum within 60 inches. In the central part of the county, the underlying fine-textured material begins at a depth of about 48 inches. Small areas of this soil are on short slope breaks throughout the county.

Because it was not practical to show them separately on the map, large areas of the same kind of soil but on dunelike terrain, in which small areas have slopes of either more or less than 5 to 8 percent, were mapped with this soil.

This soil is poorly suited to cultivated crops, since it is very droughty and very low in natural fertility. It is moderately well suited to pasture and to longleaf pine trees. Few areas have been cleared. Most of the acreage is covered with scrub oak, wiregrass, and some longleaf pines. (Capability unit IVse–4; woodland group 1.)

Blanton fine sand, high, 8 to 12 percent slopes (BfD).—This soil occurs mostly as small areas on short breaks around lakes and sinks, and along streams. It is not extensive in the county. Depth to and nature of underlying s rata are variable. In some areas sand runs deep, while in others substrata of fine-textured material or rock begin at a depth of 30 to 42 inches.

Unlike Blanton fine sand, high, 0 to 5 percent slopes, this soil is poorly suitable for cultivation. It is droughty and very low in natural fertility, and it erodes easily unless protected. Few areas have been cleared. Most of the acreage is covered with scrub oak, pine, and wiregrass. (Capability unit VIse–1; woodland group 1.)

Blanton fine sand, high, 12 to 35 percent slopes (BfE).—This soil occurs as small areas on steep breaks and escarpments around lakes and sinks. Its total acreage—less than 300 acres—includes all of the areas in the county that have moderately steep and steep slopes and good to excessive drainage.

In most places sand extends to a depth of more than 5 feet, but in some places it overlies fine-textured material or rock within a depth of 5 feet. This soil is not suitable for cultivation. Most of it is covered with scrub oak, pine, and wiregrass. (Capability unit VIIse–1; woodland group 1.)

Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes (BhB).—This is an excessively drained, light-colored, sandy soil. The major horizons are—

0 to 7 inches, brownish-gray to light brownish-gray, loose fine sand.
7 to 32 inches, very pale brown, loose fine sand mottled with white and strong brown.
32 to 51 inches, strong-brown, friable fine sandy loam or fine sandy clay loam; weak to moderate, angular and subangular blocky structure.

The surface layer ranges from 3 to 7 inches in thickness and from gray to brownish gray in color. It overlies a 2- to 3-foot layer of very pale brown to pale-yellow, loose fine sand.

This soil is strongly acid, low in natural fertility, and low in content of organic matter. In the upper part,

it is rapidly permeable and has low available moisture capacity. The finer textured material in the substratum is moderately permeable and easily penetrated by deep-rooting plants. Tilth is good, and the soil is easily cultivated.

This soil is well suited to pasture and to pine trees, and, although droughty and low in natural fertility, it is moderately well suited to cultivation if properly managed. Good management practices include (a) crop rotation to help improve moisture-holding properties and (b) frequent application of a complete fertilizer.

Much of the acreage is cultivated, and many formerly cultivated fields are planted to slash pine. (Capability unit IIIse–2; woodland group 1.)

Blanton fine sand, low, 0 to 5 percent slopes (BmB).—This is a deep, moderately well drained, light-colored, sandy soil. The major horizons are—

0 to 7 inches, light-gray to dark-gray, loose fine sand.
7 to 28 inches, light-gray to pale-brown, loose fine sand.
28 to 59 inches, light-gray to white, loose fine sand.
59 inches +, yellowish-brown, friable fine sandy clay loam mottled with gray and red; subangular blocky structure.

The surface layer generally is 3 to 7 inches thick. It grades into the underlying layers, which are more than 36 inches thick. The soil material at a depth of about 6 feet is fine sandy clay loam or sandy clay mottled with yellow, brown, red, and dark gray.

This soil has characteristics similar to those of Blanton fine sand, high, 0 to 5 percent slopes, but it is in a lower position where the water table is nearer the surface. Normally, the water table is between 36 and 60 inches from the surface, but it may rise into the root zone for a short time in wet seasons.

This soil is well suited to tobacco (fig. 3), corn, watermelons, and small grain. It is also well suited to pasture and to pine trees. If unprotected, cultivated fields can be severely eroded by wind. Growing cover crops in strips will help to reduce wind erosion. Rotating crops, applying a complete fertilizer, and other management practices are needed to help improve the soil.

Much of the acreage has been cleared for cultivation, and many formerly cultivated fields have been planted to slash pine. (Capability unit IIIse–4; woodland group 5.)

Blanton fine sand, low, 5 to 8 percent slopes (BmC).—This soil usually occurs as small isolated areas on short breaks associated with Blanton fine sand, low, 0 to 5 percent slopes. In some places the soil is wetter at the bottom of the slope than at the top because of seepage. This soil is more susceptible to erosion by both wind and water than Blanton fine sand, low, 0 to 5 percent slopes, and it is more limited in its capacity for producing crops. In many cultivated areas, wind and water have removed much of the original surface soil and have exposed the lighter colored underlying sand. This soil is well suited to pasture and to pine trees. (Capability unit IVse–2; woodland group 5.)

Blanton fine sand, low, 8 to 12 percent slopes (BmD).—This soil occurs as small areas usually on short slope breaks near lakes or sinks. The lower part of the break is wetter than the upper part because of seepage. This soil is not extensive in the county. It is not used for cultivated crops; it is either in pasture or in pine trees and wiregrass. (Capability unit IVse–2; woodland group 5.)

Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes (BnB).—This is a moderately well drained, light-colored, sandy soil. It occurs as relatively large areas in the central part of the county. The major horizons are—

0 to 6 inches, very dark gray to gray, loose fine sand.
6 to 38 inches, grayish-brown, pale-brown, or very pale brown, loose fine sand.
38 to 54 inches +, yellowish-red fine sandy clay loam mottled with brown and light gray.

The surface layer is 4 to 7 inches thick. The subsurface layer is grayish brown immediately below the surface layer, but it grades to pale brown or very pale brown, and it is faintly mottled in the lower part. At a depth between 30 and 42 inches, it overlies a layer of yellowish-red, yellow, or brownish-yellow fine sandy clay loam or fine sandy loam.

This soil is very strongly acid, low in natural fertility, and medium to low in organic-matter content. The available moisture capacity is low. The soil is in good tilth. The subsurface layers are porous; water and air move rapidly through them down to the water table, which is normally 30 to 48 inches below the surface. The water table is high enough to furnish moisture in the lower part of the root zone.

If properly managed, this soil is well suited to tobacco, corn, watermelons, small grain, and similar crops. It is also well suited to pine trees. If unprotected, cultivated fields are highly susceptible to wind erosion.

Much of the acreage has been cleared for cultivation. Many formerly cultivated fields have been planted to slash pine. (Capability unit IIIse–4; woodland group 5.)

Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes (BnC).—This soil occurs throughout the central part of the county as small areas on short breaks. It is associated with similar soils on more gentle slopes. A few areas are eroded. The total acreage is small. Because slopes are steeper, erosion is a greater hazard on

Figure 3.—**Bright tobacco, one of the county's most important crops, on Blanton fine sand, low, 0 to 5 percent slopes.**

this soil than on Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes. Both are suited to the same crops, but this soil needs more intensive conservation practices. It is well suited to pasture and to pine trees. (Capability unit IVse–2; woodland group 5.)

Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes (BoB).—This soil complex occurs as fairly extensive areas in the gently undulating central part of the county, where slopes are irregular and wavy. The soils that make up this complex are so intricately mixed that they cannot be shown separately on a map of the scale made to accompany this report. They grade from one to the other through rather diffuse boundaries. The principal soils are the Blanton, Bowie, and Susquehanna. In a representative area, the proportions are roughly 40 percent Blanton fine sand, low; 25 percent Bowie fine sand; and 20 percent Susquehanna fine sand. The remaining 15 percent consists of small inclusions of several related soils and intergrades. A few small areas where slopes are steeper than 5 percent and other small areas where erosion has exposed the subsoil were mapped with this complex.

There is no definite stream pattern for surface drainage. Water moves rapidly through the deep sandy soils into porous limestone substrata. Permeability in the subsoil of Bowie and Susquehanna soils is very slow, but excess rainfall drains rapidly through the numerous sand lenses and sand-filled sinks on these soils. Some spots in fields, particularly on the Susquehanna soil, stay wet during prolonged rainy seasons. Water erosion is only a slight hazard, but large unprotected fields are very susceptible to wind erosion.

Originally, these soils were covered with longleaf pine, oak, and wiregrass. Now, most areas have been cleared, and the soils are cultivated intensively. The soils respond well to management and are well suited to field crops commonly grown in the county. They are also well suited to pasture and to pine trees. (Capability unit IIIse–4; woodland group 5.)

Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes (BoC).—This complex occurs as small areas within areas of Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes. In this complex, however, slopes are steeper (a few are steeper than 8 percent), more intensive management practices are needed, and the proportion of Bowie and Susquehanna soils is usually greater. These two soils are usually eroded, and their subsurface layers of loamy sand to sandy clay loam are exposed.

This complex is well suited to pasture and to pine trees. (Capability unit IVse–2; woodland group 5.)

Blanton-Chiefland fine sands, 0 to 5 percent slopes (BtB).—This soil complex consists of deep, light-colored, excessively drained soils. They were mapped together as one unit in places where they were so intricately mixed that it was impractical to separate them on the soil map. The proportion of each soil is variable, but most areas are roughly 70 percent Blanton fine sand and 30 percent Chiefland fine sand. These soils are described separately under their respective series.

A few small areas, mostly around sinks, that have slopes steeper than 5 percent were included in mapping this complex.

Limestone is 3 to 10 feet from the surface of these soils. The limestone underlying the Chiefland soil is near enough the surface to affect soil properties. The Blanton soil is strongly acid to a depth of 48 inches or more.

Natural fertility and the organic-matter content are low in both soils. Permeability is rapid, and the available moisture capacity is low. Water erosion is only a slight hazard, but wind erosion is a severe hazard in unprotected fields.

If properly managed, these soils are moderately well suited to most crops grown on general farms. They are very good soils for peanuts (fig. 4). They are well suited to pasture and to pine trees. Much of their acreage has been cultivated, but many formerly cultivated fields have been planted to slash pine. (Capability unit IIIse–3; woodland group 1.)

Blanton-Chiefland fine sands, 5 to 8 percent slopes (BtC).—This complex occurs as small areas on short slope breaks or near sinks and is usually associated with Blanton-Chiefland fine sands, 0 to 5 percent slopes. Depth to underlying limes one or fine-textured material is variable but usually less than in the more gently sloping areas. Limestone is at the surface in some places. The total acreage is small, and most of it is in pine or oak. The few areas that are cultivated are usually within an area of the more extensive gently sloping phase. (Capability unit IVse–5; woodland group 1.)

Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes (BuB).—This soil complex occurs on gentle slopes on the flood plains along the Suwannee and Santa Fe Rivers. The dominant soil is Blanton fine sand, low, 0 to 5 percent slopes. This soil occurs mainly on low river terraces and is subject to periodic overflow. It is described on page 11. The other principal soils in this complex are Kalmia loamy fine sand and Leaf loamy fine sand.

The major horizons of Kalmia loamy fine sand, as it occurs in this complex, are—

0 to 4 inches, gray loamy fine sand.
4 to 9 inches, grayish-brown loamy fine sand.
9 to 14 inches, yellowish-brown fine sandy loam; weak, subangular blocky structure.
14 to 36 inches, yellowish-brown light silty clay loam or sandy clay loam; subangular blocky structure.
36 to 46 inches, light yellowish-brown sandy loam; weak, subangular blocky structure.

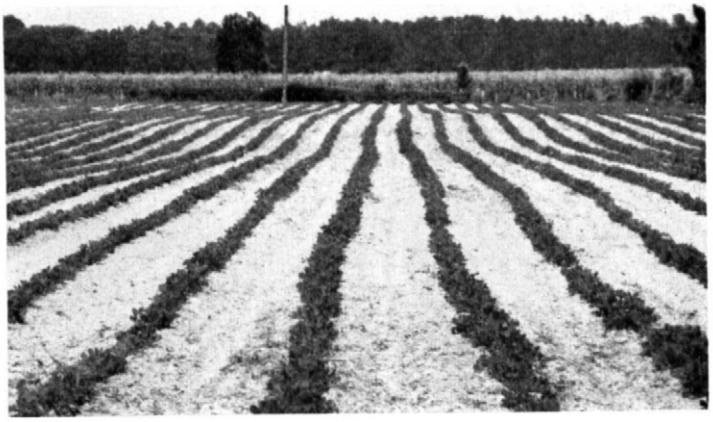

Figure 4.—**Peanuts, and corn in the background, on Blanton-Chiefland fine sands, 0 to 5 percent slopes. Peanuts are particularly well adapted to these soils.**

The surface layer ranges from gray to dark gray in color and from 4 to 7 inches in thickness. The subsurface layer is pale brown or grayish brown and 12 to 24 inches thick. The subsoil ranges from sandy loam to sandy clay loam or silty clay loam in texture and from 12 to 36 inches in thickness.

This soil is on low knolls and is flooded only occasionally, during unusually high floods.

The major horizons of Leaf loamy fine sand, as it occurs in this complex, are—

0 to 3 inches, dark-gray loamy fine sand or very fine sandy loam.
3 to 14 inches, grayish-brown to pale-brown loamy fine sand.
14 to 54 inches, brownish-gray, plastic clay or sandy clay mottled with red and brown; angular blocky structure.

The surface and subsurface layers range from gray to dark gray and together are less than 30 inches thick. The subsoil is clay, sandy clay, or sandy clay loam and is prominently mottled with gray, red, yellow, and brown.

This soil is well above river level but is flooded every time the rivers overflow. Surface drainage is ordinarily good; internal drainage is slow.

Besides the three principal soils, minor inclusions of Alluvial land and of Swamp and a few areas of soils that have slopes steeper than 5 percent were included in this complex.

Vegetation covers almost all of this complex. Mixed pines, hardwoods, shrubs, vines, and grasses grow on the Blanton soil. Loblolly pines and undergrowth of saw-palmetto are on the Kalmia soil. Hardwoods, including gum, maple, and live oak trees, a few loblolly pines, and a dense undergrowth of shrubs and vines, are on Leaf soils.

This complex is poorly suited to cultivation because it is frequently flooded and is in areas too narrow to justify major flood control structures. It is well suited to pasture, except when flooded, but at present is best suited to use as woodland or as habitats for wildlife. (Capability unit Vws–1; woodland group 6.)

Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes (BuA).—Most areas of this complex occupy less than 25 acres, and they are more variable in percentage of the component soils than are areas of Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes. Some areas consist almost entirely of Blanton fine sand, low, and others of Kalmia loamy fine sand or of Leaf loamy fine sand.

The total acreage is small. Almost all of it is covered with hardwoods and some pines.

This complex is poorly suited to cultivation, for it is subject to flooding. It is best suited for use as woodland. If provision is made to move the livestock during floods, it is suitable for use as pasture. (Capability unit Vws–1; woodland group 6.)

Bowie Series

The Bowie series consists of well-drained, gently sloping soils.

The surface layer of these soils ranges from fine sand to loamy sand. The subsoil is porous and friable. It begins at a depth of less than 30 inches and usually is 6 to 24 inches thick. It gradually grades to layers of compact, slowly permeable, mottled sandy clay loam to clay.

These soils are strongly acid, low in organic-matter content, and low in natural fertility. They respond well to management.

Bowie soils are closely associated with Susquehanna and Blanton soils. Their friable, yellowish-brown subsoil and less prominently mottled substrata distinguish them from Susquehanna soils, and they do not have deep sandy layers like Blanton soils do.

The vegetation consists of wiregrass, sedges, carpetgrass, longleaf pine, dwarf waxmyrtle, sumac, chinquapin, dogfennel, blackberry briers, and bluejack oak. Most of the acreage has been cleared and is cultivated, is used as pasture, or has been planted to pine trees.

The largest areas of Bowie soils occur south of Live Oak in the central part of the county. Smaller areas, in which Bowie soils are intricately associated with Blanton and Susquehanna soils, occur over much of the rest of the county, except along the Suwannee River. In these small areas, Bowie, Blanton, and Susquehanna soils were mapped together as a soil complex.

Bowie fine sand, 2 to 5 percent slopes (BvB).—This is a well-drained soil on uplands. Its major horizons are—

0 to 5 inches, grayish-brown, loose fine sand.
5 to 10 inches, pale-brown, loose fine sand.
10 to 25 inches, yellowish-brown fine sandy loam to fine sandy clay loam.
25 to 38 inches +, mottled yellowish-brown, gray, and red, firm, heavy fine sandy clay loam or clay.

The surface layer is loamy fine sand in places. The subsoil is 6 to 16 inches thick. It is friable fine sandy loam in the uppermost part and fine sandy clay loam in the lower part. The layer below the subsoil ranges from fine sandy clay loam or sandy clay to clay.

Natural fertility is low in this soil. Permeability is rapid in the surface layer, moderately slow in the subsoil, and slow below the subsoil. The available moisture capacity is low to moderate.

This soil retains plant nutrients and responds well to good management. It produces moderately high yields of commonly grown crops if it is well managed. It is well suited to improved pasture and to pine trees.

Wind erosion is a hazard on all unprotected areas; water erosion is a hazard on the steeper unprotected areas. (Capability unit IIes–1; woodland group 3.)

Bowie fine sand, 5 to 8 percent slopes (BvC).—This soil occurs mostly as small areas on short slope breaks. Its total acreage is small. Because erosion has removed some of the surface soil, its surface layer normally is thinner than that of Bowie fine sand, 2 to 5 percent slopes. In a few small areas, erosion has removed most of the surface layer.

This soil is well suited to many crops, but it requires more intensive management than do similar soils on more gentle slopes. It is also well suited to pasture and to pine trees. (Capability unit IIIes–1; woodland group 3.)

Bowie fine sand, thick surface, 2 to 5 percent slopes (BwB).—This is a well-drained soil on uplands. The major horizons (fig. 5) are—

0 to 6 inches, gray, loose fine sand.
6 to 19 inches, very pale brown to yellow, loose fine sand.
19 to 32 inches, yellow to yellowish-brown, friable fine sandy loam and fine sandy clay loam.
32 to 82 inches, mottled brown, yellow, gray, and red, firm clay.

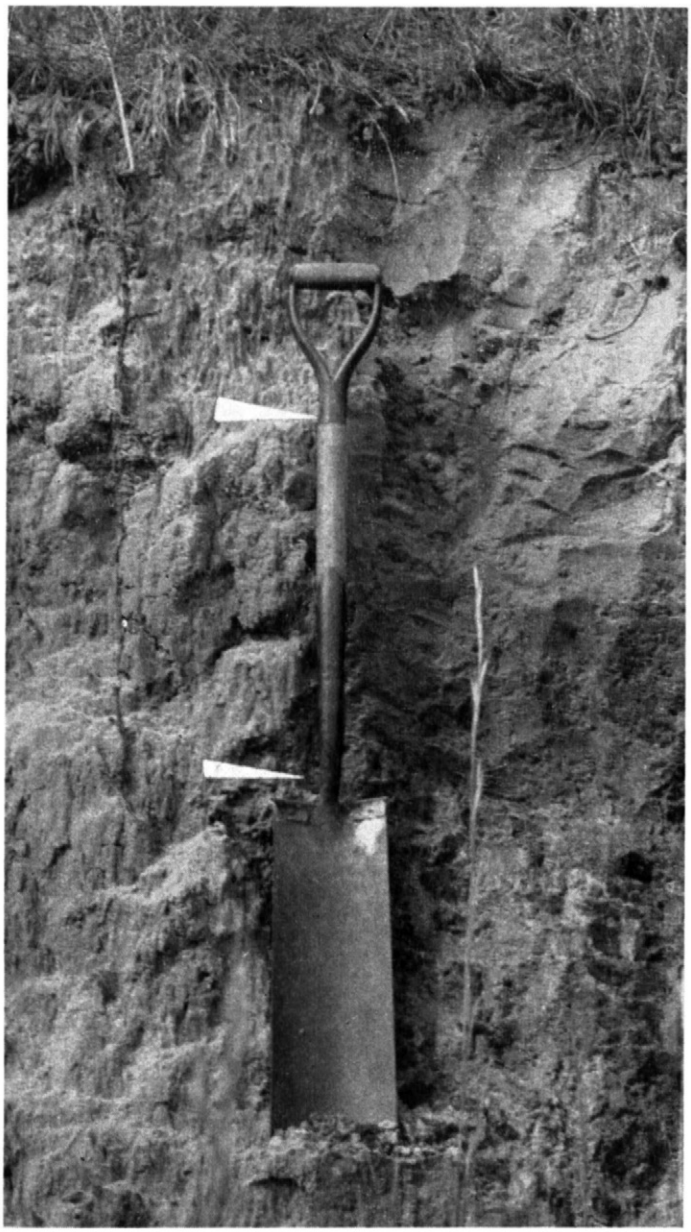

Figure 5.—**Profile of Bowie fine sand, thick surface, 2 to 5 percent slopes. The surface horizon (first white mark) is 20 inches thick, and the subsoil (second white mark) is also 20 inches thick. Below the subsoil are layers of mottled clay.**

The subsoil is 10 to 18 inches thick. It is yellow, friable fine sandy loam in the upper part and yellowish-brown, friable fine sandy clay loam in the lower part.

Natural fertility and the organic-matter content are low in this soil. The available moisture capacity is moderate. Permeability is rapid in the surface layer, moderately slow in the subsoil, and slow below the subsoil.

This soil is in good tilth and responds well to management. It is well suited to cultivated crops, improved pasture, and pine trees.

Wind erosion is a hazard on all unprotected areas, and water erosion is a hazard on the steeper unprotected areas. (Capability unit IIes–1; woodland group 3.)

Bowie fine sand, thick surface, 5 to 8 percent slopes (BwC).—This soil occurs as small areas on short slope breaks. The total acreage is small. This soil is more susceptible to water erosion than Bowie fine sand, thick surface, 2 to 5 percent slopes. It is well suited to cultivated crops but requires intensive management. It is also well suited to pasture and to pine trees. (Capability unit IIIes–1; woodland group 3.)

Bowie-Blanton complex, 2 to 5 percent slopes (BxB).—This complex occurs in all sections of the county except the northeastern and extreme southern parts and the areas of deep sand that parallel the Suwannee River. The acreage is extensive.

The soils in this complex are deep, sandy, gently sloping, and well drained to moderately well drained. Their surface layer varies widely in thickness over short distances. In places it is 18 inches thick and overlies a yellowish-brown, friable, loamy subsoil. In other places it extends below 18 inches and as deep as 42 inches. In still other places it is fine sand to undetermined depths.

A representative area generally is made up of about 55 percent Bowie fine sand and Bowie fine sand, thick surface; about 40 percent Blanton fine sand, low, and Blanton fine sand, low, moderately shallow; and 5 percent minor inclusions of a number of different kinds of soils. In fringe areas adjacent to deep sands, the percentage of Blanton soils increases. In those areas adjoining larger areas of Bowie soils, the percentage of Bowie soils increases. The principal soils in this complex are described individually under their respective series.

Small barren spots of deep, nearly white sand, which are known locally as sand soaks, lightning struck spots, or dead spots, were mapped with this complex.

The soils respond well to management. They are well suited to improved pasture and to pine trees. Large areas are used for growing crops adapted to the county. Yields are moderate. (Capability unit IIes–1; woodland group 3.)

Bowie-Blanton complex, 5 to 8 percent slopes (BxC).—This complex usually occurs as small areas on short breaks within areas of Bowie-Blanton complex, 2 to 5 percent slopes. Runoff in unprotected areas is more rapid in this complex than in those in the less sloping complex, and cultivated fields require more intensive management.

In some places slopes are steeper than 8 percent, and in others erosion has removed the surface soil and exposed the subsoil.

This complex is best suited to pasture and to pine trees. (Capability unit IIIes–1; woodland group 3.)

Chiefland Series

The soils in this series are well-drained to somewhat excessively drained, deep sands that are nearly level or gently sloping for the most part and sloping in a few small areas.

The surface layer of these soils is gray to dark-gray fine sand 4 to 7 inches thick. It overlies a layer of fine sand that is pale brown or very pale brown in the upper part, lighter colored with depth, and nearly white in the lower part. The sandy material normally extends to a depth of 30 to 42 inches, but in some places the finer textured material or the limestone that underlies the sandy material is only 20 to 30 inches from the surface.

Chiefland soils are closely associated with Jonesville, Archer, Susquehanna, Hernando, and Blanton soils. They have a lighter colored subsurface layer than Jonesville soils. They differ from Archer, Susquehanna, and Hernando soils in lacking a finer textured layer, or in having only a thin one just above the limestone. Their subsurface layer is lighter colored than that of these soils also. They are less acid than Blanton soils and are underlain by limestone.

The vegetation consists of bluejack, post, red, turkey, live, and water oaks, longleaf pine, partridgepea, wiregrass, chinquapin, and an occasional saw-palmetto. Most of the acreage, which occurs in the southern part of the county, has been cleared and is used as pasture, or is cultivated, or is planted to pine trees.

Chiefland fine sand, 0 to 5 percent slopes (ChB).—This is a deep, well-drained, sandy soil. The major horizons are—

0 to 7 inches, gray, loose fine sand; many clean sand grains.
7 to 36 inches, light-gray to very pale brown, loose fine sand.
36 to 39 inches, yellowish-brown, friable fine sandy loam.
39 inches +, soft limestone.

The surface layer ranges from gray to dark gray in color and from 4 to 8 inches in thickness. In places the thin layer of yellowish-brown fine sandy loam is absent and the layers of fine sand are directly over the limestone.

The reaction of this soil is strongly acid to within a few inches of the finer textured layer or the limestone. At this depth it is slightly acid to neutral. The soil is low in natural fertility and in organic-matter content. Its available moisture capacity is low. Water moves rapidly through it and readily leaches plant nutrients.

This soil is easily plowed, even a few hours after a heavy rain. It has a deep root zone. It is well suited to peanuts and moderately well suited to the general farm crops and to the deep-rooted grasses commonly grown for improved pastures. Good management practices, including proper fertilization, are needed to obtain maximum yields. (Capability unit IIIse–3; woodland group 1.)

Chiefland fine sand, 5 to 8 percent slopes (ChC).—This soil is more susceptible to erosion than Chiefland fine sand, 0 to 5 percent slopes. Limestone is at the surface in a few places, and shallow gullies have formed in other places. Because of the erosion hazard, cultivated crops should be grown only occasionally. This soil is best suited to deep-rooted grasses for improved pasture. (Capability unit IVse–5; woodland group 1.)

Coxville Series

The Coxville series consists of poorly drained, strongly acid soils that formed principally from beds of clayey material. These soils occur on nearly level, broad flats.

The surface layer is dark-gray to very dark gray loamy fine sand only a few inches thick. The subsoil is gray clay or fine sandy clay 4 to 8 inches thick. It begins at a depth of about 18 inches.

Coxville soils are closely associated with Grady and Bladen soils. They have a more plastic subsoil than Grady soils, and they occur on broad flats rather than in small depressions or "pot holes" like Grady soils. Their profile has more red color than that of Bladen soils.

In Suwannee County, Coxville soils were not mapped separately. They were combined with Grady and Bladen soils and mapped as an undifferentiated unit.

Coxville soils are well suited to pasture and to woodland and are presently used for these purposes. See Grady, Bladen, and Coxville soils, page 17.

Fellowship Series

The Fellowship series consists of moderately well drained to somewhat poorly drained soils of the Central Florida Ridge.

These soils have a surface layer of black to very dark gray loamy fine sand 7 to 14 inches thick. Their subsoil is dark-gray to gray, slowly permeable fine sandy clay loam. It overlies layers of mottled gray, slowly permeable sandy clay to clay. Small phosphatic pebbles usually are noticeable in all layers. Gravelly or stony outcrops are common.

Fellowship soils are associated with Arredondo, Gainesville, and Kanapaha soils. They are more poorly drained than Arredondo and Gainesville soils, and they have a darker gray surface layer and a less deep, finer textured subsoil. Their subsoil is less deep than that of Kanapaha soils also.

The original vegetation was mostly oak and hickory trees, with some slash and loblolly pines. Most of the acreage has been cleared. The steeper slopes are still covered with vegetation, chiefly sweetgum, hickory, pine, myrtle, and wiregrass. A few areas are in pasture. Only the more gentle slopes are cultivated. These soils erode rapidly if not well protected.

The acreage of Fellowship soils in Suwannee County is small. Most of the areas are in the northern part but a few small ones are in the central part.

Fellowship loamy fine sand, 5 to 8 percent slopes (FfC).—This is a moderately well drained to somewhat poorly drained soil on hillsides. Its major horizons are—

0 to 14 inches, very dark gray to black, very friable loamy fine sand to fine sandy loam.
14 to 20 inches, dark-gray, firm fine sandy clay loam.
20 to 36 inches +, gray, plastic, very firm fine sandy clay mottled with yellowish brown.

The surface layer is black in undisturbed areas and dark gray in cultivated fields. It is predominantly loamy fine sand but in some places is finer textured. The subsoil ranges from heavy fine sandy clay loam to clay in texture and from 4 to 12 inches in thickness. The layer below the subsoil normally is plastic, firm clay but in a few places it is fine sandy loam or fine sandy clay loam. Fragments of soft phosphatic or ferruginous sandstone are visible on the surface and throughout the profile.

The reaction of this soil is medium acid. Natural fertility is high, and the organic-matter content is moderate. Permeability is slow, and the available moisture capacity is high. The sticky subsoil expands and shrinks considerably with a change in moisture content. The surface layer is in good tilth.

This soil is well suited to improved permanent pasture and to pine trees. It can be cultivated only occasionally, even under good management, because erosion is a serious hazard. Because it is slowly permeable and has high shrink-swell properties, this soil makes a poor foundation

for roads and buildings and an unsuitable disposal field for septic tanks. (Capability unit IVe–1; woodland group 7.)

Fellowship loamy fine sand, 2 to 5 percent slopes (FfB).—The surface layer of this soil is thicker than that of Fellowship loamy fine sand, 5 to 8 percent slopes. The subsoil, also, is usually thicker and is more uniformly developed. This soil has fewer phosphatic pebbles throughout its profile. It is less susceptible to erosion, since it is more gently sloping. Some small areas, however, are moderately eroded. In these, the surface layer is thinner than in uneroded areas. In a few small places, the slope is less than 2 percent.

This soil is well suited to cultivated crops and to pasture. When properly managed, it is one of the most productive upland soils in the county. (Capability unit IIIsw–2; woodland group 7.)

Fellowship loamy fine sand, 8 to 12 percent slopes (FfD).—The surface layer of this soil is only 6 to 10 inches thick in most places. It is thinner than that of Fellowship loamy fine sand, 5 to 8 percent slopes. The subsoil also is thinner and in some places is almost nonexistent. This soil is more readily eroded than the gently sloping one, because runoff is more rapid.

In some small areas, very slowly permeable substrata are near the surface. Small, very gravelly areas and areas affected by seepage are common in a few places.

This soil is too strongly sloping to be cultivated safely; it should be kept under some kind of permanent vegetation. It is well suited to pasture and to pine trees. (Capability unit VIe–1; woodland group 7.)

Fort Meade Series

The soils in this series are gently sloping to sloping, deep, sandy, well drained, and strongly acid. They have a 10- to 30-inch surface layer of black to very dark gray loamy fine sand. This overlies a layer of brown or very pale brown fine sand that extends to a depth of 42 inches or more. Weathered phosphatic pebbles are common on the surface and throughout the profile (fig. 6).

Fort Meade soils are closely associated with Arredondo, Gainesville, Kanapaha, Fellowship, and Zuber soils. They have a thicker and darker surface layer than Arredondo, Gainesville, and Kanapaha soils; and generally the phosphatic influence is stronger in the Fort Meade soils. They are more yellow or brown and less gray in the subsurface layer than Kanapaha soils. They do not have a fine-textured subsoil like that of Fellowship and Zuber soils.

Fort Meade soils are not extensive in Suwannee County. Their largest area is northeast of McAlpin in the south-central part of the county. Most of the acreage is in forest. The vegetation consists of wiregrass, sedges, pine, persimmon, waxmyrtle, and sumac.

Fort Meade loamy fine sand, 5 to 8 percent slopes (FmC).—This is a sloping, well-drained soil. Its major horizons are—

0 to 30 inches, very dark gray, very friable loamy fine sand; few phosphatic sandstone pebbles.
30 to 49 inches, brown to very pale brown, loose loamy fine sand or fine sand; many phosphatic sandstone pebbles.
49 to 72 inches, light-gray, friable fine sandy loam mottled with yellow, yellowish brown, and strong brown; many phosphatic sandstone pebbles.

Figure 6.—**Fort Meade loamy fine sand. Phosphatic pebbles are common on the surface and throughout the profile. This soil is underlain by gravelly phosphatic sandstone. Zuber, Kanapaha, Arredondo, and Gainesville soils also are underlain by this material.**

The surface layer ranges from black to very dark gray when wet; it is 10 to 30 inches thick. The layer of finer textured material (sandy loam, fine sandy loam, or sandy clay loam) begins at a depth of 42 to 60 inches.

A few small areas where slopes are less than 5 percent were mapped with this soil.

The surface layer is extremely acid, and the clayey substrata are strongly acid. This soil is medium in natural fertility and in organic-matter content. It is rapidly permeable throughout. If well managed, it is suited to cultivated crops, pasture, and trees. (Capability unit IVse–1; woodland group 1.)

Gainesville Series

The Gainesville series consists of gently sloping to sloping, coarse-textured soils that are medium acid, well drained, and influenced by phosphatic material.

The surface layer of these soils is dark grayish-brown loamy fine sand 4 to 7 inches thick. It overlies layers of strong-brown to reddish-brown loamy fine sand that may extend to a depth of several feet. In some places, however, they extend to only 30 to 42 inches from the surface. Phosphatic pebbles are common on the surface and throughout the profile.

Gainesville soils are closely associated with Arredondo, Fort Meade, and Zuber soils. They differ from Arredondo soils chiefly in having a browner or more reddish-brown subsurface layer. Also, their subsurface layer is not the same color as that of Fort Meade soils. Their sandy surface layer is thicker than that of Zuber soils.

The acreage of Gainesville soils is small in Suwannee County; most of it is in the northern and northeastern parts, and nearly all of it is cultivated.

Gainesville loamy fine sand, 2 to 5 percent slopes (GaB).—This is a well-drained, dark-surfaced, upland soil influenced by phosphatic material. The major horizons are—

0 to 7 inches, very dark grayish-brown, loose loamy fine sand.
7 to 69 inches, brown, very friable loamy fine sand.

The surface layer is dark grayish brown or very dark grayish brown. It generally is 4 to 7 inches thick but in places is thicker than 7 inches. It overlies layers of s rong-brown, brown, or dark-brown loamy fine sand 30 to more than 60 inches thick. Small, soft, phosphatic sandstone pebbles are scattered throughout the profile. These pebbles are more numerous in some places than in others.

Natural fertility is moderate in this soil, and the organic-matter content is medium. The available moisture capacity is moderate. This soil is porous; water and air move rapidly through it.

If properly managed, this soil is well suited to cultivated crops, to improved pasture, and to pine trees. Wind erosion is a hazard in unprotected areas. (Capability unit IIIse–1; woodland group 1.)

Gainesville loamy fine sand, 5 to 8 percent slopes (GaC).—This soil occurs mostly as small areas associated with Gainesville loamy fine sand, 2 to 5 percent slopes. Its total extent is about 164 acres. It is more susceptible to erosion than the less steep soil, and generally its surface layer is not so thick. In some places this soil is moderately eroded, and in some it is steeper than 8 percent. Clayey layers are at a depth of 30 to 42 inches in some areas.

The severe hazard of erosion limits the suitability of this soil for cultivation. Pasture or pine trees are best suited. (Capability unit IVse–1; woodland group 1.)

Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes (GfB).—This is a well-drained, dark-surfaced, upland soil influenced by phosphatic material. The major horizons are—

0 to 7 inches, very dark grayish-brown, loose loamy fine sand.
7 to 36 inches, brown, very friable loamy fine sand.
36 to 58 inches +, strong-brown, friable fine sandy loam and fine sandy clay loam.

The surface layer ranges from very dark brown to dark grayish brown. It is 4 to 7 inches thick in most places but is thicker than 7 inches in a few places. The depth to the layers of fine sandy loam and fine sandy clay loam ranges from 30 to 42 inches. A variable number of small, soft, phosphatic sandstone pebbles is scattered throughout the profile.

Natural fertility and the organic-matter content are moderate in this soil. The available moisture capacity is moderate. This soil is porous; water and air move rapidly through it.

If properly managed, this soil is well suited to cultivated crops, to improved pasture, and to pine trees. Wind and water erosion are hazards in unprotected areas. (Capability unit IIIse–1; woodland group 1.)

Grady Series

The Grady series consists of poorly drained to very poorly drained, strongly acid soils that formed in marine sand and clay sediments. These soils occur on flats, in small ponds, or in depressions, some of which are partially filled-in lime sinks.

These soils have a gray to very dark gray surface layer 3 to 7 inches thick. This layer grades to a dark-gray or very dark grayish-brown subsoil. Normally, the thickness of the fine-textured subsoil is less than 18 inches, but it is as much as 30 inches in places. Below the subsoil are layers of gray clay with red and yellowish-brown mottles. Limestone material generally is at too great a depth to affect acidity in the overlying layers.

Grady soils are associated with Bowie, Blanton, and Susquehanna soils. They are shallower to fine-textured material than Blanton soils; they have a grayer subsoil than Bowie and Susquehanna soils; and they are more poorly drained than any of these associated soils.

The vegetation is chiefly water oak, live oak, chestnut oak, sweetgum, blackgum, hickory, and loblolly pine.

Grady soils occur as numerous small areas scattered throughout the county. Their acreage is small and most of it is used as woodland or as pasture.

Grady fine sandy loam, thick surface (Gr).—This is a poorly drained to very poorly drained upland soil on small flats, in ponds, or in depressions. The major horizons are—

0 to 7 inches, very dark gray, very friable fine sandy loam.
7 to 20 inches, dark-gray, very friable fine sandy loam splotched with light gray.
20 to 27 inches, gray, firm fine sandy clay loam splotched with light yellowish brown.
27 to 42 inches +, gray, very firm clay mottled with yellowish brown and red.

The surface layer ranges from gray to very dark gray in color and from 3 to 7 inches in thickness. In a few small areas, however, it is black and 7 to 20 inches thick. The subsurface layer ranges from gray to dark gray in color and from 7 to 20 inches in thickness. The subsoil ranges from firm sandy clay loam to very firm clay and is mottled with gray, brown, and red.

This soil is wet and has a high available moisture capacity. It is very strongly acid, low to medium in organic-matter content, and medium in natural fertility.

This soil is poorly suited to cultivated crops, because it contains excess water that is difficult to remove, is flooded periodically, and has a slowly permeable subsoil. It is moderately well suited to grasses and clovers for pasture and to pine trees. (Capability unit Vws–1; woodland group 9.)

Grady, Bladen, and Coxville soils (Gx).—The soils that make up this undifferentiated soil group are Grady fine sandy loam, Bladen fine sandy loam, and Coxville loamy fine sand. These are poorly drained and very poorly drained upland soils on flats, in small shallow ponds, and in depressions. The areas of the individual soils are small, and the total acreage of the group is small. Bladen and Coxville soils were not mapped separately in Suwannee County.

The dominant soil is Grady fine sandy loam. Its major horizons are—

0 to 7 inches, very dark gray fine sandy loam.
7 to 14 inches, dark-gray or very dark grayish-brown heavy fine sandy clay loam mottled with red and yellowish brown.
14 to 54 inches +, gray, very firm clay mottled with red, yellow, and brown.

The major horizons of Bladen fine sandy loam are—

0 to 5 inches, dark-gray fine sandy loam.
5 to 13 inches, light brownish-gray fine sandy loam; weak, medium, crumb structure.
13 to 24 inches, brown and yellowish-brown sandy clay mottled with gray; medium, angular blocky structure.
24 to 48 inches, gray to light-gray, firm clay mottled with brownish yellow and red; medium, angular blocky structure.

The major horizons of Coxville loamy fine sand are—

0 to 2 inches, dark-gray and very dark gray loamy fine sand or very fine sand.
2 to 9 inches, gray to grayish-brown loamy fine sand or very fine sand.
9 to 13 inches, gray fine sandy clay or clay with strong-brown and olive-brown mottles; medium, angular blocky structure.
13 to 58 inches, gray clay with fine, red mottles; fine, subangular blocky structure.

The surface layer of the soils that make up this group varies in texture and color over short distances. It ranges from 3 to 7 inches in thickness, and the layer directly under it, from 1 to 6 inches. The color of the subsoil ranges from dark gray to yellowish brown mottled with yellow, brown, and gray; the texture, from heavy sandy clay loam to clay; and the thickness, from 4 to 12 inches. Active lime sinks occur in a few places.

Grady fine sandy loam is very strongly acid, low to medium in organic-matter content, and medium in natural fertility. It is wet, plastic, and slowly permeable, and it has high available moisture capacity.

Bladen fine sandy loam and Coxville loamy fine sand are more uniform than Grady fine sandy loam, and they occur in slightly higher areas. The subsoil of the Coxville soil is more yellow and brown and more plastic than that of the Grady soil. The subsoil of the Bladen soil also is more plastic than that of the Grady soil.

This group of soils is poorly suited to cultivated crops because of excess water, which, in most instances, can be removed only through underground channels. These soils are well suited to pasture grasses and clovers and, except in the lowest areas where "drowning out" often happens, are suited to pine trees. (Capability unit Vws–1; woodland group 9.)

Hernando Series

The Hernando series consists of well drained to moderately well drained, slightly acid soils. They are mostly very gently sloping but are steeper in places. Their surface is undulating, which is typical of soils that are underlain by limestone. Surface water drains through the soil into the porous limestone.

The surface layer of Hernando soils is dark-gray to grayish-brown fine sand 3 to 6 inches thick. It overlies a layer of pale-brown fine sand that ranges from 12 to 24 inches in thickness. The subsoil is faintly to prominently mottled, yellowish-brown fine sandy clay or sandy clay loam. Depth to the subsoil varies over short distances, but usually it is between 12 and 30 inches. Soft to hard limestone is at a depth of 3 to 6 feet. In some small areas there are sinks filled with sand; these are of fairly uniform texture from the surface down to the limestone material.

Hernando soils are closely associated with Archer, Susquehanna, Chiefland, Lakeland, and Blanton soils. They are less red than Archer soils, and usually their subsoil is sandier. They are less acid than Susquehanna soils, have a sandier subsoil, and are underlain by limestone. The surface layer of Hernando soils is thinner than that of Lakeland, Chiefland, and Blanton soils.

The vegetation is longleaf pine, live oak, and bluejack oak and an undergrowth of wiregrass and sedges. Most of the acreage has been cleared and is cultivated. Some areas are in pasture or have been planted to slash pine. Hernando soils occur in the southern part of the county.

Hernando fine sand, 2 to 5 percent slopes (HdB).—This moderately deep soil (fig. 7) is well drained to moderately well drained. Its major horizons are—

0 to 3 inches, dark-gray, loose fine sand.
3 to 12 inches, brown, loose fine sand.
12 to 24 inches, yellowish-brown fine sandy clay loam with red and brownish-gray mottles.
24 to 38 inches, yellow, sticky fine sandy clay to marly clay mottled with shades of gray and brown.
38 inches +, limestone.

The surface soil ranges from 3 to 6 inches in thickness and from gray to dark gray or dark brownish gray in color. Its texture usually is fine sand but is loamy fine sand in a few places. The sandy layers normally are less than 18 inches thick but are 18 to 30 inches thick in some places. The subsoil is yellow to yellowish-brown fine

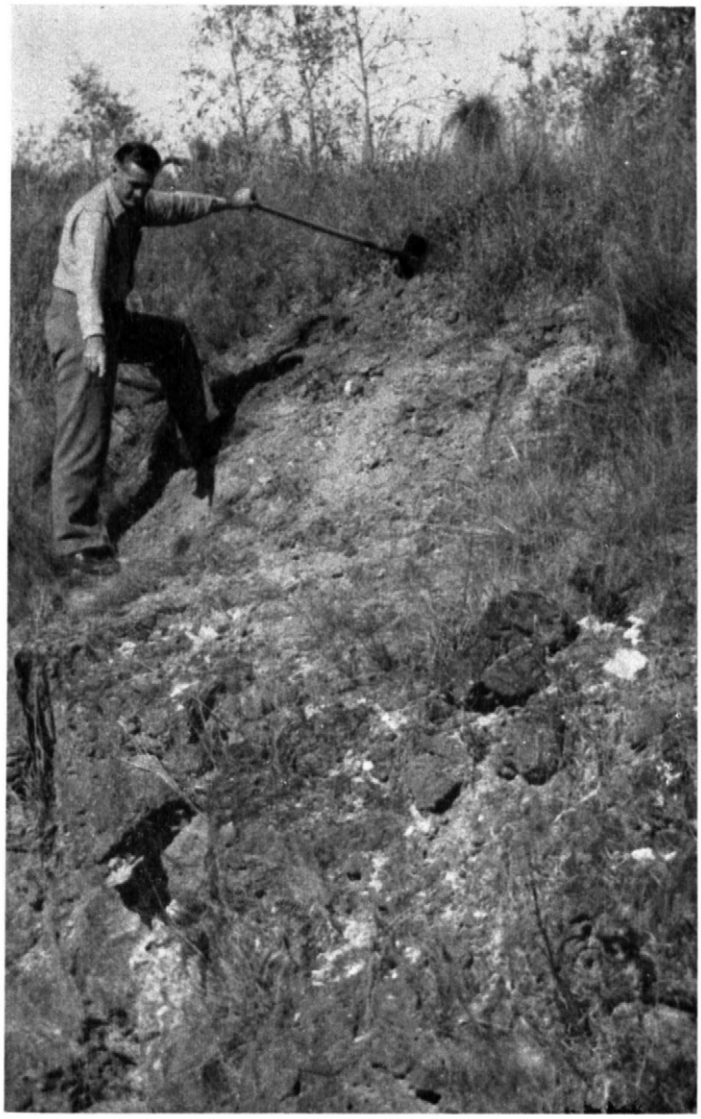

Figure 7.—**Shallow deposits of fine sand and fine sandy clay loam resting abruptly on Ocala limestone give rise to soils such as Hernando fine sand.**

sandy clay loam to clay. It ranges from 6 to 12 inches in thickness, but it is several feet thick in some small areas where the underlying limestone has dissolved and the solution holes have filled with clay.

Small areas with slopes of less than 2 percent were mapped with this soil.

Natural fertility is low in this soil, and the organic-matter content is medium. The surface soil is strongly acid and has moderately rapid permeability. The subsoil is medium acid and has slow permeability. The available moisture capacity is moderate.

If well managed, this soil is moderately well suited to general cultivated crops and to improved pasture. It is very good for peanuts. (Capability unit IIIse–5; woodland group 4.)

Hernando fine sand, 5 to 8 percent slopes (HdC).—Because it is steeper than Hernando fine sand, 2 to 5 percent slopes, this soil is more susceptible to erosion. In places, it is eroded. Usually, it is associated with sinks or sharp depressions. The acreage is small, and most of it has been cleared. The cleared areas, however, are now in pasture or second growth forest. (Capability unit IVes–1; woodland group 4.)

Jonesville Series

The soils in this series are sandy and very low in silt and clay. They are deep and well drained to somewhat excessively drained.

Their surface layer is gray to dark-gray fine sand 4 to 8 inches thick. It overlies a layer of reddish-yellow, light yellowish brown, or strong-brown fine sand.

Jonesville soils are closely associated with Lakeland, Archer, Hernando, Chiefland, and Blanton soils. Unlike Hernando and Archer soils, Jonesville soils have more than 30 inches of sand in their profile. In this respect they are similar to Chiefland and Blanton soils, but they are more yellow and brown throughout. Jonesville soils are influenced by limestone, especially in the lower part of their profile, and thereby are distinguished from Lakeland and Blanton soils.

The vegetation is chiefly wiregrass, sedges, longleaf pine, dogfennell, bluejack oak, live oak, and turkey oak.

In Suwannee County, the acreage of Jonesville soils is small. They were mapped only with Lakeland soils as an undifferentiated soil group. See Lakeland and Jonesville fine sands, 0 to 5 percent slopes, page 21.

Kalmia Series

The Kalmia series consists of well-drained, moderately permeable, deep, strongly acid soils on river terraces.

The surface layer of these soils is gray to dark-gray loamy fine sand 4 to 7 inches thick. Below this is a 4- to 10-inch, light-gray, loamy fine sand subsurface layer and a yellowish-brown, silty clay or sandy clay loam subsoil.

Kalmia soils are associated with Blanton and Leaf soils. Unlike Blanton soils, they have finer textured material within 30 inches of the surface, and unlike Leaf soils, they have a well-developed and unmottled subsoil that is more permeable.

The vegetation is predominantly loblolly pine and saw-palmetto.

These soils occur as bands along the flood plains. They are flooded occasionally during unusually prolonged, heavy rainfall. Their acreage is small and almost all of it is covered with vegetation. They were mapped only with Blanton and Leaf soils as a soil complex. See Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes, page 12.

Kanapaha Series

The soils in this series are deep, moderately well drained to somewhat poorly drained, strongly acid, and coarse textured. They are nearly level for the most part and sloping in a few places.

Their surface layer is gray to dark-gray fine sand 4 to 7 inches thick. Their subsurface layer is light-gray fine sand mottled with shades of yellow or reddish yellow. Finer textured substrata occur at a depth of more than 30 inches and in places at a depth of several feet. Phosphatic pebbles are scattered on the surface and throughout the profile in some areas. A few sloping areas are gravelly. Very slowly permeable substrata are responsible for a perched water table; ground water normally is within 4 feet of the surface.

Kanapaha soils are associated with Fellowship, Arredondo, Gainesville, Fort Meade, and Plummer soils. Their surface layer is coarser and lighter colored than that of Fellowship soils; their subsoil also is coarser and lighter colored, and it is deeper. Their surface layer is thinner and lighter colored than that of Fort Meade soils. Kanapaha soils are grayer throughout their profile than are Arredondo, Fort Meade, and Gainesville soils. They are better drained than Plummer soils; they are influenced by phosphatic materials and Plummer soils are not.

The vegetation consists of oak, sweetgum, loblolly pine, sedges, an occasional saw-palmetto, and wiregrass. Most of the acreage is in native woods, but some of it is cultivated, used as pasture, or planted to slash pine.

There are approximately 1,300 acres of Kanapaha soils in Suwannee County. The largest areas are in the northern and southeast-central parts. Smaller areas are in other parts of the county where phosphatic materials are present.

Kanapaha fine sand, 0 to 5 percent slopes (KaB).—This is a moderately well drained to somewhat poorly drained soil on uplands. Its major horizons are—

0 to 7 inches, dark-gray to dark grayish-brown, loose fine sand.
7 to 44 inches, grayish-brown to light brownish-gray, loose fine sand distinctly mottled with gray and pale yellow below a depth of 29 inches.
44 to 74 inches, light-gray, very friable fine sandy loam mottled with reddish yellow.

The surface soil ranges from dark gray to dark grayish brown in undisturbed areas; it is lighter colored in cultivated fields. The layers of fine sand usually extend to a depth of more than 42 inches, but in many places the substrata of finer textured material begin at a depth of 30 to 42 inches. In some places the substrata are predominantly mottled with red, gray, and yellow below a depth of 42 inches.

A few small areas where sandy loam is at a depth of less than 30 inches were mapped with this soil.

This soil is strongly acid. It is low in organic-matter content and in natural fertility. It has a low available moisture capacity, but it is favorably influenced by the ground water table, which normally is in the lower part of the root zone. Though it is rapidly permeable, this soil may become saturated to the surface during prolonged wet seasons.

This soil is well suited to cultivated crops, especially to truck crops, improved pasture, and pine trees. (Capability unit IIIsw–1; woodland group 5.)

Kanapaha fine sand, 5 to 8 percent slopes (KaC).—This soil usually occurs as small areas on long narrow strips in association with Kanapaha fine sand, 0 to 5 percent slopes. The thickness of the fine sand layers is more variable in this soil than in the more gently sloping phase.

A few seepy areas where slopes are steeper than 8 percent were mapped with this soil.

This soil is not well suited to cultivation, but it is well suited to pasture and to pine. Its total area is about 300 acres, and most of this is in pine trees or pasture. (Capability unit IVse–3; woodland group 5.)

Klej Series

The Klej series consists of nearly level to gently sloping, moderately well drained, strongly acid, sandy soils.

Fine sand extends to a depth of more than 30 inches. It is gray to dark gray at the surface and very pale brown or light yellowish brown at a depth of 3 to 7 inches. It is mottled with gray, yellowish brown, and pale brown at a depth of 24 to 36 inches.

Klej soils are closely associated with Blanton, Lakeland, and Scranton soils. They differ from Blanton soils chiefly in that they are yellower and mottled in the uppermost 30 inches of their profile. They differ from Lakeland soils in that they are mottled gray and yellowish brown below a depth of 30 inches. Their surface layer is thinner and lighter colored than that of Scranton soils.

The vegetation consists of sedges, wiregrass, pine trees, and oaks.

These soils occur mostly in the eastern part of the county. Most of the acreage has been cleared and is used as pasture, or is in cultivated crops, or is planted to slash pine.

Klej fine sand, 0 to 5 percent slopes (KfB).—This is a moderately well drained soil. Its major horizons are—

0 to 7 inches, gray, loose fine sand.
7 to 28 inches, very pale brown, loose fine sand.
28 to 42 inches +, very pale brown, loose fine sand mottled with brownish yellow and light gray.

The surface layer ranges from gray to dark gray in color and from 3 to 7 inches in thickness. The upper part of the subsurface layer is very pale brown or pale-brown fine sand 18 to 30 inches thick; and the lower part is mottled gray, pale-brown, very pale brown, or brownish-yellow fine sand. The fine sand usually extends to a depth of more than 42 inches, but in a few places clayey material occurs at a depth between 30 and 42 inches.

This soil is strongly acid. It is low in natural fertility and in organic-matter content. It is well aerated. Water moves rapidly through it and leaches out plant nutrients. Except in very dry periods, the water table fluctuates at a depth near 42 inches from the surface.

Under good management, this soil is well suited to cultivated crops and to improved pasture. It is also suited to pine trees. (Capability unit IIIse–4; woodland group 5.)

Lakeland Series

The soils in this series are deep, well drained to excessively drained, strongly acid, and coarse textured. They are nearly level to sloping for the most part but are strongly sloping in a few small areas.

The surface layer of these soils consists of fine sand that ranges from gray to dark grayish brown; it is 2 to 6 inches thick. Below it is a layer of light yellowish-brown or brownish-yellow fine sand that normally extends to a depth of more than 42 inches. The depth to layers of fine-textured material usually is more than 5 feet, but in a few places it is only 30 to 42 inches.

Lakeland soils are closely associated with Blanton, Klej, and Arredondo soils. They differ from Blanton soils in having unmottled yellow and light yellowish-brown fine sand below the surface soil. They are better drained than Klej soils and are not mottled in the uppermost 36 to 42 inches of their profile. They have a lighter colored surface layer than Arredondo soils, and they are not phosphatic.

The vegetation consists of turkey oak, post oak, pine, and wiregrass. Most of the acreage has been cleared and is used as pasture, or is cultivated, or is planted to pine.

These soils occur mostly in the broad, deep, sandy areas in the southern and western parts of the county. Small areas occur near the Suwannee River on well-drained, terracelike positions.

Lakeland fine sand, 0 to 5 percent slopes (LaB).—This is a well-drained to excessively drained soil on broad uplands. Its major horizons are—

0 to 5 inches, gray, loose fine sand.
5 to 48 inches, light yellowish-brown, loose fine sand.
48 to 62 inches, very pale brown, loose fine sand; light-gray splotches.

The surface layer ranges from gray to dark grayish brown in color and from 2 to 6 inches in thickness. The darker colors usually are in the cultivated areas. The subsurface layer is yellowish brown but in a few places is brownish yellow. In cultivated areas, a transitional layer usually occurs between the surface layer and the subsurface layer. This layer is a mixture of pale brown, gray, and yellowish brown. In a few places medium-sized splotches of light gray and white occur in this soil nearer the surface than normal, or at a depth of 30 to 42 inches. Where this soil is adjacent to Blanton soils, high phase, it grades to pale brown.

Mapped with this soil were small areas that have fine-textured material at a depth of 30 to 42 inches. In these areas—about 190 acres on terraces along the Suwannee River—the surface layers consist of gray sand and the substrata of yellow to reddish-brown, friable sandy loam to sandy clay loam.

Lakeland fine sand, 0 to 5 percent slopes, is strongly acid and low in natural fertility and in organic-matter content. It has a deep root zone. It is in good tilth and can be plowed within a short time after heavy rainfall.

It is droughty and very rapidly permeable. Plant nutrients leach out of it readily.

If well managed, this soil is moderately well suited to the general farm crops grown in the county. It produces watermelons and bright tobacco of high quality. It is well suited to deep-rooted, improved grasses for pasture. (Capability unit IIIse–2; woodland group 1.)

Lakeland fine sand, 5 to 8 percent slopes (LaC).—This soil is similar to Lakeland fine sand, 0 to 5 percent slopes, but it is steeper and consequently more susceptible to erosion. In a few small places, slopes are steeper than 8 percent.

The surface layer of this soil normally is thinner than that of the less sloping Lakeland soils. A few areas show moderate sheet erosion, and shallow gullies have formed in places. A few small areas in which fine-textured substrata occur at a depth of 30 to 42 inches were mapped with this soil.

This soil is only fairly well suited to cultivated crops, but it is moderately suited to deep-rooted grasses for pasture. Some of this soil has been cleared, but much of it is covered with scattered longleaf pines, scrub oaks, and wiregrass. (Capability unit IVse–4; woodland group 1.)

Lakeland and Jonesville fine sands, 0 to 5 percent slopes (LdB).—This undifferentiated soil group consists of 45 percent Lakeland fine sand, 40 percent Jonesville fine sand, and 15 percent minor inclusions of Chiefland fine sand, Blanton fine sand, and Hernando fine sand. The percentages vary slightly from place to place. This soil group occupies a few hundred acres in the extreme southern part of the county.

A profile description of Lakeland fine sand is on page 20. Following is a profile description of Jonesville fine sand.

0 to 5 inches, gray fine sand.
5 to 36 inches, yellowish-brown fine sand; single grained.
36 to 55 inches, light yellowish-brown fine sand; many, faint, pale-brown mottles; single grained.
55 to 67 inches, strong-brown heavy fine sandy loam or light fine sandy clay loam; medium crumb structure.
67 inches +, soft limerock.

The surface layer of Jonesville fine sand is gray or light gray and less than 8 inches thick. It is underlain by layers of yellowish-brown and light yellowish-brown fine sand that extend to a depth of more than 30 inches. These layers are slightly acid to neutral. They overlie a layer of strong-brown fine sandy loam or fine sandy clay loam that is slightly acid to neutral, that is 6 to 18 inches thick in most places, and that overlies hard limestone or marl.

The soils in this soil group are low in natural fertility and in organic-matter content. They are in good tilth, and they have a deep root zone. The available moisture capacity is low. Permeability is rapid throughout; mineral fertilizers leach out rapidly.

If well managed, these soils produce good yields of common crops in years of adequate rainfall. They are especially well suited to peanuts and bright tobacco. Most of the acreage has been cleared for cultivation. (Capability unit IIIse–3; woodland group 1.)

Leaf Series

The Leaf series consists of poorly drained, strongly acid soils in nearly level areas near the Suwannee River.

The surface layer of these soils ranges from gray to dark gray in color and from 3 to 7 inches in thickness. The subsoil is yellowish-brown, plastic sandy clay or clay mottled with gray, red, yellow, and brown.

Leaf soils are closely associated with Blanton and Kalmia soils. Their mottled, heavy, plastic clay subsoil distinguishes them from both Blanton and Kalmia soils.

The vegetation consists of a variety of plants, including gum, maple, oak, loblolly pine, and a dense undergrowth of shrubs and vines in some places.

In Suwannee County, the acreage of these soils is small. They were mapped only with Blanton and Kalmia soils as a soil complex. See Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes, page 12.

Leon Series

The Leon series consists of nearly level or gently sloping, somewhat poorly drained or poorly drained soils of the Coastal flatwoods.

The surface layer of these soils is thin and consists of gray to very dark gray fine sand. It grades to a leached layer of light-gray to white fine sand 10 to 24 inches thick. At a depth of less than 30 inches, the leached layer ends abruptly and overlies a brown to black pan that is weakly to strongly cemented and stained by organic matter.

These soils are very strongly acid, low in natural fertility, and low in organic-mattter content. The ground water table normally is at a depth of 24 to 36 inches, but it rises to the surface in wet seasons.

Leon soils are closely associated with Blanton, Ona, Pomello, Plummer, and Scranton soils. The light-colored, leached layer between the surface layer and the stained pan distinguishes Leon soils from Ona soils. The stained pan distinguishes them from Blanton, Pomello, Plummer, and Scranton soils. Furthermore, Leon soils are more poorly drained than Blanton and Pomello soils and better drained than Plummer soils. They are darker colored than Pomello soils, and they have a thinner and lighter colored surface layer than Scranton soils.

The vegetation is saw-palmetto, longleaf pine, wiregrass, sedges, fetter bushes, and some gallberry. Most of the acreage is in pine trees. A small part has been cleared and is used as pasture.

Leon soils occur in the flatwoods section in the eastern part of the county.

Leon fine sand, 0 to 2 percent slopes (LfA).—This is a somewhat poorly drained to poorly drained soil that has a thin surface layer and an organic pan. The major horizons are—

0 to 5 inches, gray, loose fine sand; many clean grains.
5 to 23 inches, light-gray, loose fine sand.
23 to 29 inches, black fine sand; weakly cemented organic pan.
29 to 54 inches, very pale brown to pale-yellow, loose fine sand.

The surface layer ranges from 1 to 7 inches in thickness and from gray to very dark gray in color; its many, clean, white grains of sand give it a salt and pepper appearance. The subsurface layer is leached; it ranges from light gray to white in color and from 4 to 24 inches in thickness. The organic pan ranges from black to reddish brown in color and from 3 to 8 inches in thickness. It is soft and friable in some places and firm and strongly cemented

in others. The depth to the organic pan normally is less than 30 inches, but in a few places it is more than 30 inches.

This soil is very strongly acid, low in organic-matter content, and low in natural fertility. It has a low available moisture capacity and a periodically high water table. Plant foods leach out rapidly. The root zone is restricted.

This soil is poorly suited to cultivation but well suited to pasture and to pine trees. (Capability unit Vsw–2; woodland group 6.)

Leon fine sand, loamy substratum, 0 to 5 percent slopes (LmA).—This is a somewhat poorly drained to poorly drained soil. Its major horizons are—

0 to 5 inches, dark-gray, loose fine sand; many clean grains.
5 to 18 inches, light-gray to gray, loose fine sand.
18 to 23 inches, very dark grayish-brown fine sand; weakly cemented organic pan.
23 to 36 inches, very pale brown, loose fine sand.
36 to 46 inches +, mottled pale-brown, friable fine sandy clay loam; slowly permeable.

The surface layer ranges from 1 to 7 inches in thickness. It is dark gray or very dark gray, but its many, clean, white grains of sand give it a salt and pepper appearance. This layer grades into a leached layer of gray to white fine sand 9 to 24 inches thick. The organic pan is black to reddish brown, weakly cemented to strongly cemented, and 3 to 8 inches thick. The clayey material is at a depth of 36 to 48 inches.

This soil is very strongly acid, low in organic-matter content, and low in natural fertility. It has a low available moisture capacity and a restricted root zone. Permeability is rapid down to the organic pan. Plant foods leach out rapidly. (Capability unit Vsw–2; woodland group 6.)

Leon and Ona fine sands (Ln). The principal soils in this undifferentiated soil group are Leon fine sand and Ona fine sand. In many areas, these soils occur in such intricate patterns that separation was not feasible. In other places, one or the other principal soil dominates and constitutes at least 85 percent of the delineated area. The extent of each soil within individual areas, however, varies considerably from place to place. Leon fine sand makes up about 55 percent of the total acreage, and the Ona soil, most of the rest. There are minor inclusions of Blanton, Plummer, Rutlege, and other soils. The soil characteristics in a given area vary according to the individual soils in the area.

The Leon soil in this group is similar to Leon fine sand, 0 to 2 percent slopes, described on page 21, but its surface layer is thicker and darker than that of the described soil, and its leached subsurface layer usually is thinner.

Ona fine sand lacks a leached subsurface layer. It has an organic-stained layer or a weak pan beneath the surface layer. The major horizons are—

0 to 6 inches, black fine sand; many clean grains.
6 to 10 inches, dark reddish-brown fine sand.
10 to 36 inches, very pale brown fine sand; few, fine, distinct, yellow mottles.
36 to 54 inches +, white fine sand; few yellow and brown mottles.

The surface layer of this Ona soil ranges from dark gray to black in color and from 3 to 7 inches in thickness. In a few places, however, this layer is only about 2 inches thick. The subsurface layer ranges from 3 to 12 inches in thickness and from only a stained sand to a weakly cemented organic pan. In some small areas, this layer is at the surface. The substrata range from brown to light gray. Usually, they are lighter colored with depth. In a few small areas, fine sandy loam occurs at a depth between 30 and 42 inches.

Leon fine sand is somewhat poorly drained or poorly drained and Ona fine sand is somewhat poorly drained. They have a low available moisture capacity, and they are rapidly permeable. Plant nutrients leach out rapidly. The reaction is very strongly acid. The organic-matter content is low to medium, and natural fertility is low.

These soils are suited to special crops, including Irish potatoes and cabbage or other leafy vegetables. They are also suited to pasture and to trees. (Capability unit IVsw–2; woodland group 6.)

Local Alluvial Land (Lo)

Local alluvial land is a land type made up of a mixture of coarse-textured, acid material, mostly sand and loamy sand, that has washed or blown from adjacent areas. It occurs in depressions on uplands. It is moderately well drained, though it has no natural drainage outlets (water drains through underground channels). This land is rarely saturated, since it is rapidly permeable throughout. A few of the lowest lying areas are flooded during periods of heavy and extended rainfall. At such times, the water table rises above normal level throughout the area.

Both the surface layer and the subsoil consist of fine sand or loamy fine sand. The surface layer ranges from 5 to 10 inches in thickness and from dark gray to very dark grayish brown in color. The subsoil is gray or light gray. In some places, especially where underground drainage is rapid, the surface layer is dark gray or black and the subsoil is pale brown. In places where light-colored sediment has been deposited recently, the subsoil is darker colored than the surface soil.

This land type is closely associated with Lakeland and Blanton soils. A thicker and darker surface layer distinguishes Local alluvial land from both Lakeland and Blanton soils. Furthermore, this land type has a slightly stratified subsoil that is lighter colored than that of Blanton soils. It is less uniform in texture than Lakeland soils, and it lacks the yellow in the subsurface layer.

The vegetation consists principally of oak and pine trees, briers, and native grasses, including wiregrass.

Local alluvial land occurs as small areas, scattered throughout the county, usually adjacent to acid soils that have better drainage. The total acreage is small. Many areas have been cleared, and since they are small and occur within areas of more extensive soils, they are put to the same use as the surrounding areas. In most areas of this land type, natural fertility and the organic-matter content are high, and the available moisture capacity is moderate to high. Consequently, these areas are conspicuous in large cultivated fields because plants grow more vigorously on them. (Capability unit IIsw–1; woodland group 8.)

Local Alluvial Land, Phosphatic (Lp)

Local alluvial land, phosphatic, is a land type made up of a mixture of soil material that has washed or blown from adjacent areas and accumulated in depressions and at the base of slopes. The soil material is of phosphatic origin. Except for the phosphatic influence, this land type is similar to Local alluvial land.

Texture, color, and stratification vary, but this land type is predominantly very dark grayish brown to black in the surface layer, which is 8 to 15 inches thick, and dark gray or brown in the subsurface layer, which extends to a depth of several feet. Water drains through the permeable soil into porous limestone.

This land type is associated with Arredondo, Gainesville, and Zuber soils. These soils generally surround areas of this land type. It is stratified surface material from these soils that makes up this land type.

The vegetation consists of oak, hickory, sweetgum, pine, myrtle, briers, and native grasses, including wiregrass.

This land type occurs as small areas in the parts of the county where phosphatic soils occur. The total acreage is small. Most of it is cultivated or is used as pasture. In most areas of this land type, natural fertility is high, the organic-matter content is moderate, and the available moisture capacity is moderate to high. Consequently, in large cultivated fields, these areas are conspicuous because plants make better growth on them than on the soils surrounding. (Capability unit IIsw–1; woodland group 8.)

Mine Pits and Dumps (Mp)

Mine pits and dumps is a miscellaneous land type that varies widely in texture, consistence, and structure. Areas of this land type occur 1 mile north of Live Oak and 3 miles east of Branford. The wide range of land conditions is a result of mining and quarrying operations. Most of the areas where soil and underlying minerals have been removed are scarred with pits and trenches and dotted with piles of waste material. These areas have little or no agricultural value. In some places, however, trees are reseeding naturally and some pasture plants have become established. (Capability unit VIIse–2; not placed in a woodland group.)

Ona Series

The Ona series consists of somewhat poorly drained, strongly acid soils. Beneath the surface layer they have either a layer stained by organic matter or a weak pan. They were derived from acid, marine sand.

The fine sand surface layer of these soils ranges from dark gray to black. Their subsoil is fine sand that ranges from grayish brown to brownish black.

Ona soils are closely associated with Scranton, Rutlege, and Leon soils. Except for the stained, brown layer beneath their surface layer, Ona soils are similar to Scranton soils. Ona soils have a thicker and darker surface layer than Leon soils, and they lack a leached layer beneath the surface layer. Furthermore, they have only a weakly cemented pan, or merely a stained layer in places, whereas Leon soils have a weakly to strongly cemented pan. Ona soils are better drained than Rutlege soils, and they occur at higher elevations.

The vegetation consists of wiregrass, sedges, longleaf pine, slash pine, gallberry, waxmyrtle, and some saw-palmetto.

Ona soils occur in the nearly level flatwoods section in the eastern part of the county. Their acreage is small, and they were mapped only in a complex with Leon soils. See Leon and Ona fine sands, page 22.

Peat (Pa)

Peat consists of very poorly drained, very strongly acid to extremely acid material that was derived from the remains of grasses, lilies, and woody plants. It has a high content of nitrogen and organic matter but a low content of all other plant nutrients, including the minor ones. It occurs in depressions where outlets for surplus water are poor.

Peat ranges from dark reddish brown to dark brown in color and from 36 to 60 inches in thickness. It is shallow around the rim of depressions and deep at the center. The underlying material normally is coarse sand but is sandy clay in places.

Subsidence due to decomposition is very slow in undisturbed areas and rapid in drained, cultivated areas.

Peat is closely associated with Plummer and Rutlege soils. It differs from them in being derived from remains of vegetation rather than from inorganic matter.

The vegetation consists of sweetbay, ash, cypress, pine, moss, ferns, maidencane, and other water-tolerant plants.

Most areas of peat are too small to be drained economically. (Capability unit VIIws–2; woodland group 11.)

Plummer Series

The soils in the Plummer series are deep, sandy, and somewhat poorly drained to very poorly drained.

Their surface layer is gray to black fine sand 2 to 6 inches thick. Their subsurface layer is light-gray to gray fine sand mottled with pale yellow or pale brown in places. A clayey layer normally occurs at a depth of 4 or 5 feet, but in places it is at a depth between 30 and 42 inches.

These soils are very strongly acid. They are low in organic-matter content and in natural fertility.

Plummer soils are closely associated with Rutlege, Scranton, Leon, Grady, Klej, and Blanton (low phase) soils. They are similar to Rutlege soils, but they have a thinner, lighter colored surface layer. Plummer soils lack a thick, dark surface layer like that of Scranton soils, and they are less brown and yellow. Their lack of an organic pan distinguishes them from Leon soils. They differ from Grady soils in that they do not have a clayey subsoil within a depth of 30 inches. They are more poorly drained than Klej and Blanton soils. Furthermore, they are grayer than Klej soils.

The vegetation consists of loblolly pine, slash pine, pond pine, bay, gum, cypress, ferns, oak, gallberry, wiregrass, and saw-palmetto.

Plummer soils are extensive in Suwannee County. Most of the acreage is in woodland. Some has been cleared and is used as pasture or is cultivated.

Plummer fine sand, 0 to 2 percent slopes (PdA).—This is a poorly drained to very poorly drained, deep, sandy soil. Its major horizons are—

0 to 4 inches, dark-gray, loose fine sand.
4 to 20 inches, light-gray to gray, loose fine sand mottled with brownish gray.
20 to 48 inches +, light-gray, loose fine sand mottled with yellowish brown and white.

The surface layer ranges from gray to very dark gray in color and from 2 to 7 inches in thickness. The subsurface layer usually is mottled with brownish gray or white and shades of brown and yellow. In places a brown stain occurs at a depth of 30 to 48 inches.

This soil is strongly acid. It is low in organic matter content and in natural fertility. A water table at or near the surface most of the time, and other unfavorable characteristics, make this soil unsuitable for cultivation. Its suitability for pasture and woodland can be improved if adequate surface drainage is provided. (Capability unit Vws–2; woodland group 10.)

Plummer fine sand, 2 to 5 percent slopes (PdB).—Because its slopes are gentle this soil has more rapid surface drainage than Plummer fine sand, 0 to 2 percent slopes. This soil is low in natural fertility. Plant nutrients leach out of it rapidly. The soil is not suited to cultivation, but if properly managed it is well suited to improved pasture and to pine trees. (Capability unit Vws–2; woodland group 10.)

Plummer fine sand, depressions (Pf).—This is a strongly acid, highly leached, deep, sandy soil that occurs in depressions and is covered with shallow water most of the time. The major horizons are—

0 to 6 inches, black, loose fine sand.
6 to 23 inches, light-gray, loose fine sand.
23 to 48 inches, white fine sand with yellow mottles.

The surface layer is fine sand or mucky fine sand. It ranges from gray to black in color and from 2 to 7 inches in thickness. A brown stained layer commonly occurs at a depth of 36 to 48 inches.

This soil is not suitable for cultivation. It has to be drained for use as pasture or for growing pine trees. (Capability unit Vws–2; woodland group 10.)

Plummer fine sand, high (Ph).—This is a somewhat poorly drained, acid, deep, sandy soil. Its major horizons are—

0 to 5 inches, gray, loose fine sand.
5 to 66 inches, light brownish-gray to pale-brown, loose fine sand mottled with light gray and yellowish brown.
66 to 78 inches, white fine sand mottled with pale brown.

The surface layer ranges from gray to dark gray in color and from 4 to 7 inches in thickness. The substrata are lighter colored and less mottled with depth. The uppermost part of the substrata, to a depth of about 30 inches, is light brownish gray to pale brown; the lower part, at a depth of 30 inches and extending down to 78 inches, is light gray to white.

This soil is low in organic-matter content and in natural fertility. Plant nutrients leach out rapidly. The water table normally fluctuates at a depth between 18 inches and 36 inches.

This soil occurs mostly as small areas. It is used to grow general farm crops. Yields are good during dry years. Improved bermudagrass and bahiagrass do well if the soil is well managed. (Capability unit IVsw–1; woodland group 6.)

Plummer fine sand, moderately shallow (Pm).—This is a poorly drained to very poorly drained, acid soil. Its major horizons are—

0 to 5 inches, black, loose fine sand.
5 to 27 inches, gray, loose fine sand.
27 to 35 inches, light-gray, loose loamy fine sand; brownish-yellow mottles.
35 to 50 inches, light-gray and yellowish-brown fine sandy loam.

The surface layer ranges from light gray to black in color and from 2 to 7 inches in thickness. Mottles in the lower part of the profile range from yellow to yellowish brown. In places a brown stained layer occurs between the surface and clayey substratum.

This soil is not suitable for cultivation, because of poor soil characteristics, including a high water table that generally is at or near the surface. (Capability unit Vws–2; woodland group 10.)

Plummer, Bladen, and Rains soils, 5 to 17 percent slopes (PrD).—Soils of the Plummer, the Bladen, and the Rains series on sloping to steep hillsides make up this undifferentiated soil group. The component soils have two characteristics in common—slope, and wetness throughout the year because of seepage. Otherwise, they vary to an extent that sharp boundaries exist between them. The texture and thickness of their surface layer and subsoil range widely. In some places the three soils may occur within one mapped area but in others only one or two may be present.

The Plummer soil in this group is steeper than the previously described Plummer soils, but otherwise it has similar characteristics. Bladen soils were not mapped separately in this county. A general description of the Bladen series is on page 9, and a profile description of Bladen fine sandy loam is on page 17. Rains soils also were not mapped separately in this county, and they are not described in detail in this report. They are similar to Bladen soils in many respects. Their sandy loam to sandy clay loam subsoil, however, is coarser textured than that of Bladen soils. Rains soils occur in the county only as small areas.

The total acreage of this soil group is small. It occurs as numerous small areas scattered throughout the county. Most areas are in native growth, which consists of pine trees, hardwoods, gallberry, and grass. A few areas are adjacent to well-drained pastureland. The soils in this group erode severely if cleared. Besides, ordinary farm equipment cannot operate successfully on them. They are, therefore, best left wooded. (Capability unit VIIws–1; woodland group 10.)

Pomello Series

The Pomello series consists of rapidly permeable, somewhat droughty, sandy soils. They formed from thick beds of nearly white, acid, marine sand.

The surface layer of these soils is 1 to 6 inches thick. It is gray or light gray and has a salt and pepper appearance. Below it is a layer of white or light-gray sand that extends to a depth of more than 30 inches. A weakly cemented, organic pan of dark reddish-brown or dark grayish-brown fine sand occurs at a depth

between 30 and 42 inches. It is 3 to 10 inches thick, and it is underlain by pale-brown fine sand.

Pomello soils are closely associated with Leon, Blanton, and Rutlege soils. They are similar to Leon soils in that both have an organic pan, but Pomello soils are deeper to the pan and are lighter colored. Their pan distinguishes them from Blanton soils. Furthermore, Pomello soils are lighter colored than Blanton soils. They are better drained than Rutlege soils and have a lighter colored surface layer.

The vegetation consists principally of wiregrass, sawpalmetto, turkey oak, and longleaf pine.

Pomello soils occur in small, nearly level to gently sloping areas throughout the county. Many of the areas are in cultivated fields that are near small ponds or depressions. During growing seasons these areas are easily distinguishable because they are light colored and plants grow poorly on them.

Pomello fine sand (Ps).—This moderately well drained soil is the best drained of organic-pan soils in the county. Its major horizons are—

0 to 5 inches, gray, loose fine sand.
5 to 39 inches, white, loose fine sand.
39 to 45 inches, dark reddish-brown fine sand with organic pan.
45 to 58 inches, pale-brown fine sand.

The surface layer is light-gray or gray fine sand or sand 1 to 6 inches thick. Below it is a leached layer of light-gray or white fine sand or sand 28 to 42 inches thick. The organic pan consists of dark-brown to dark reddish-brown fine sand. It is weakly to strongly cemented and 3 to 10 inches thick.

This soil is very strongly acid and very low in organic-matter content and in natural fertility. It has a very low available moisture capacity.

This soil is not suited to cultivated crops and is only fair for pasture and for pine trees. (Capability unit Vsw–1; woodland group 6.)

Rutlege Series

The soils in this series are deep, strongly acid, and very poorly drained. They occur on nearly level areas or in shallow ponds.

Their surface layer is very dark gray or black fine sand 8 to 12 inches thick. It grades to a 24- to 60-inch layer of gray to dark-gray fine sand that abruptly overlies a layer of gray sandy clay mottled with brown, reddish brown, or yellowish brown.

Rutlege soils are associated with Plummer, Leon, Ona, and Scranton soils. Their surface layer is thicker and usually darker than that of Plummer soils. Their lack of a layer or pan stained or cemented by organic matter distinguishes them from both Ona and Leon soils. Rutlege soils are more poorly drained than Ona, Leon, and Scranton soils. They are less yellow in their lower horizons than are Scranton soils.

The native vegetation is chiefly cypress, blackgum, slash pine, pond pine, and moss.

These soils are not extensive in the county. They occur as small areas scattered throughout the flatwoods section in the eastern part. Many areas are wet. Since they are difficult to drain, they are in native woodland.

Rutlege fine sand (Ru).—This is a very poorly drained pond soil. Its major horizons are—

0 to 8 inches, black, loose fine sand.
8 to 56 inches, gray to dark-gray, loose fine sand.
56 to 66 inches +, gray silty clay loam; angular blocky structure.

The surface layer is mucky fine sand in places. The subsurface layer is gray to dark-gray fine sand several feet thick. Normally, at a depth of 3½ to 5 feet, the fine sand abruptly overlies gray clayey material mottled with reddish brown, yellow, or yellowish brown. This soil is strongly acid and high in organic-matter content.

This soil requires drainage before it can be cultivated. If adequately drained and otherwise well managed, it is fairly well suited to cultivation and well suited to pasture. Normally, it is too wet for good production of pine trees, but if drained it is well suited to slash pine, pond pine, and loblolly pine. (Capability unit Vws–2; woodland group 10.)

Sandy and Clayey Land

This is a miscellaneous land type that contains Blanton, Bowie, Susquehanna, Lakeland, and other soils mixed in an intricate pattern. Areas of the individual soils are too small for practical separation, and the extent of each soil within individual areas of this land type varies from place to place.

Surface texture, depth, degree of profile development, color, and drainage vary widely from one area to another according to the individual soils in the area. In some places highly mottled clay loam or clay is exposed. In others a layer of yellow, brown, red, or dark-gray, moderately permeable sandy clay loam occurs between a thin, sandy surface layer and the mottled, slowly permeable, clayey substratum. Rapidly permeable, light-colored sand extends to a depth of several feet in some areas.

The mapping units in this land type are Sandy and clayey land, gently sloping, and Sandy and clayey land, sloping.

Sandy and clayey land, gently sloping (SaB).—This land type is slightly undulating; the slope range is 2 to 5 percent. The surface is marked by knolls and shallow swales. There is no well-defined pattern for surface drainage.

In a typical profile of this land type, fine sand overlies clayey material. The thickness of the sandy surface layer and the texture, consistence, and permeability of the clayey substrata vary within short distances. In many places, the surface layer is less than 6 inches deep. The clayey substrata are normally less than 24 inches deep. Pockets of fine sand several feet thick are common. Surplus water drains through these deep sands and into the underlying porous limestone. In some small areas clay is exposed at the surface.

The original vegetation was longleaf pine and wiregrass. Much of the acreage has been cleared and is now cultivated or used as pasture. This land type generally is well suited to cultivated crops. Growth is irregular, however, because of the wide range in soil characteristics.

Most of the acreage—approximately 5,000 acres—is in the western part of the county. (Capability unit IVse–6; woodland group 4.)

Sandy and clayey land, sloping (ScC).—This land type consists of the same soils that make up Sandy and clayey land, gently sloping, but those soils that have clayey material near the surface are dominant. Outcrops of clay are more numerous in this land type.

The approximately 800 acres of this land type occur in small areas associated with larger areas of similar but more gently sloping soils. Much of the acreage has been cleared and is cultivated. This land type erodes easily if not well protected. It is well suited to pasture and to pine trees. (Capability unit VIes–1; woodland group 4.)

Scranton Series

The Scranton series consists of deep, strongly acid, poorly drained or somewhat poorly drained soils that were derived from thick beds of marine sand.

The 6- to 12-inch surface layer of very dark gray to black fine sand grades into a layer of dark-gray fine sand. The substratum is pale-brown or very pale brown fine sand mottled with shades of yellow or grayish brown. The water table normally fluctuates within 3 feet of the surface.

Scranton soils are closely associated with Ona, Leon, Plummer, and Rutlege soils. They are most nearly like Ona soils, but they do not have a brown stained layer beneath their surface layer. They differ from Leon soils in having a thicker surface layer and in not having an organic pan. They have a thicker and darker surface layer than Plummer soils, and in most places are better drained. They are better drained than Rutlege soils.

The vegetation consists chiefly of longleaf pine, slash pine, gallberry, waxmyrtle, palmetto, and wiregrass. Scranton soils are suitable for cultivation, for use as pasture, and for use as woodland.

In Suwannee County, these soils occur mostly in the flatwoods section in the eastern part.

Scranton fine sand (Sd).—This is a nearly level, somewhat poorly drained, deep soil. Its major horizons are—

0 to 8 inches, black fine sand.
8 to 18 inches, dark-gray fine sand.
18 to 48 inches, pale-brown or very pale brown, loose fine sand.

The upper layers range from black to very dark gray in color and from 7 to 18 inches in thickness. These grade to a layer of pale-brown or very pale brown fine sand mottled with yellow. This layer is 24 to 60 inches thick in most places.

Mapped with this soil were small areas in which a layer of gray, yellow, or brown fine sandy clay loam or fine sandy loam occurs at a depth between 30 and 42 inches. Also included were small areas where the slope range is 2 to 5 percent.

This soil is strongly acid, high in organic-matter content, and medium to high in natural fertility. It is in good tilth, and it rarely needs more than shallow drainage to control excess water. It is well suited to cultivation, to pasture, and to trees. (Capability unit IIws–1; woodland group 10.)

Susquehanna Series

The soils in this series are gently sloping to strongly sloping, moderately deep, and somewhat poorly drained or moderately well drained.

Their surface layer is dark-gray or very dark gray fine sand 3 to 7 inches thick. Their subsurface layer is brown or light brownish-gray fine sand 4 to 16 inches thick. These overlie a layer of mottled, firm to very firm clay. Normally, the depth to this layer is less than 18 inches, but in places it is 18 to 30 inches.

Susquehanna soils are associated with Blanton and Bowie soils. The clayey material within the upper 30 inches of their profile distinguishes them from Blanton soils. Their more mottled, finer textured subsoil distinguishes them from Bowie soils. In many areas, these three soils are so intermingled that they were mapped together as a soil complex.

The vegetation is longleaf pine, bluejack oak, live oak, waxmyrtle, chinquapin, blackberry briers, and wiregrass. Most of the acreage has been cleared and is cultivated or is used as pasture. A few areas are still in native growth or have been planted to pine.

Susquehanna soils are extensive in Suwannee County. They occur throughout the central part.

Susquehanna fine sand, 2 to 5 percent slopes (SfB).—This is a somewhat poorly drained to moderately well drained soil on uplands. The major horizons are—

0 to 8 inches, gray to dark-gray, loose fine sand.
8 to 16 inches, brown clay mottled with strong brown and gray.
16 to 52 inches, light brownish-gray to light-gray, very firm clay mottled with red, dark red, reddish yellow, and gray.

In places the surface layer is loamy fine sand. The subsoil is mottled brown to reddish-brown clay 3 to 10 inches thick. Depth to the highly mottled, clayey substratum ranges from 10 to 24 inches.

Areas in which the subsoil is gray to very dark gray clay with small red mottles were mapped with this soil. Also included in the mapping was a small area in which the subsoil is dark brown. Outcrops of unrelated limerock occur in a few places, and a few acres are moderately eroded.

This soil is strongly acid, low in natural fertility, and low in organic-matter content. It has moderate available moisture capacity. The very slowly permeable subsoil is plastic and sticky when wet, firm when moist, and hard when dry.

This soil can be used safely for cultivation only occasionally and only if well managed. It is well suited to pasture and fairly well suited to pine trees. (Capability unit IVse–6; woodland group 4.)

Susquehanna fine sand, 5 to 8 percent slopes (SfC).—Because its slopes are steeper, runoff is more rapid on this soil than on Susquehanna fine sand, 2 to 5 percent slopes. Generally, this soil is not as deep as the more gently sloping phase. It is not suited to cultivation, but it is well suited to pasture and fairly well suited to pine trees. (Capability unit VIes–1; woodland group 4.)

Susquehanna fine sand, 5 to 8 percent slopes, eroded (SfC2).—This soil has a thinner surface layer and steeper slopes than Susquehanna fine sand, 2 to 5 percent slopes. Otherwise, it has similar characteristics. It is not suited to cultivation but is well suited to pasture and fairly well suited to pine trees. (Capability unit VIes–1; woodland group 4.)

Susquehanna fine sand, 8 to 12 percent slopes (SfD).—This soil has a slightly thinner surface layer and steeper slopes than Susquehanna fine sand, 2 to 5 percent slopes.

Otherwise, it is similar. About 51 acres of this soil are moderately eroded. This soil is not suited to cultivated crops but is well suited to pasture and fairly well suited to pine trees. (Capability unit VIes–1; woodland group 4.)

Susquehanna fine sand, thick surface, 2 to 5 percent slopes (ShB).—This is a somewhat poorly drained to moderately well drained soil on uplands. Its major horizons are—

0 to 20 inches, gray to grayish-brown, loose fine sand.
20 to 28 inches, strong-brown fine sandy clay loam mottled with brownish yellow.
28 to 40 inches, light-gray fine sandy clay mottled with reddish yellow and red.

The combined thickness of the surface layer and the subsurface layer ranges from 18 to 30 inches. The subsoil normally is mottled brown to yellowish-brown or red, firm, plastic clay. In places it is absent. In these places the substratum is finer textured and more highly mottled. Depth to the finer textured material is variable. In some areas the sandy surface layer extends to a depth of slightly more than 30 inches.

This soil is strongly acid, low in natural fertility, and low in organic-matter content. Its available moisture capacity is low.

Even if well managed, this soil can be cultivated safely only occasionally. It is well suited to pasture and fairly well suited to pine tree production. (Capability unit IVse–6; woodland group 4.)

Susquehanna-Blanton complex, 2 to 5 percent slopes (SnB).—In some areas, concentrated mostly in the central part of the county, Susquehanna soils are so intricately mixed with Blanton soils that separation was not feasible. Thus, in these areas the two soils were mapped together as a soil complex. The individual soils are described under their respective series.

Although a profile typical of the individual soils would not be difficult to find in any area of this complex, in most places the soil is an intergrade between the two. A fine sand surface layer overlies clayey substrata throughout the acreage. The thickness of the surface layer, however, varies widely over short distances. Limestone outcrops are common. Small areas of almost sterile sand that supports little vegetation are also common. These areas, locally known as sand soaks or dead spots, are only a few feet in diameter. In these, the sand usually is not underlain by clay but extends to great depths.

This complex is low in organic-matter content and in natural fertility. It has a low available moisture capacity.

The original vegetation was longleaf pine, oak, and wiregrass. Most areas have been cleared and cultivated. More recently, many areas are being used as pasture or have been reforested with slash pine. (Capability unit IIIse–4; woodland group 4.)

Susquehanna-Blanton complex, 5 to 8 percent slopes (SnC).—Except for steeper slopes, this complex is similar to Susquehanna-Blanton complex 2 to 5 percent slopes. Because of the steeper slopes, this complex is more susceptible to erosion; and due to erosion, its surface layer is thinner.

Mapped with this complex are a few moderately eroded areas and a few other areas, mostly on short breaks around the rim of sinkholes, where slopes are steeper than 8 percent. These areas are too small to delineate.

This complex is low in organic-matter content and in natural fertility. It has a low available moisture capacity. Generally, it is not suited to cultivated crops, but it is suited to deep-rooted grasses, including bahiagrass, and to pine trees. (Capability unit IVse–6; woodland group 4.)

Susquehanna-Blanton complex, 8 to 12 percent slopes (SnD).—This complex is similar to Susquehanna-Blanton complex, 2 to 5 percent slopes, but it has a thinner surface layer and is more susceptible to erosion because it has stronger slopes.

A few moderately eroded areas, too small to be mapped separately, were included with this complex.

This complex is low in organic-matter content and in natural fertility. It has low available moisture capacity. It is not suited to cultivated crops but is suited to deep-rooted grasses and pine trees. (Capability unit VIes–1; woodland group 4.)

Swamp (Sw)

This is a miscellaneous land type that is very poorly drained and is flooded periodically during the year. It occurs in low-lying positions on uplands where there are no natural drainage outlets and in areas adjacent to the Suwannee and Santa Fe Rivers. These areas are mostly in the northeastern and eastern parts of the county and around the perimeter.

Because of excess water or thick vegetation, these areas are not accessible for orderly examination of the soils. Therefore, the soil materials of this land type have not been classified.

The natural vegetation is chiefly a mixture of cypress, bay, gum, slash pine, myrtle, and vines. The proportion of each kind of vegetation varies considerably from place to place. Cypress, for example, is dominant in the most poorly drained areas, especially those areas in depressions or uplands.

In its native state, this land type provides food and cover for wildlife. Poor drainage and periodic flooding limit the vegetation to water-tolerant plants. Many areas could not be drained easily nor economically because of their small size or position on the landscape. (Not placed in a capability grouping; woodland group 11.)

Weston Series

The Weston series consists of nearly level, poorly drained, strongly acid soils in depressions or low, flat areas that have no natural drainage outlets.

The surface layer is dark-gray to black fine sand. It overlies a layer of light-gray to dark-gray fine sand. The subsoil and the layers below it are gray, dark-gray, or dark brownish-gray clay with pockets of sandy or silty material.

Weston soils are closely associated with Grady, Bladen, and Coxville soils. A surface layer that is thicker and fine-textured layers that have less red mottling and that have pockets or lenses of sandy material distinguish Weston soils from the associated soils.

The native vegetation is pine, oak, sumac, waxmyrtle, dwarf huckleberry, blackberry briers, sedges, and

wiregrass. Most of the acreage is in forest; some is in pasture and some is cultivated.

Weston soils are scattered throughout the county. Their total acreage is small.

Weston fine sand, dark subsoil variant (Wf).—This is a poorly drained, strongly acid soil. It closely resembles soils occurring in old lakebeds. Its major horizons are—

0 to 5 inches, dark-gray, loose fine sand.
5 to 15 inches, grayish-brown, loose fine sand splotched with light gray.
15 to 22 inches, dark-gray clay; dark-red mottles.
22 to 52 inches, very dark gray to black clay; red and dark-red mottles.

The surface layer ranges from dark gray to black in color and from 4 to 6 inches in thickness. In places its texture is loamy fine sand. The subsurface layer ranges from grayish brown to dark gray in color and from 12 to 24 inches in thickness. The subsoil and the layers below it are dark gray to black and mottled with red and yellowish brown. Pockets of sandy or silty material occur within the subsoil and the clayey substrata. Depth to the clayey material ranges from 14 to 30 inches.

Mapped with this soil were about 61 acres where the slope range is 2 to 5 percent.

This soil is strongly acid and has high available moisture capacity. Drainage is subterranean, since there are no natural drainage outlets. Permeability is rapid in the surface layer and slow in the subsoil and substrata. The water table is at or near the surface during periods of heavy rainfall.

The response to fertilization is good. If the soil receives adequate drainage and high-level management, it is good for cultivated crops and excellent for forage crops and improved pasture. It is poor for tobacco, peanuts, and watermelons. (Capability unit IIIws–1; woodland group 9.)

Zuber Series

The soils in this series are moderately well drained to well drained, gently sloping to strongly sloping, and moderately eroded in places. They were derived from thin layers of acid, marine loamy fine sand and fine sandy clay loam overlying phosphatic material.

The surface layer is very dark gray to very dark grayish-brown loamy fine sand. It is 5 to 8 inches thick and grades to a layer of yellowish-brown loamy fine sand that is 8 to 12 inches thick. The subsoil is yellowish-brown fine sandy clay loam about 18 inches thick. It overlies a layer of clay or fine sandy clay. In many places there are phosphatic pebbles on the surface and throughout the profile.

Zuber soils are closely associated with Arredondo, Gainesville, and Fort Meade soils. They differ from these soils in having finer textured material within the upper 30 inches of their profile. Furthermore, they are less brown and red than Gainesville soils, and they have a thinner surface layer than Fort Meade soils. Also, in many places, Zuber soils overlie rock beds at a depth of less than 30 inches.

The natural vegetation is loblolly pine, longleaf pine, sweetgum, many kinds of oaks, wiregrass, and briers.

The acreage of Zuber soils is small in Suwannee County. Most of it has been cleared and is now cultivated, or in pasture, or planted to pine.

Zuber loamy fine sand, 5 to 8 percent slopes, eroded (ZuC2).—This is a well-drained soil that developed from phosphatic sand and clay. Its major horizons are—

0 to 7 inches, dark grayish-brown or very dark grayish-brown, very friable loamy fine sand.
7 to 14 inches, yellowish-brown, very friable loamy fine sand.
14 to 33 inches, yellowish-brown, friable fine sandy clay loam.
33 to 56 inches, light-gray, friable to firm fine sandy clay loam to sandy clay mottled with shades of red and brown.
56 to 82 inches, white fine sandy clay mottled with yellow and reddish yellow.

The surface layer ranges from 5 to 8 inches in thickness, and the subsurface layer, from 6 to 10 inches. The subsoil is yellowish-brown fine sandy clay loam, except for the uppermost few inches, which is yellowish-brown fine sandy loam. Phosphatic and ferruginous stones occur from place to place in variable numbers. (On the map in the back of this report, the conventional symbol for stones identifies areas where there are stones enough to affect cultivation.)

This soil has moderate natural fertility and moderate organic-matter content. It is in good tilth, except in the more severely eroded and rockier areas. The available moisture capacity is moderate. Permeability is moderate to rapid in the surface layer and moderate to very slow in the subsoil.

This is a good soil for improved pasture. Gullies (which are common), slope, erosion, and susceptibility to erosion restrict use for cultivated crops. (Capability unit IVe–1; woodland group 3.)

Zuber loamy fine sand, 2 to 5 percent slopes (ZuB).—This soil is similar to Zuber loamy fine sand, 5 to 8 percent slopes, eroded, but it has smoother and less steep slopes, is less eroded, and has a thicker root zone.

The following are included in the mapped areas of this soil: 10 acres of soils that have a browner or redder subsoil, 77 acres of stony soils, and 23 acres of moderately eroded soils.

This soil responds well to management. It is well suited to general farm crops and to improved pasture. (Capability unit IIe–1; woodland group 3.)

Zuber loamy fine sand, 5 to 8 percent slopes (ZuC).—This soil is similar to Zuber loamy fine sand, 5 to 8 percent slopes, eroded, but it is less eroded and it has a slightly deeper root zone. Sheet erosion is not serious, and only a few shallow gullies have formed on this soil.

The following are included in the mapped areas of this soil: 29 acres of soils that have a browner or redder subsoil, and 68 acres of stony soils.

This soil responds well to management. It is only moderately well suited to general farm crops (fig. 8) but is well suited to improved pasture. (Capability unit IIIe–1; woodland group 3.)

Zuber loamy fine sand, 8 to 35 percent slopes (ZuE).—This soil is steeper but generally less eroded than Zuber loamy fine sand, 5 to 8 percent slopes, eroded, and it has a thinner solum.

The acreage of this soil is small. Included in mapping were 26 acres of stony soils.

Because this soil is steep and susceptible to erosion, it is not suited to cultivated crops. Where its slopes are not too steep, it is moderately well suited to improved pasture. (Capability unit VIIe–1; woodland group 3.)

Figure 8.—**Area of Zuber loamy fine sand, 5 to 8 percent slopes. If well managed, this soil yields 75 bushels or more of corn per acre.**

Use of the Soils for Agriculture

This section discusses general practices of good soil management, contains a table that gives, for each soil, estimated yields of crops and pasture under two levels of management, explains the capability classification system, and discusses, by capability unit, the use and management of the soils in the county.

General Soil Management [2]

The soils in Suwannee County used for cultivation are porous, droughty, deficient in plant nutrients, and susceptible to wind erosion. Following is the general management they most need.

Practices for Improving Supply of Organic Matter

The management practices most needed in this county are those that increase the amount of organic matter in the soils. The organic matter adds some nitrogen to the soils as it decays, but more important, it improves the ability of the soils to hold water and to retain plant nutrients added in fertilizer. The amount of organic matter can be increased in a soil by (1) conserving residues from cultivated crops, (2) growing cover crops after cultivated crops and plowing down the cover crops, and (3) rotating cultivated crops with pasture in such a way that sod is plowed down after the soil has been in grass for 2 years or more.

[2] By H. E. Van Arsdall, State soil conservationist, Soil Conservation Service.

Conserving crop residues.—Residues from cultivated crops should be left on the surface of the soil or incorporated in the soil. The cultivated row crops commonly grown in this county are corn, peanuts, tobacco, and watermelons. Even at a high level of management, these do not furnish crop residues in amounts sufficient to improve the supply of organic matter in the soils.

Growing cover crops.—If a cover crop follows a row crop, it protects the soil while growing and provides organic matter when it is plowed into the soil. Either legumes or nonlegumes are suitable as cover crops. The nonlegumes, such as small grains, are less effective than the legumes in furnishing organic matter.

Legumes provide more residue than nonlegumes and also release to the soil nitrogen that can be used by crops that follow. Suitable legumes in this county are lupine, indigo, and southern peas. Lupine, a winter cover crop, can follow a cultivated summer crop. Indigo and southern peas can be grown alone, following a row crop, or they can be seeded in corn. If they are seeded in corn, this is normally done at the last cultivation of the corn, and they make most of their growth late in summer and in fall.

Rotating tilled crops with pasture.—Pastures fit well in the system of general farming used in this county. The pastures provide most of the forage for cattle, protect the soils from erosion, and produce large amounts of organic matter when plowed under. Also, use of the soils as pasture helps to control root knot nematodes, which are harmful to tobacco, an important crop in the county.

The principal grass used for pasture in Suwannee County is bahiagrass (fig. 9), but improved bermudagrass is also used. Both are well adapted to the climate. Bahiagrass is established by seed, and improved bermudagrass by sprigs. Both grasses need fertilizer containing nitrogen, phosphate, and potash for satisfactory growth. Improved bermudagrass is better suited to hay production. If large amounts of fertilizer are used, bermudagrass produces more forage than behiagrass. Both produce about the same if small amounts of fertilizer are used.

Clovers are suitable only for those soils that have a high available moisture capacity or a high water table.

Figure 9.—**Pasture of Pensacola bahiagrass on Susquehanna fine sand, 2 to 5 percent slopes (class IV soil). In the background, planted pines on Susquehanna fine sand, 5 to 8 percent slopes (class VI soil).**

White clover is the best adapted, but crimson clover can be grown. Hairy indigo, a summer legume, sometimes is seeded with bahiagrass when pastures are being established, but it usually does not persist with the grass for more than 1 or 2 years. To grow satisfactorily, these legumes need fertilizer that contains phosphate and potash.

For good growth of pastures, ground limestone should be applied periodically. The amount and frequency of application of both limestone and fertilizer should be determined by soil tests. Grazing should be regulated so that pasture plants have time to recover after they are grazed. Thus, more forage will be produced and the soils will be better protected.

Controlling Erosion

In Suwannee County, most of the soils suitable for cultivation are fine sands that are highly susceptible to wind erosion (fig. 10) in spring. The fine sand particles carried by the wind damage crops and sometimes completely cover young plants. Water erosion (fig. 11) is a problem in areas where there is a heavy concentration of water from higher positions or from roads, buildings, or other structures. Erosion, whether by water or wind, reduces the supply of organic matter and of plant nutrients in the soil.

Leaving plant residues on or just below the surface and keeping the soils under vegetation as much as possible can effectively control both wind and water erosion. Other erosion control practices include (1) establishing grasses in areas where there is a heavy concentration of water that has drained from higher places, (2) cultivating on the contour on the steeper slopes, and (3) in the spring, growing small grains, lupine, or other close-growing crops in strips between cultivated crops (fig. 12).

Applying Lime and Fertilizer

The soils in Suwannee County are normally acid. Lime is needed to obtain satisfactory yields of most crops. The soils that have been influenced by phosphatic material or by limestone need less lime than the rest, but still require lime occasionally. Typical soils influenced by phosphatic material are the Gainesville and Arredondo. The Chiefland and Jonesville are representative of those soils influenced by limestone.

Figure 10.—**Sand along road blew through fence from cultivated field of Blanton fine sand, 0 to 5 percent slopes. Farther along the fence is a soil protected by sod; it did not blow.**

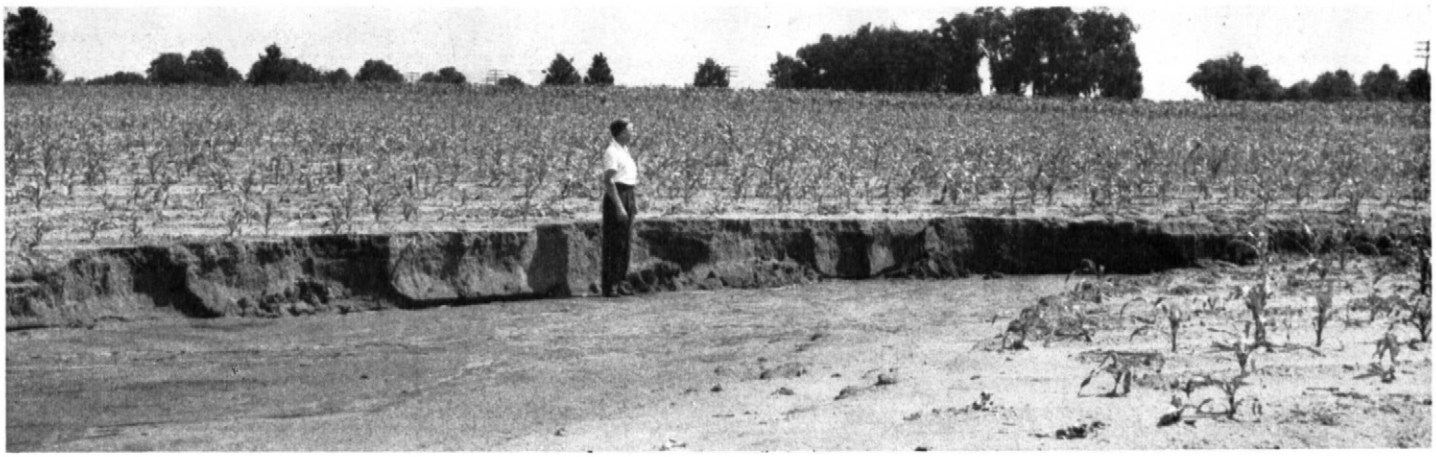

Figure 11.—**A field of Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes, damaged during storm by drainage water from field above.**

Figure 12.—On the left, strips of a small grain alternating with clean-tilled crops help protect against wind erosion. On the right, freshly plowed, wind-blown, unprotected field of Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes.

Figure 13.—An excavated farm pond that can be used for irrigation.

For satisfactory production of most crops, all of the soils in the county need fertilizer containing nitrogen, phosphate, and potash. Legumes are the exception; they usually grow satisfactorily without the addition of nitrogen.

Since little of the applied nitrogen and potash is retained by the soils in the county, there is little advantage in applying any more than the crop being grown can use. Phosphate is retained, however, and if it has been applied regularly over a period of years, the additional amount needed for satisfactory production decreases.

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The county agricultural agent, by means of soil tests, can determine the amount of fertilizer and lime needed for best production.

Irrigation

Because most of the soils in the county have a low available moisture capacity, irrigation is profitable, especially in fields of tobacco, truck crops, and other cash crops of high value. Sprinkler irrigation is suitable. Deep wells usually supply the water, but some excavated ponds (fig. 13) in soils that have a high water table are suitable sources. Ponds constructed in drains having small watersheds are also suitable.

Estimated Yields

Table 2 lists estimated average acre yields for the principal crops grown in the county at two levels of management. Yields in the table are based on information obtained from many farmers in the county, from the district soil consevationist, from the county agricultural agent, from observations by members of the soil survey party, from research material compiled by the Florida Agricultural Experiment Stations, and from recorded crop yields. For many soils, accurate recorded crop yields were not available; estimates for these are based on yields for a similar soil.

In the A columns are yields to be expected under customary management, and in the B columns are yields to be expected under improved management, excluding irrigation. Improved management practices include the following:

1. Choosing adapted, high-yielding varieties for planting.
2. Preparing the seedbed properly to assure maximum germination of seeds.
3. Using a proper rate of seeding and planting at the right time by improved methods.
4. Controlling insects and diseases.
5. Applying fertilizer in amounts at least equal to the current recommendations of the county agricultural agent and the Florida Agricultural Experiment Stations in relation to the needs indicated by soil tests.
6. Inoculating legumes.
7. Applying and maintaining appropriate soil and water conservation, such as sodding of waterways, contour tillage, and stripcropping.
8. Cultivating row crops according to current recommendations of the Florida Agricultural Experiment Stations.
9. Using a cropping system that will help control erosion, maintain the structure of the soil, and add organic matter.

The level of management needed to get the yields in the B columns is about equivalent to that described for the soils in the subsection "Capability Groups of Soils."

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

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

The subclasses indicate major limitations within the classes. Within most of the classes there can be up to four kinds of subclasses. The subclass is 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 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*, which is not used in Suwannee County, indicates that the chief limitation is climate that is too cold or too dry.

Most soils in Suwannee County have two subclass limitations almost equal in their effect on use and management. Some excessively drained soils are both droughty and subject to wind and water erosion; hence have both *s* and *e* limitations. Many perennially wet soils (subclass *w*) have serious limitations (subclass *s* or *e*) even if adequately drained. Those soils having two limitations have two small letters following their class numeral, for example, IIIse. The first letter represents the more severe limitation.

Class I has no subclasses, because the soils in this class have few or no limitations. Class V can have, at the most, only subclasses *w*, *s*, and *c*, because the soils in it are not likely to erode but have other limitations that restrict their use largely to pasture, woodland, or wildlife.

Within the subclasses are the capability units, which are groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally identified by numbers assigned locally, for example, IIe–1 or IIIse–2.

Soils are placed in capability classes, subclasses, and units according to the degree and kind of their permanent limitations, but without considering possible but unlikely reclamation projects, or major and generally expensive landforming to change slope, depth, or other characteristics of the soil.

The eight classes in the capability system, and the subclasses and units in this county are described in the list that follows.

Class I. Soils that have few limitations that restrict their use. (Suwannee County has no class I soils.)

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

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

Unit IIe–1.—Gently sloping, well-drained, deep soils that have a loamy fine sand surface layer and a well-developed, clayey subsoil; permeability is moderately slow in the subsoil.

Subclass IIes. Soils moderately limited by risk of erosion if not protected, and by moisture capacity and low natural fertility.

Unit IIes–1.—Gently sloping, slightly eroded, well-drained soils that have sandy surface layers and a friable to firm, clayey subsoil.

TABLE 2.—*Estimated average acre yields of principal crops and carrying capacity of pasture under two levels of management*

[Yields in A columns are to be expected under common management; those in B columns, under improved management excluding irrigation. Absence of yield in a column indicates that the crop is not commonly grown, that yields would be too low if the crop were grown, or that needed management is too exacting to warrant growing the crop]

Map symbol	Soil	Corn		Peanuts		Bright tobacco		Watermelons		Pasture			
										Grass		Small grain	
		A	B	A	B	A	B	A	B	A	B	A	B
		Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Lb.*	*No.*	*No.*	*Cow-days* [1]	*Cow-days* [1]	*Lb. of beef*	*Lb. of beef*
Al	Alluvial land												
AhA	Archer-Susquehanna fine sands, 0 to 2 percent slopes	20	40	800	1,600	1,200	1,550	250	360	150	325	60	145
AhB	Archer-Susquehanna fine sands, 2 to 5 percent slopes	18	36	700	1,450	1,075	1,400	225	325	135	295	55	130
AhC	Archer-Susquehanna fine sands, 5 to 8 percent slopes	16	32	650	1,300	950	1,250	200	300	120	260	50	100
AnA	Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes	18	36	800	1,600	1,200	1,550	250	360	150	325	60	145
AnB	Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes	16	32	700	1,450	1,075	1,400	225	325	135	295	55	130
AnC	Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes	14	28	650	1,300	950	1,250	200	300	150	325	50	100
ArB	Arredondo fine sand, 0 to 5 percent slopes	18	35	550	1,100	1,200	1,600	250	360	160	300	70	160
ArC	Arredondo fine sand, 5 to 8 percent slopes	16	32	500	1,000	1,075	1,450	225	325	145	270	65	145
ArD	Arredondo fine sand, 8 to 12 percent slopes									130	240		
AsB	Arredondo fine sand, moderately shallow, 0 to 5 percent slopes	20	40	550	1,100	1,200	1,600	250	360	160	300	70	160
AsC	Arredondo fine sand, moderately shallow, 5 to 8 percent slopes	18	36	500	1,000	1,075	1,450	225	325	145	270	65	145
Bb	Bayboro fine sandy loam	15	40							150	325		
BfB	Blanton fine sand, high, 0 to 5 percent slopes	15	30	475	900	1,100	1,475	250	325	150	275	60	150
BfC	Blanton fine sand, high, 5 to 8 percent slopes	13	27	425	800	1,000	1,325	225	300	135	250	55	135
BfD	Blanton fine sand, high, 8 to 12 percent slopes									120	220		
BfE	Blanton fine sand, high, 12 to 35 percent slopes									80	200		
BhB	Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes	15	30	475	900	1,100	1,475	250	325	150	275	60	150
BmB	Blanton fine sand, low, 0 to 5 percent slopes	20	45	600	1,600	1,000	2,000	200	300	175	350	60	155
BmC	Blanton fine sand, low, 5 to 8 percent slopes	18	40	525	1,400	900	1,800	175	275	150	315	55	135
BmD	Blanton fine sand, low, 8 to 12 percent slopes	16	35			800	1,600	150	250	140	280	50	125
BnB	Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes	20	45	600	1,200	1,000	2,000	200	300	175	350	60	155
BnC	Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes	18	40	525	1,050	900	1,800	175	275	150	315	55	135
BoB	Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes	20	45	600	1,200	1,000	2,000	200	300	175	350	60	155
BoC	Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes	18	40	525	1,050	900	1,800	175	275	150	315	55	135
BtB	Blanton-Chiefland fine sands, 0 to 5 percent slopes	15	30	700	1,500	1,150	1,500	250	345	150	275	60	150
BtC	Blanton-Chiefland fine sands, 5 to 8 percent slopes	13	27	600	1,350	1,025	1,350	225	310	135	250	55	135
BuA	Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes									175	350		
BuB	Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes									175	350		
BvB	Bowie fine sand, 2 to 5 percent slopes	35	65	800	1,400	1,200	1,600	250	360	150	320	80	160
BvC	Bowie fine sand, 5 to 8 percent slopes	30	60	700	1,250	1,075	1,450	225	325	135	290	70	145
BwB	Bowie fine sand, thick surface, 2 to 5 percent slopes	30	60	800	1,400	1,200	1,600	250	360	150	320	80	160
BwC	Bowie fine sand, thick surface, 5 to 8 percent slopes	27	55	700	1,250	1,075	1,450	225	325	135	290	70	145
BxB	Bowie-Blanton complex, 2 to 5 percent slopes	30	60	750	1,350	1,200	1,600	250	360	150	320	80	160
BxC	Bowie-Blanton complex, 5 to 8 percent slopes	27	55	700	1,250	1,075	1,450	225	325	135	290	70	145
ChB	Chiefland fine sand, 0 to 5 percent slopes	15	30	700	1,500	1,150	1,500	250	345	150	275	60	150
ChC	Chiefland fine sand, 5 to 8 percent slopes	13	27	600	1,350	1,025	1,350	225	310	135	250	55	135
FfB	Fellowship loamy fine sand, 2 to 5 percent slopes	25	55	800	1,600			225	350	160	375	45	120
FfC	Fellowship loamy fine sand, 5 to 8 percent slopes	22	50	700	1,450			200	315	145	340	40	110
FfD	Fellowship loamy fine sand, 8 to 12 percent slopes									130	300		

See footnote at end of table.

TABLE 2.—*Estimated average acre yields of principal crops and carrying capacity of pasture under two levels of management*—Continued

Map symbol	Soil	Corn		Peanuts		Bright tobacco		Watermelons		Pasture			
										Grass		Small grain	
		A	B	A	B	A	B	A	B	A	B	A	B
		Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Lb.*	*No.*	*No.*	*Cow-days* [1]	*Cow-days* [1]	*Lb. of beef*	*Lb. of beef*
FmC	Fort Meade loamy fine sand, 5 to 8 percent slopes	18	36	700	1,450	1,125	1,500	225	325	150	300	70	150
GaB	Gainesville loamy fine sand, 2 to 5 percent slopes	20	40	800	1,600	1,250	1,650	250	360	165	325	75	165
GaC	Gainesville loamy fine sand, 5 to 8 percent slopes	18	36	700	1,450	1,125	1,500	225	325	150	285	70	150
GfB	Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes	20	40	800	1,600	1,250	1,650	250	360	165	325	75	165
Gr	Grady fine sandy loam, thick surface									175	350		
Gx	Grady, Bladen, and Coxville soils									175	350		
HdB	Hernando fine sand, 2 to 5 percent slopes	20	40	800	1,600	1,200	1,550	250	360	150	325	60	145
HdC	Hernando fine sand, 5 to 8 percent slopes	18	36	700	1,450	1,075	1,400	225	325	135	300	55	130
KaB	Kanapaha fine sand, 0 to 5 percent slopes	20	45	500	1,000	1,000	2,000	200	300	175	350	60	155
KaC	Kanapaha fine sand, 5 to 8 percent slopes	18	40	450	900	900	1,800	175	275	150	315	55	140
KfB	Klej fine sand, 0 to 5 percent slopes	20	45	600	1,600	1,000	2,000	200	300	175	350	60	155
LaB	Lakeland fine sand, 0 to 5 percent slopes	15	30	500	1,000	1,150	1,500	250	360	150	275	60	150
LaC	Lakeland fine sand, 5 to 8 percent slopes	13	27	450	900	1,025	1,350	225	325	135	250	55	135
LdB	Lakeland and Jonesville fine sands, 0 to 5 percent slopes	15	30	800	1,600	1,150	1,500	250	345	150	275	60	150
LfA	Leon fine sand, 0 to 2 percent slopes									160	325		
LmA	Leon fine sand, loamy substratum, 0 to 5 percent slopes									160	325		
Ln	Leon and Ona fine sands	20	40							175	350	60	165
Lo	Local alluvial land	35	70	600	1,500	1,400	1,900	225	350	200	350	70	180
Lp	Local alluvial land, phosphatic	50	80	650	1,650	1,500	2,000	225	350	200	380	75	200
Mp	Mine pits and dumps										300		
Pa	Peat									100	225		
PdA	Plummer fine sand, 0 to 2 percent slopes									100	225		
PdB	Plummer fine sand, 2 to 5 percent slopes									100	225		
Pf	Plummer fine sand, depressions									175	350	60	155
Ph	Plummer fine sand, high	20	35			1,000	1,800	200	300	100	225		
Pm	Plummer fine sand, moderately shallow												
PrD	Plummer, Bladen, and Rains soils, 5 to 17 percent slopes									75	200		
Ps	Pomello fine sand										275		
Ru	Rutlege fine sand									150	320	40	110
SaB	Sandy and clayey land, gently sloping	20	40	500	1,000	1,200	1,550	200	300	135	290		
ScC	Sandy and clayey land, sloping									200	350	60	165
Sd	Scranton fine sand	25	70							150	325	60	145
SfB	Susquehanna fine sand, 2 to 5 percent slopes	20	40	700	1,400	1,200	1,550	225	325	135	290	55	130
SfC	Susquehanna fine sand, 5 to 8 percent slopes			600	1,250	1,075	1,400	200	300	120	260		
SfC2	Susquehanna fine sand, 5 to 8 percent slopes, eroded									120	260		
SfD	Susquehanna fine sand, 8 to 12 percent slopes									150	325	60	145
ShB	Susquehanna fine sand, thick surface, 2 to 5 percent slopes	20	40	700	1,400	1,200	1,550	250	360	150	325	60	145
SnB	Susquehanna-Blanton complex, 2 to 5 percent slopes	20	40	700	1,400	1,200	1,500	250	360	135	290		
SnC	Susquehanna-Blanton complex, 5 to 8 percent slopes									120	260		
SnD	Susquehanna-Blanton complex, 8 to 12 percent slopes												
Sw	Swamp									175	350	60	150
Wf	Weston fine sand, dark subsoil variant	15	45							150	350	90	175
ZuB	Zuber loamy fine sand, 2 to 5 percent slopes	50	75	650	1,600	1,430	2,000	250	350	135	315	80	160
ZuC	Zuber loamy fine sand, 5 to 8 percent slopes	45	65	600	1,450	1,300	1,800	225	315	120	290	70	140
ZuC2	Zuber loamy fine sand, 5 to 8 percent slopes, eroded	40	60	500	1,300	1,150	1,600	200	285	80	250		
ZuE	Zuber loamy fine sand, 8 to 35 percent slopes												

[1] Number of days a year that 1 acre of pasture will graze 1 cow without injury to the pasture.

Subclass IIws. Soils moderately limited by excess water and sandy texture.
Unit IIws–1.—Nearly level, somewhat poorly drained or poorly drained, deep, acid, sandy soils having high organic-matter content.
Subclass IIse. Soils moderately limited by soil qualities affecting the root zone and by risk of erosion if not protected.
Unit IIse–1.—Nearly level, moderately well drained to somewhat poorly drained, moderately deep soils that have acid, sandy surface layers and a friable or plastic clay subsoil underlain in places by limestone.
Subclass IIsw. Soils moderately limited by soil qualities affecting the root zone and by seasonal wetness.
Unit IIsw–1.—Nearly level, moderately well drained soils in depressions that are flooded occasionally.

Class III. Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
Subclass IIIe. Soils severely limited by risk of erosion if they are tilled and not protected.
Unit IIIe–1.—Sloping, moderately eroded, well-drained, deep soils that have a loamy sand surface layer and a well-developed, moderately permeable, clayey subsoil.
Subclass IIIes. Soils severely limited by risk of erosion if cultivated and not protected, and by limited available moisture capacity and low natural fertility.
Unit IIIes–1.—Strongly sloping, slightly eroded, well-drained soils that have a fine sand surface layer and a friable, clayey subsoil.
Subclass IIIws. Soils severely limited by excess water, and by moisture capacity and natural fertility.
Unit IIIws–1.—Nearly level, poorly drained, strongly acid, wet soils that have dark-gray to black fine sandy loam and loamy fine sand surface layers and a very slowly permeable, very firm, plastic clay subsoil.
Subclass IIIse. Soils severely limited by moisture capacity and fertility, and by risk of erosion if not protected.
Unit IIIse–1.—Gently sloping, well-drained, medium acid soils that have rapidly permeable loamy fine sand surface layers more than 30 inches thick.
Unit IIIse–2.—Nearly level to gently sloping, very rapidly permeable soils that have sandy layers 30 to more than 60 inches thick.
Unit IIIse–3.—Nearly level to gently sloping, well-drained, very rapidly permeable, medium acid to strongly acid, deep sands.
Unit IIIse–4.—Nearly level to gently sloping, strongly acid, rapidly permeable, deep sands.
Unit IIIse–5.—Gently sloping, well-drained, moderately deep soils that have an acid, sandy surface layer and a friable subsoil underlain by limestone in places.
Subclass IIIsw. Soils severely limited by poor soil characteristics and by excess water.
Unit IIIsw–1.—Nearly level to gently sloping, slightly wet, medium acid, deep sands.
Unit IIIsw–2.—Gently sloping soils that have a dark-gray to black loamy fine sand surface layer and a slowly permeable, clayey subsoil; excessively wet for short periods.

Class IV. Soils that have very severe limitations that restrict the choice of plants, or that require very careful management, or both.
Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.
Unit IVe–1.—Strongly sloping to very strongly sloping, slightly eroded to moderately eroded, well-drained to somewhat poorly drained, moderately deep to deep soils that have a loamy surface layer; permeability is moderate to very slow in the subsoil.
Subclass IVes. Soils very severely limited by risk of erosion if not protected, and by low available moisture capacity and low natural fertility.
Unit IVes–1.—Strongly sloping to very strongly sloping, slightly eroded to moderately eroded, somewhat poorly drained to well drained, moderately deep soils that have an acid, sandy surface layer and a firm, sticky clay subsoil underlain by limestone in places.
Subclass IVse. Soils very severely limited by low available moisture capacity, low natural fertility, and severe hazard of erosion if cultivated and not protected.
Unit IVse–1.—Sloping to very strongly sloping, well-drained, medium acid to neutral soils that have loamy fine sand surface layers more than 30 inches thick; influenced by phosphatic material.
Unit IVse–2.—Nearly level to strongly sloping, slightly wet, strongly acid, rapidly permeable, deep sands.
Unit IVse–3.—Sloping, slightly to moderately wet, medium acid, deep sands influenced by phosphatic material.
Unit IVse–4.—Sloping, deep, droughty, very rapidly permeable sands.
Unit IVse–5.—Sloping to strongly sloping, well-drained, very rapidly permeable, medium acid to neutral, deep sands influenced by phosphatic material or limestone.
Unit IVse–6.—Gently sloping to sloping, slightly eroded to moderately eroded, moderately well drained and somewhat poorly drained, moderately deep to shallow soils that have a sandy or loamy surface layer and a very slowly permeable, clayey subsoil.
Subclass IVsw. Soils very severely limited by low natural fertility and low available moisture capacity, and by excess water.
Unit IVsw–1.—Nearly level, wet to slightly wet, strongly acid, rapidly permeable, deep, sandy soils.

Unit IVsw–2.—Nearly level, moderately wet to wet, strongly acid, sandy soils that are shallow to an organic matter-stained layer or pan.

Class V. Soils that are not likely to erode but that have other limitations, impractical to remove, that restrict their use largely to pasture, woodland, or food and cover for wildlife.

Subclass Vws. Soils unsuitable for cultivation because of excess water and poor soil qualities.

Unit Vws–1.—Nearly level to gently sloping, strongly acid, wet soils that overflow periodically.

Unit Vws–2.—Nearly level, strongly acid, very wet, deep sands.

Subclass Vsw. Soils generally unsuitable for cultivation because of poor soil qualities and wetness.

Unit Vsw–1.—Level and gently sloping, slightly wet, deep, nearly white sands.

Unit Vsw–2.—Nearly level, wet to moderately wet, strongly acid, sandy soils that have an organic pan at a depth of less than 30 inches.

Class VI. Soils that have severe limitations that make them generally unsuitable for cultivation and that restrict their use largely to pasture, range, woodland, or wildlife.

Subclass VIe. Soils not suitable for crop production and limited for other uses chiefly by the risk of erosion.

Unit VIe–1.—Strongly sloping, slightly eroded, phosphatic soils that have a loamy fine sand surface layer and a slowly permeable, clayey subsoil.

Subclass VIes. Soils generally unsuitable for cultivation and limited for other uses by risk of erosion and by poor soil characteristics.

Unit VIes–1.—Sloping and strongly sloping, slightly eroded to moderately eroded, shallow or very shallow, moderately well drained and well drained soils that have sandy or loamy surface layers and a very slowly permeable, clayey subsoil.

Subclass VIse. Soils generally unsuitable for cultivation and limited for other uses by their low available moisture capacity and low natural fertility, and by a severe risk of erosion.

Unit VIse–1.—Strongly sloping, well-drained, strongly acid, deep sands.

Unit VIse–2.—Strongly sloping, slightly eroded to moderately eroded, medium acid sands more than 42 inches thick and influenced by phosphatic material.

Class VII. Soils that have very severe limitations that make them unsuitable for cultivation and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIe. Soils very severely limited, chiefly by risk of erosion.

Unit VIIe–1.—Strongly sloping to steep, slightly eroded to moderately eroded, well-drained, moderately deep to deep, phosphatic soils that have a loamy fine sand surface layer and a clayey subsoil.

Subclass VIIws. Soils very severely limited by excess water and by poor soil qualities.

Unit VIIws–1.—Nearly level to steep, poorly drained and very poorly drained soils adjacent to streams and on seepy hillsides.

Unit VIIws–2.—Level, very wet, very strongly acid to extremely acid, deep, woody and felty organic material.

Subclass VIIse. Soils and miscellaneous land types very severely limited by low fertility and available moisture capacity, and by risk of erosion.

Unit VIIse–1.—Steep, well-drained, deep sands.

Unit VIIse–2.—Mine pits and dumps.

Class VIII. Soils and landforms that have no agricultural value because of limitations that restrict their use to recreation, wildlife, water supply, or esthetic purposes. (Suwannee County has no class VIII soils.)

Management by Capability Units

In the following pages, each of the capability units in Suwannee County is described, the soils in each are listed, and management for each group is suggested.

Capability unit IIe–1

Zuber loamy fine sand, 2 to 5 percent slopes, is the only soil in this unit. It is a deep, well-drained, medium acid, phosphatic soil that occurs as small areas. Its acreage in the county is small.

The loamy fine sand is 10 to 18 inches thick. The subsoil is friable sandy clay loam or firm sandy clay 12 to 24 inches thick.

This soil is easily kept in good tilth. The root zone is moderately deep to deep. The organic-matter content is moderate in the surface and subsurface layers. This soil is well able to hold plant nutrients in available form. It is above average in natural fertility and has an especially high content of phosphate. The available moisture capacity is moderately high to high.

Use and management.—This soil is suited to many kinds of crops, is not subject to leaching, and in most years does not need irrigation. It erodes easily if cultivated and not protected, but it is highly productive if crop residues are conserved, lime and fertilizer are applied, and a cropping system is used that keeps sod crops or green-manure crops on the soil at least half the time.

This soil is suited to most grasses and legumes grown in the county. Lupine, indigo, and crimson clover grow well under good management. Summer grasses, including bahiagrass and improved bermudagrass, are well suited and produce large quantities of hay and pasture when adequately fertilized and limed.

Capability unit IIes–1

This unit consists of shallow to moderately deep, strongly acid soils that are no more than slightly eroded. Many of the slopes are short. The soils are—

Bowie fine sand, 2 to 5 percent slopes.
Bowie fine sand, thick surface, 2 to 5 percent slopes.
Bowie-Blanton complex, 2 to 5 percent slopes.

The fine sand surface layer of these soils ranges from 8 to 30 inches in thickness but in most places is 18 to 30 inches thick. In a few small areas this layer is thicker than 30 inches. The subsoil is friable to firm sandy clay to clay 12 to 30 inches thick. The lower part is mottled

and usually denser than the upper part. The mottled substrata below the subsoil consist of very firm and compact sandy clay or plastic clay.

These soils are low in natural fertility. The surface layer is low to medium in organic-matter content; it is very permeable and has moderately low available moisture capacity. The upper part of the subsoil is moderately permeable to slowly permeable; it has a moderately high available moisture capacity. The lower part of the subsoil and the substrata are very slowly permeable. Water and air move very slowly through these layers, and plant roots cannot penetrate easily.

Use and management.—These soils are only moderately well suited to cultivated crops and are susceptible to erosion. Crop yields are low unless good management is practiced. Productivity can be increased by conserving crop residues, applying lime and fertilizer regularly, and using green-manure crops or cover crops in the rotation (fig. 14). Cultivated crops should not be grown more than half the time. Improved pasture grasses should occupy the soils at least 2 years out of 4.

Moderately good pasture can be grown. Most of the tame grasses adapted to the Florida climate are suitable. Most legumes grow only moderately well, but the more drought resistant ones grow successfully on the deeper soils. To control erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick growth of the grasses and legumes should be encouraged. Regular application of lime and fertilizer is necessary to insure satisfactory growth of pasture.

Capability unit IIws–1

Scranton fine sand is the only soil in this unit. It is a somewhat poorly drained or poorly drained soil that developed from acid sand and clay. It occurs in small low areas. The slope range is 0 to 5 percent.

The surface layer consists of very dark gray or black fine sand. It is 7 to 18 inches thick and overlies a porous layer of gray or grayish-brown fine sand 12 to 24 inches thick. These layers are underlain by more porous fine sand. Fine-textured substrata are at a depth below 30 inches.

***Figure 14.*—Rotating row crops with legume cover crops is a good practice for Bowie fine sand, thick surface, 2 to 5 percent slopes, and for other soils in capability unit IIes–1.**

This soil is high in organic-matter content and medium to high in natural fertility. Surface runoff is slow, but the soil is very permeable and water moves rapidly through it. In wet seasons the water table rises to within a few inches of the surface. In dry seasons it may recede to a depth below 60 inches.

Use and management.—The deep sandy surface layer, rapid permeability, rapid leaching, and other inherent characteristics place minor restrictions on the use of this soil. Imperfect drainage causes periodic wetness and restricts the variety of crops that can grow, or make simple drainage necessary. Erosion is not a problem.

This soil is good for truck crops, potatoes, corn, small grains, soybeans, and other cultivated crops. Its productivity can be increased by conserving crop residues, applying lime and fertilizer regularly, and keeping green-manure crops, cover crops, or other soil-improving crops on the soil at least half the time. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the soil at least 2 years out of 4. Simple surface drainage and bedding usually are sufficient to prevent damage to most crops. Control of the water table is essential if truck crops are grown.

If well managed, this soil produces excellent improved pasture. Because it has high organic-matter content and favorable moisture conditions, it is well suited to clover-grass pastures for winter grazing and to improved tame grass pastures for warm-weather grazing. Pastures should be established and managed according to the most up-to-date methods. Liberal liming is required, and yields are closely related to the quantity of fertilizer applied. Simple drainage is required to remove excess surface water after heavy rains.

Capability unit IIse–1

This unit consists of nearly level, moderately well drained or somewhat poorly drained soils that are affected by limestone in places. The soils are—

Archer-Susquehanna fine sands, 0 to 2 percent slopes.
Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes.

The surface layer of these soils consists of fine sand or loamy fine sand. Its thickness varies widely within short distances but is 6 to 30 inches in most places. The subsoil is friable or plastic, somewhat mottled fine sandy clay or sandy clay. Its thickness ranges from 6 inches to more than 30 inches. Some small areas do not have this clayey layer, and many areas are underlain by limestone within 4 feet of the surface.

These soils are low to moderate in natural fertility. The surface layer is low in organic-matter content and very strongly acid. It has a low available moisture capacity. The subsoil is strongly acid to neutral. It has a high available moisture capacity. Water moves rapidly through the surface layer. It is somewhat restricted in the slowly permeable subsoil, but in most areas it drains through numerous sand pockets into the underlying porous strata.

Use and management.—These soils are suited to a wide variety of uses. They can be cultivated safely if adequate fertility is maintained, moisture conditions are improved, and permeability of the subsoil is increased. Water erosion is only a slight hazard, but wind erosion can be severe. Strips of vegetation across cultivated fields are needed to keep the soils from blowing.

Most of the common crops can grow on these soils, but yields are low unless soil-improving practices are followed. Fertilizer and lime should be applied frequently; crop residues should be left on the surface; and cover crops should be kept on the soils at least half the time. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the soils at least 2 years out of 4. The sod should be plowed under when the soils are again planted to cultivated crops.

Most tame grasses adapted to the well-drained soils of central and northern Florida grow well on these soils if adequate amounts of fertilizer and lime are applied. The response to fertilizer warrants fairly heavy applications. Although hairy indigo, lupine, sweetclover, and other deep-rooting legumes can grow successfully, grass-legume pastures are difficult to establish and maintain.

Capability unit IIsw-1

This unit consists of moderately well drained land types. They occur as small isolated areas in pockets or other low positions at the bottom of slopes. The land types are—

Local alluvial land.
Local alluvial land, phosphatic.

These land types vary in texture and in stratification because they consist of deposits of soil material from adjacent areas. Recently deposited material is predominantly coarse textured, and material that has accumulated over a long period is fine textured in most places. The characteristics of these land types depend somewhat on the nature of the soils from which they have formed.

The surface layer ranges from gray or dark gray to black in color and from 4 to 12 inches in thickness. The texture ranges from sand to sandy clay loam. The material below the surface layer varies widely in color and texture.

Most of the new deposits are low in organic-matter content, whereas the older ones are high in organic-matter content. All areas are moderately high to high in natural fertility. The available moisture capacity varies from place to place, but it is high in most places.

Use and management.—These land types are suitable for intensive cultivation. Occasionally they are flooded by runoff from adjacent areas. Each area presents its own problem in water management, but seldom does an area require more than simple drainage or diversion of water from higher places. Only moderate conservation practices are needed to maintain good soil qualities. Erosion is not a problem.

In many places these land types occur as small areas in fields of other soils. Because they are more fertile, they support plants better than the surrounding soils that have received similar treatment.

These land types are suited to most of the crops commonly grown in the county. Crops are damaged occasionally by runoff from adjacent slopes. Excess water has to drain internally, since surface outlets are seldom available. Clean-tilled crops should not occupy the land more than half the time; they should be rotated with green-manure crops. If clean-tilled crops are rotated with improved pasture, well-managed sod should occupy the land at least 2 years out of 4. Although moderately fertile, the soils respond well to heavy applications of lime and fertilizer.

These land types are well suited to improved pastures. Most of the tame grasses adapted to the Florida climate grow well if lime and fertilizer are used and if grazing is controlled. Deep-rooting clover also grows well. On the more loamy areas, pasture shows excellent response to fertilizer.

Capability unit IIIe-1

Zuber loamy fine sand, 5 to 8 percent slopes, is the only soil in this unit. It is a deep, well-drained soil that developed from unconsolidated sand and clay mixed with some fragments of phosphatic rock.

This soil has a surface layer of loamy sand. It has a well-defined subsoil of friable to firm sandy clay loam or sandy clay within 30 inches of the surface.

This soil is easily kept in good tilth. It has a moderately deep to deep root zone. It is medium acid to strongly acid, has moderate organic-matter content, and is well able to hold plant nutrients in available form. Its available moisture capacity is moderately high to high. Permeability is moderate to rapid in the surface layer and moderate to slow in the subsoil.

Use and management.—Because of good soil qualities, including high natural fertility, this soil is suited to many crops. Runoff is rapid, however, because of steep slopes and slow infiltration; consequently, the hazard of erosion is severe. Nevertheless, if intensive erosion control practices are employed, this soil can be cultivated.

This soil can be highly productive if crops are arranged in strips on the contour, if crop residues are left on it, if lime and fertilizer are applied regularly, and if soil-improving perennials and cover crops or green-manure crops are used in the rotation at least two-thirds of the time. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the soil at least 2 years out of 3, or 4 years out of 6.

Crops will grow without irrigation because the supply of soil moisture is favorable. Sprinkler irrigation, however, can supplement rainfall, especially at critical times, to obtain the best yields of high-value crops.

This soil is suited to most grasses and legumes grown in Florida. If adequately fertilized and limed, it is a good soil for tall fescue, white clover, crimson clover, sweetclover, and other cool-season plants. It is well adapted to summer grasses, including bermudagrass and bahiagrass, and can produce high yields of hay and pasture. To control erosion, the soil should be seeded as soon as possible after the land has been prepared, and quick growth of the grasses should be encouraged. Regular applications of fertilizer and lime are needed for satisfactory growth. Phosphate requirements are low, but the response to other fertilizers is so good that heavy fertilization is practical.

Capability unit IIIes–1

The soils in this unit are well drained and either not eroded or only slightly eroded. They are—

Bowie fine sand, 5 to 8 percent slopes.
Bowie fine sand, thick surface, 5 to 8 percent slopes.
Bowie-Blanton complex, 5 to 8 percent slopes.

In most places fine sand extends to a depth of 10 to 30 inches. In a few places it extends below 30 inches. The fine sand in the uppermost 4 to 6 inches is grayish brown to gray. The subsoil is friable to firm sandy clay to clay 12 to 30 inches thick. In most places it is mottled in the lower part. Layers of highly mottled, firm, compact, strongly acid sandy clay or plastic clay underlie the subsoil.

The organic-matter content is medium to low in the surface layer. Permeability is rapid in the surface and subsurface layers, moderately slow in the upper part of the subsoil, and slow below that. The available moisture capacity is low in the surface and subsurface layers and moderately high in the upper part of the subsoil.

Use and management.—Because of good soil qualities, including the capacity to hold available plant nutrients and a moderately deep root zone, these soils are suited to most plants. Runoff is rapid, however, because of steep slopes and slow infiltration; consequently, the hazard of erosion is severe. Nevertheless, if intensive erosion control practices are followed, these soils can be cultivated.

These soils are not readily leached, and they retain fertilizers well. They can be highly productive if crops are arranged in strips across the slope, if crop residues are conserved, if lime and fertilizer are applied in adequate amounts, and if soil-improving perennials and cover crops or green-manure crops are used in the rotation at least three-fourths of the time. If cultivated crops are rotated with improved pasture, well-managed pasture should occupy the soils at least 3 years out of 4. All natural draws and other points of water concentration should be kept in perennial close-growing vegetation.

These soils are suited to most grasses and legumes grown in Florida. If adequately fertilized and limed, they are good soils for crimson clover, sweetclover, and other cool-season plants. They also are well adapted to summer grasses, particularly improved bermudagrass and bahiagrass, and produce high yields. To control erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick growth of the grasses should be encouraged. Regular applications of fertilizer and lime are needed for satisfactory growth. The good response to fertilizers warrants heavy applications.

Capability unit IIIws–1

This unit consists of poorly drained soils that occur in low, flat areas and in depressions. The soils are—

Bayboro fine sandy loam.
Weston fine sand, dark subsoil variant.

The upper layers of these soils range from loamy fine sand to fine sandy loam in texture and from 8 to 30 inches in thickness. The uppermost 8 to 18 inches is dark gray to black and grades to light gray or gray. The subsoil is mottled, very plastic sandy clay.

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These soils are strongly acid throughout. They are moderate in natural fertility and medium to very high in organic-matter content. The most poorly drained areas are highest in organic-matter content. The available moisture capacity is high. Permeability is slow to very slow in the subsoil.

Use and management.—Because of somewhat favorable soil qualities, including good surface texture, medium to very high organic-matter content, high available moisture capacity, and moderate fertility, these soils are suitable for cultivation. Wetness, however, is a major limitation. The very slowly permeable subsoil makes adequate water control difficult. Even if well-established drains are provided, some soils are still subject to waterlogging during wet seasons. The very poorly aerated subsoil restricts the root zone and thereby limits the range of crops.

If they are cultivated, these soils need properly spaced shallow ditches and bedding that remove surface water. Also needed are lime and fertilizer in adequate amounts and a cropping system that frequently includes deep-rooting green-manure crops to help improve structure, tilth, and permeability. In most places permeability in the surface layer is too slow to allow effective subirrigation. The soils are not droughty; their available moisture capacity is high.

The soils in this unit are well suited to most of the tame grasses grown in Florida. Simple drains are needed to remove surface water if these soils are to be used as improved pasture. Tall fescue, white clover, sweetclover, and other cool-season plants grow well if the soils are fertilized and limed. Heavy applications of fertilizer and lime are needed for best returns.

Capability unit IIIse–1

This unit consists of well-drained, sandy soils that developed from deep loamy sand influenced by phosphatic material. They occur as broad areas on uplands. The soils are—

Gainesville loamy fine sand, 2 to 5 percent slopes.
Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes.

In most places the surface and subsurface horizons consist of loamy fine sand and extend to a depth of more than 42 inches. In some places, however, they are underlain by fine-textured material at a depth of 30 to 42 inches. Gullies have formed in a few areas.

These soils are medium acid and moderate in natural fertility. They are somewhat droughty in dry seasons because they are porous and have low available moisture capacity. Water and air move rapidly through them, and added plant nutrients leach out readily.

Use and management.—Because low available moisture capacity and rapid permeability make these soils both droughty and low in plant nutrients, they need intensive management if they are cultivated. Furthermore, they are moderately susceptible to both wind and water erosion if they are not protected.

Most of the common crops are grown on these soils, but yields are low unless intensive soil-improving practices are followed. For tilled crops the practices generally needed are cultivating on the contour, applying fertilizer and lime frequently, working crop

residues into the soil, and practicing a rotation that keeps sod crops or cover crops on the land at least two-thirds of the time. If cultivated crops are rotated with improved pasture, a well-managed sod of high-quality is needed on the soils at least 4 years out of 6. The sod should be plowed under when the soils are to be planted to tilled crops.

These soils are well suited to pasture. They are good for most grasses and for indigo, crimson clover, and sweetclover, but they are too sandy for fescue or white clover. These soils need adequate applications of lime and fertilizer to produce satisfactory yields of grasses and legumes. Since the soils respond well to fertilizer, heavy applications are practical. Erosion can be controlled by seeding the land soon after it has been prepared and by encouraging quick growth of the grasses. Grazing should be rotated and controlled to prevent stunting of the grasses.

Capability unit IIIse–2

This unit consists of well-drained, slightly eroded, sandy soils that occur as broad areas on uplands. The soils are—

Blanton fine sand, high, 0 to 5 percent slopes.
Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes.
Lakeland fine sand, 0 to 5 percent slopes.

The surface and subsurface layers consist of sand or fine sand 30 to more than 60 inches thick. In most places they are underlain below a depth of 60 inches by layers of fine sandy loam to sandy clay loam.

These soils are strongly acid, low in organic-matter content, and low in natural fertility. They are porous and have a low available moisture capacity. Water and air move rapidly through them, and added plant nutrients leach out readily.

Use and management.—Droughtiness and low plant-nutrient content severely limit the suitability of these soils for agricultural use. Water erosion is only a minor hazard, but wind erosion is often severe if the soils are not protected.

These soils are well suited to watermelons, bright tobacco, and a few other special crops. Cultivated crops should be rotated with cover crops so as to keep the soil-improving crops on the soil at least two-thirds of the time. If row crops are rotated with improved pasture, well-managed sod should occupy the soil 4 years out of 6. During the 2 years of cultivation, furthermore, row crops should be followed by cover crops. Terraces are not necessary, because the soils are porous enough to absorb excess water, but crops should be grown in strips across the slope to provide adequate protection against wind erosion. Liberal use of fertilizer is necessary. Where an easily accessible supply of water is available, sprinkler irrigation for special crops of high value is desirable.

These soils are moderately well suited to improved pasture. Pangolagrass, bahiagrass, and other deep-rooting grasses grow well. Although hairy indigo, lupine, and other deep-rooting legumes grow successfully, they are difficult to establish and maintain. Pasture management should provide adequate fertilizing and liming, and also controlled grazing.

Capability unit IIIse–3

This unit consists of nearly level to gently sloping, well-drained soils that developed from sand and fine sand influenced in places by phosphatic material or by limestone. The soils are—

Arredondo fine sand, 0 to 5 percent slopes.
Arredondo fine sand, moderately shallow, 0 to 5 percent slopes.
Blanton-Chiefland fine sands, 0 to 5 percent slopes.
Chiefland fine sand, 0 to 5 percent slopes.
Lakeland and Jonesville fine sands, 0 to 5 percent slopes.

These soils have fine sand to a depth of 30 to 60 inches. In a few small areas, however, they are less than 30 inches deep. In places the fine sand overlies phosphatic material or limestone.

These soils are medium acid to strongly acid and low in most of the essential plant nutrients. They are droughty during normal dry seasons because they have poor moisture-holding properties. They are porous; water and air move rapidly through them.

Use and management.—Sandy texture and associated poor qualities severely limit the suitability of these soils for cultivation. Low natural fertility, low available moisture capacity, and rapid permeability restrict the choice of crops and make it necessary to use soil-improving crops frequently in the rotation. Water erosion is only a minor problem, but wind erosion is a hazard if the soils are not protected (fig. 15).

These soils are poorly suited to most cultivated crops. They are suited to watermelons, peanuts, bright tobacco, and a few other special crops. Soil-improving cover crops should be kept on the soils at least two-thirds of the time. If cultivated crops are rotated with improved

Figure 15.—**Windbreak of slash pine protects Blanton-Chiefland fine sands, 0 to 5 percent slopes, and other loose sand soils from wind erosion.**

pasture, well-managed sod should occupy the soils 4 years out of 6. Also, during the 2 years of cultivation, row crops should be followed by annual cover crops. Terraces are neither necessary nor desirable, but crops should be grown in strips across the slope to provide protection from wind erosion. Liberal use of fertilizer is necessary. Where an easily accessible supply of water is available, sprinkler irrigation for special crops of high value is desirable.

Soils in this unit are moderately well suited to improved pasture. Pangolagrass, bahiagrass, and other deep-rooting grasses grow well. Although hairy indigo, lupine, and other deep-rooting legumes grow successfully, they are difficult to maintain. Pasture management should provide adequate fertilizing and liming, as well as controlled grazing.

Capability unit IIIse–4

This unit consists of well drained and moderately well drained soils that developed from thick beds of sand. The soils are—

Blanton fine sand, low, 0 to 5 percent slopes.
Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes.
Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes.
Klej fine sand, 0 to 5 percent slopes.
Susquehanna-Blanton complex, 2 to 5 percent slopes.

The surface layer of these soils is sand or fine sand. It is 3 to 12 inches thick and overlies faintly mottled sand or fine sand that, except in a few places, extends to a depth of more than 30 inches. In some places sandy clay underlies sand or fine sand at a depth of 30 to 42 inches.

These soils are low in natural fertility, and they are porous. Water moves rapidly through them; consequently, they are droughty. The depth to the water table varies, but normally the water table is 36 to 72 inches below the surface. The water table is high enough to affect the amount of moisture in the subsoil; consequently, these soils are less droughty during a normal dry season than are the associated soils at higher elevations.

Use and management.—Conservation practices needed for the soils in this unit are mainly those that enable the soils to retain more water and plant nutrients. Erosion, particularly that caused by wind, is a hazard in unprotected areas. Ordinarily, however, the practices that improve the soils also control erosion.

Soils in this unit are moderately well suited to most of the common crops but need intensive soil-improving practices if they are to produce high yields. All crop residue should be left on the soils and incorporated in the surface layer. Cover crops should be grown at least two-thirds of the time and worked into the soil when they mature. Improved pasture can be rotated with cultivated crops (fig. 16) to provide well-managed, high-quality sod 3 years out of 4, or 4 years out of 6.

Since much of their acreage is in large, nearly level, relatively uniform tracts, these soils are well suited to large field layouts. In these large fields, cover crops should be planted in strips spaced at short intervals to reduce soil blowing. Some areas of these soils are small and difficult to manage properly because they are surrounded by either wetter or drier soils. In these small areas, fertilizer and lime should be applied regularly, just as in the large fields.

Figure 16.—**Rotating tobacco with bahiagrass pasture is a good practice on soils in capability unit IIIse–4.**

If they are properly fertilized and limed and are otherwise well managed, the soils in this unit are well suited to the deep-rooting tame grasses and the legumes that grow well on sandy uplands. Pastures are less affected by drought on these soils than on similar soils in capability unit IIIse–2.

Capability unit IIIse–5

This unit consists of gently sloping, well-drained, sandy soils that are moderately eroded in places. The soils are—

Archer-Susquehanna fine sands, 2 to 5 percent slopes.
Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes.
Hernando fine sand, 2 to 5 percent slopes.

The surface layer of these soils is fine sand or loamy fine sand. It grades to fine sandy loam. The thickness of the surface and subsurface layers varies within short distances and ranges from 6 to 30 inches in most places. The subsoil is somewhat mottled, firm clay or sandy clay. Within short distances the thickness of the subsoil ranges from 6 inches to more than 30 inches. Limestone underlies these soils in most places.

These soils are slightly acid to medium acid and low to moderate in natural fertility. The available moisture capacity is low in the sandy surface and subsurface layers and high in the subsoil. Water moves rapidly through the surface and subsurface layers. It is somewhat restricted in the slowly permeable subsoil but drains through many small sand-filled openings and into the underlying porous substrata.

Use and management.—These soils are suited to a wide variety of uses. They can be cultivated safely under management designed to maintain an adequate fertility level, to improve moisture conditions, and to improve permeability in the subsoil. Water erosion is only a moderate hazard, but wind erosion is a severe one.

Most of the common crops are grown on these soils, but yields are low unless soil-improving practices are followed. Fertilizer should be applied frequently, and lime occasionally. Crop residues should be worked into the soils, and clean-tilled crops rotated with cover crops at least two-thirds of the time.

Strips of vegetation across cultivated fields are needed to keep the soils from blowing. If cultivated crops are rotated with improved pasture, well-managed sod of high-quality should occupy the soils at least 4 years out of 6. The sod should be plowed under when the soils are cultivated again. Terraces are not practical on these soils.

Most tame grasses adapted to the well-drained soils of central and northern Florida grow well on these soils if adequate amounts of fertilizer and lime are applied. The response to fertilizer warrants fairly heavy applications. Although hairy indigo, lupine, sweetclover, and other deep-rooting legumes can grow successfully, grass-legume pastures are difficult to establish and maintain.

Capability unit IIIsw–1

Kanapaha fine sand, 0 to 5 percent slopes, is the only soil in this unit. It is a moderately well drained or somewhat poorly drained, sandy soil that developed from moderately thick beds of sand underlain by phosphatic sandy clay loam.

This soil has layers of fine sand extending to a depth of more than 42 inches, but in some areas sandy clay material is at a depth between 30 and 42 inches. Numerous pebbles are scattered throughout the profile in places.

This soil is medium acid and low in natural fertility. It is very porous. Water and air move rapidly through it. Normally the water table fluctuates between 12 and 60 inches below the surface. The available moisture capacity is low, but because of favorable moisture conditions in the lower profile, this soil is less droughty during a normal dry season than the associated soils at higher elevations.

Use and management.—Low fertility and periodic wetness are the main restrictions on use for cultivated crops. The practices needed are chiefly those that enable the soil to retain plant nutrients. Though it is rapidly permeable, this soil may become saturated to the surface during a prolonged wet period. Wind erosion and water erosion are not hazards.

Most of the common crops are grown on this soil, but usually yields are low unless soil-improving practices are followed. Fertilizer and lime should be applied regularly; crop residues should be left on the surface; and cover crops should occupy the soil at least two-thirds of the time and should be chopped into the soil when mature. A rotation that includes improved pasture and cultivated crops also improves soil qualities. A good sod should be established and maintained 4 years out of 6; it should be plowed under before the soil is cultivated.

Some isolated areas of this soil are small and difficult to manage properly because they are surrounded by either wetter or drier soils.

If it is properly fertilized and limed and otherwise well managed, this soil is well suited to the deep-rooting tame grasses and legumes that grow well on sandy uplands. Because of the high water table, pastures are less affected by drought on this soil than on similar sandy soils.

Capability unit IIIsw–2

Fellowship loamy fine sand, 2 to 5 percent slopes, is the only soil in this unit. It is a gently sloping soil derived from thin deposits of sand overlying clayey phosphatic material.

In most places this soil has surface and subsurface horizons of loamy fine sand less than 18 inches thick. In a few places these horizons are 18 to 30 inches thick. The subsoil is plastic sandy clay loam to clay. Texture and thickness of the subsoil vary within short distances. Underlying geologic material is stratified sand and heavy clay with high content of phosphatic, pebbly material.

This soil is medium in natural fertility. It has a moderately high available moisture capacity. Plant nutrients leach out slowly. Water moves very slowly through the subsoil. Consequently, the soil is waterlogged for short periods after heavy rains.

Use and management.—This soil is suitable for cultivation but requires intensive soil-improving and erosion control practices. Runoff is rapid during heavy rainfall, because the soil is slowly permeable. The soil erodes easily, and it is excessively wet for short periods after heavy rainfall.

This soil is moderately well suited to cultivated crops. Yields are moderately high and can be increased considerably if crop residues are incorporated into the soil; if deep-rooting, soil-improving crops are included in the rotation; and if complete fertilizers and lime are applied regularly. A good cover of vegetation should be established to protect against erosion. Clean-tilled crops should not be grown more than one-third of the time. A close-growing annual cover crop should be grown between rows of clean-tilled crops. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the soil at least 4 years out of 6.

If adequately fertilized and limed, this soil is suited to most grasses and legumes adapted to Florida, including sweetclover and other cool-season plants, bermudagrass, pangolagrass, bahiagrass, hairy indigo, and other summer grasses and legumes. Plant growth is satisfactory and yields, both of hay and pasture, are high. Phosphate requirements are relatively low, but heavy applications of other fertilizers are practical for highest yields.

Capability unit IVe–1

This unit consists of well-drained to somewhat poorly drained soils that developed from phosphatic sand and clay. They are slightly eroded to moderately eroded. The soils are—

Fellowship loamy fine sand, 5 to 8 percent slopes.
Zuber loamy fine sand, 5 to 8 percent slopes, eroded.

The horizons of loamy fine sand are less than 30 inches thick. They overlie a friable to firm sandy clay loam or sandy clay subsoil. The parent material is unconsolidated sand and clay with some fragments of phosphatic rock.

These soils are medium acid to strongly acid. Their root zone is moderately deep to deep. The organic-matter content is moderate to high in the loamy fine sand horizons. The available moisture capacity is moderately high to high. Permeability is moderate to rapid above the subsoil and moderate to very slow in the subsoil. The soils are well able to hold plant nutrients in available form.

Use and management.—Runoff is rapid because of steep slopes and slow infiltration; consequently, the hazard of erosion is severe. Nevertheless, if intensive erosion control practices are followed, the soils can be cultivated.

These soils are suited to many crops. They are above average in fertility and are particularly high in phosphate. They are not readily leached and retain fertilizers well. They can be highly productive soils if crop residues are conserved, if adequate amounts of lime and fertilizer are applied, and if grass sod or other effective close-growing cover crops and green-manure crops make up at least three-fourths of the crop rotation. If cultivated crops are rotated with improved pasture, well-managed pasture should occupy the land at least 3 years out of 4. All natural draws and other points of water concentration should be kept in perennial close-growing vegetation. Cultivation should be in strips on the contour. The slopes are too steep and too irregular to be terraced. They do not need irrigation.

Most grasses and legumes grown in Florida are adapted to these soils. If adequately fertilized and limed, the soils can produce high yields of summer grasses, particularly improved bermudagrass and bahiagrass. Under good management, white clover grows well with pasture grasses. To control erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick grass growth should be encouraged. Regular applications of fertilizer and lime are needed for satisfactory growth. Phosphate requirements are low, but the favorable response to other fertilizers makes heavy fertilization practical.

Capability unit IVes-1

This unit consists of well-drained to somewhat poorly drained, slightly eroded to moderately eroded soils that are underlain by limestone in most places. The soils are—

Archer-Susquehanna fine sands, 5 to 8 percent slopes.
Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes.
Hernando fine sand, 5 to 8 percent slopes.

The surface layer is fine sand or loamy fine sand that grades to fine sandy loam. It varies in thickness within short distances but is less than 30 inches thick in most places. The subsoil is firm or plastic, slowly permeable, mottled fine sandy clay or clay. It ranges from 6 inches to more than 30 inches in thickness. In some small areas this layer is absent.

These soils are slightly acid to medium acid and low to moderate in natural fertility. Their available moisture capacity is low in the surface layer and high in the subsoil. Water moves rapidly through the surface layer but is somewhat restricted in the subsoil. It drains through small sand-filled openings in the subsoil and into the underlying strata.

Use and management.—Runoff is very rapid because of steep slopes and slow permeability in the subsoil; consequently, the hazard of erosion is severe. Wind erosion is also a serious hazard if the soils are not protected by vegetation.

The suitability of these soils for cultivation is severely limited by the hazard of erosion. Grass sod or cover crops should occupy the land at least three-fourths of the time, and a strip rotation should be followed. If the soils are cultivated they should be fertilized frequently and limed occasionally. All crop residues should be worked into the soil. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the land at least 3 years out of 4. The surface is too irregular for contour cultivation or terraces.

These soils are well suited to improved pasture and hay. If adequately fertilized and limed, they produce good yields of most tame grasses adapted to the well-drained soils of central and northern Florida. Response to fertilizer warrants fairly heavy applications. Although hairy indigo, sweetclover, and other deep-rooting legumes grow successfully, grass-legume pastures are difficult to establish and maintain.

Capability unit IVse-1

This unit consists of well-drained, sandy soils that developed from deep loamy sand influenced by phosphatic material. The soils are—

Fort Meade loamy fine sand, 5 to 8 percent slopes.
Gainesville loamy fine said, 5 to 8 percent slopes.

The surface layer and subsurface layers consist of loamy fine sand and extend to a depth of more than 42 inches. In places fine-textured material is at a depth between 30 and 42 inches. Active gullies have formed in some areas.

These soils are medium acid to neutral in reaction and moderate in natural fertility. They have a moderate to low available moisture capacity and are somewhat droughty in dry season. They are porous; water and air move rapidly through them, and added plant nutrients leach out readily.

Use and management.—The suitability of these soils for agricultural use is severely limited because they are droughty and low in plant nutrients. Because of the steep slopes, they are susceptible to water erosion.

Most of the crops common to the surrounding areas are grown on these soils, but yields are low unless intensive soil-improving practices are followed. Grass sod or cover crops should occupy the land at least three-fourths of the time, and a strip rotation should be followed. If cultivated crops are rotated with improved pasture, well-managed pasture of high quality should occupy the land at least 3 years out of 4. All crop residues should be worked into the soil. Plowing should be on the contour and sod strips left at intervals, or an

annual cover crop should be grown between rows of cultivated crops. Fertilizer and lime should be applied frequently. The soils are too sandy for terraces. Erosion should be controlled by means of vegetation.

These soils are well suited to pasture. They are good soils for indigo, sweetclover, and most summer grasses but are too sandy for fescue and white clover. They need to be well fertilized and limed to produce satisfactory yields of grasses and legumes. Good response to fertilizer makes heavy applications practical. To control erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick growth of the grasses should be encouraged. Grazing should be rotated and controlled to prevent stunting of the grasses.

Capability unit IVse–2

The soils in this unit are deep and moderately well drained for the most part. They are moderately eroded in some small areas. The soils are—

Blanton fine sand, low, 5 to 8 percent slopes.
Blanton fine sand, low, 8 to 12 percent slopes.
Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes.
Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes.

These soils are usually mottled or splotched below the surface. Their surface layer is fine sand and extends to a depth of 30 inches or more. In a few somewhat poorly drained areas, fine-textured material is at a depth of 12 to 30 inches.

These soils are strongly acid throughout. They are very porous within the root zone; water drains rapidly and leaches out plant nutrients. Because they retain little water, the soils are droughty. Those on long, narrow slope breaks are affected by the variable high water table of the adjoining, nearly level soils of the same type. Those in other, more extensive areas are wet in the subsoil because of seepage from higher slopes. This free water in the lower part of the root zone reduces droughtiness.

Use and management.—The soils in this unit usually occur as small areas within the larger areas of soils in capability unit IIIse–4. They require more intensive treatment than the surrounding soils. Because they are low in natural fertility, they need to be fertilized and limed. Soil-improving crops are needed also to produce even moderate yields.

These soils are suited to the same crops as those that can be grown on soils in capability unit IIIse–4 but, because erosion is a greater hazard on these soils, they should be planted to close-growing cover crops most of the time. They should not be planted to clean-tilled crops more than one-fourth of the time.

If properly fertilized, limed, and otherwise well managed, these soils are well suited to the deep-rooting tame grasses and the legumes that grow well on sandy uplands. Management requirements for improved pasture are similar to those of soils in capability unit IIIse–4.

Capability unit IVse–3

Kanapaha fine sand, 5 to 8 percent slopes, is the only soil in this unit. It is a moderately well drained soil that developed from moderately thick beds of sand and fine sand overlying phosphatic sandy clay loam. This soil is inextensive and occurs as small areas on slope breaks.

The fine sand surface layer ordinarily extends to a depth of more than 42 inches. In places, however, sandy clay material underlies the surface layer at a depth between 30 and 42 inches. Pebbles are scattered throughout the profile.

This soil is medium acid, low in natural fertility, and low in organic-matter content. It is very porous; water and air move rapidly through it and plant nutrients are readily leached. In wet seasons, however, the soil is quickly saturated and the ensuing runoff is rapid. The loose sand surface layer erodes easily if not protected by vegetation. The available moisture capacity is low, but seepage keeps the soil wet most of the time. In places where seepage water is not abundant, the soil is droughty. Because of seepage, this soil is less droughty during a normal dry season than the associated soils.

Use and management.—Usually this soil occurs as small areas within larger areas of the soil in capability unit IIIsw–1. It requires more intensive treatment than the surrounding, more gently sloping soil.

This soil is suited to the same crops as those grown on the soil in capability unit IIIsw–1, but, because erosion is a greater hazard on this soil, it should be planted to close-growing cover crops most of the time. It should not be planted to clean-tilled crops more than one-fourth of the time. Because this soil is low in natural fertility, it requires fertilizer and lime, along with intensive use of soil-improving crops, to produce even moderate yields.

If properly established, adequately fertilized and limed, and otherwise well managed, this soil is well suited to the deep-rooting tame grasses and the legumes adapted to sandy uplands. Pastures are affected less by drought on this soil than on similar sandy soils because seepage keeps the root zone moist even during dry seasons.

Capability unit IVse–4

This unit consists of well-drained, uneroded, sandy soils on uplands. The soils are—

Blanton fine sand, high, 5 to 8 percent slopes.
Lakeland fine sand, 5 to 8 percent slopes.

The upper layers are 42 to more than 60 inches thick. In most places they are underlain below 60 inches by fine sandy loam to sandy clay loam.

These soils are strongly acid, low in natural fertility, and low in organic-matter content. They have a low available moisture capacity and are droughty. They are very porous. Water and air move rapidly through them, and added plant nutrients leach out readily.

Use and management.—The suitability of these soils for cultivation is severely limited by poor soil qualities. Conservation practices needed are mainly those that enable the soils to retain more water and plant nutrients. Erosion is a moderate hazard on unprotected slopes, but the practices needed to improve the soils are also adequate to control the erosion.

These soils are suited to a very limited number of cultivated crops. Watermelons and bright tobacco grow successfully, but these and other cultivated crops should be grown in a rotation that keeps soil-improving cover

crops on the soils at least three-fourths of the time. Cover crops should be planted in strips across the slope to control wind erosion. If cultivated crops are rotated with improved pasture, well-managed sod should occupy the soils 3 years out of 4. Liberal applications of fertilizers are needed.

These soils are moderately well suited to improved pasture. Pangolagrass, bahiagrass, and other deep-rooting grasses grow well. Hairy indigo and other deep-rooting legumes also grow well, but careful management is needed to establish and maintain them as grass sod. Controlled grazing and frequent fertilizing and liming are necessary.

Capability unit IVse-5

This unit consists of well-drained, slightly eroded soils that developed from sand and fine sand overlying and influenced by phosphatic material or limestone. The soils are—

Arredondo fine sand, 5 to 8 percent slopes.
Arredondo fine sand, moderately shallow, 5 to 8 percent slopes.
Blanton-Chiefland fine sands, 5 to 8 percent slopes.
Chiefland fine sand, 5 to 8 percent slopes.

The surface horizon of these soils normally extends to a depth of more than 42 inches. In a few places, however, fine-textured material is at a depth between 30 and 42 inches.

These soils are medium acid to neutral in reaction and low in most of the essential plant nutrients. They have very poor moisture-holding properties and are droughty during a normal dry season. They are very porous. Water and air move rapidly through them.

Use and management.—The suitability of these soils for cultivation is severely limited by poor soil qualities. Furthermore, wind erosion is a severe hazard if the soils are unprotected, and water erosion is a moderate hazard on unprotected slopes. The conservation practices needed, mainly those that enable the soils to retain more water and plant nutrients, also control erosion.

These soils are well suited only to watermelons, peanuts, bright tobacco, and a few other special crops. Soil-improving cover crops or grass sod should be used in the rotation at least three-fourths of the time. If cultivated crops are rotated with improved pasture, well-managed sod of high quality should occupy the soils at least 3 years out of 4. Terraces are not practical, but cover crops should be planted in strips across the slope. Liberal use of fertilizer is necessary.

These soils are moderately well suited to improved pasture. Pangolagrass, bahiagrass, and other deep-rooting grasses grow well. Hairy indigo and other deep-rooting legumes also grow well but are difficult to maintain as pasture. Carefully controlled grazing and frequent fertilizing and liming are necessary.

Capability unit IVse-6

The soils in this unit are moderately well drained and somewhat poorly drained. They are slightly eroded for the most part and moderately eroded in places. Shallow gullies are common. The soils are—

Sandy and clayey land, gently sloping.
Susquehanna fine sand, 2 to 5 percent slopes.
Susquehanna fine sand, thick surface, 2 to 5 percent slopes.
Susquehanna-Blanton complex, 5 to 8 percent slopes.

The surface layer is gray fine sand to fine sandy loam 6 to 18 inches thick. It is underlain by a very slowly permeable subsoil of plastic or compact sandy clay to clay. The subsoil grades to very slowly permeable, highly mottled sandy clay and clay.

These soils are strongly acid, low in organic-matter content, and low in natural fertility. The root zone is shallow because the subsoil is poorly aerated and otherwise not favorable to root development. The available moisture capacity of the root zone is low.

Use and management.—The suitability of these soils for cultivation is very severely limited by unfavorable internal soil conditions. Furthermore, crops are affected by excess water during seasons of heavy rainfall and by drought during dry seasons. Also, the soils are quickly saturated, and the ensuing runoff is rapid. Consequently, erosion is a serious hazard. The shallower soils are in poor tilth and are difficult to plow.

These soils, for the most part, are poorly suited to commonly grown row crops. If row crops are grown, grass sod or close-growing cover crops should be on the soils at least three-fourths of the time. If tilled crops are rotated with improved pasture, well-managed sod should occupy the soils at least 3 years out of 4. Excess water should be controlled by strips of vegetation and by contour cultivation. Use of complete fertilizers and lime is necessary. Terraces are not practical.

Moderately good improved pastures can grow on these soils. Most tame grasses adapted to the Florida climate can grow also, but their growth is stunted in dry seasons because roots cannot penetrate deeply. Most legumes do not grow well, but the more drought-resistant ones grow successfully on the deeper soils if the soils are well managed. To prevent erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick growth should be encouraged. Regular applications of fertilizer and periodic liming are needed for satisfactory growth. Active gullies should receive special attention. Water should be diverted away from them and a good sod established.

Capability unit IVsw-1

Plummer fine sand, high, is the only soil in this unit. This is a somewhat poorly drained soil that developed from thick beds of sand. It occurs as small, isolated areas surrounded by entirely different kinds of soils. The slope range is 0 to 5 percent, but most of the slopes are less than 2 percent.

The surface layer is light-gray to dark-gray fine sand 3 to 6 inches thick. It grades to faintly mottled, light-gray fine sand that extends to a depth of more than 30 inches.

This soil is strongly acid and low in natural fertility. It is very porous. Water and air move rapidly through it, and plant nutrients leach out readily. The water table normally fluctuates within 24 to 48 inches of the surface, but in an extremely dry season it may recede to a depth of more than 60 inches. The soil is droughty when the water table is low. It has a low available moisture capacity but benefits from the capillary water that rises from the water table into the root zone. In

a wet season the soil is saturated to within a few inches of the surface.

Use and management.—The sandy, deep upper layers and other poor soil qualities limit the suitability of this soil for cultivation. Conservation practices needed are primarily those that improve soil-moisture conditions. Erosion is not a serious problem and usually is adequately controlled by soil-improving practices.

Most of the common crops are grown on this soil, but usually yields are low. To increase productivity, the soil should be limed and fertilized regularly, all crop residues should be left on the surface, and grass sod or cover crops should occupy the soil at least three-fourths of the time. A rotation that includes improved pasture also improves the soil. If crops are rotated with improved pasture, a well-managed sod should occupy the soil 3 years out of 4.

Deep-rooting tame grasses and legumes, including pangolagrass, bahiagrass, and indigo, are well adapted to this soil and grow well if the soil is fertilized, limed, and otherwise well managed.

Capability unit IVsw–2

Leon and Ona fine sands, as they occur in an undifferentiated soil group, make up this unit. These soils are nearly level and somewhat poorly drained or poorly drained.

The surface layer is gray or dark-gray to black fine sand 3 to more than 7 inches thick. Leon fine sand has a leached subsurface layer of lighter colored fine sand 4 to 24 inches thick. It overlies a weakly cemented to strongly cemented organic pan 3 to 8 inches thick. Ona fine sand lacks a leached subsurface layer. It has an organic-stained layer or a weakly cemented pan beneath the surface layer. In most places both soils have a layer of light-colored fine sand below the pan.

These soils are very strongly acid. They are low in natural fertility but respond well to fertilizer. They have a low available moisture capacity, and they are rapidly permeable. They are affected by a fluctuating water table that rises to within a few inches of the surface in wet seasons and drops to 36 inches or more below the surface in dry seasons.

Use and management.—Several poor qualities limit the suitability of these soils for cultivation. They are readily leached, are droughty in normal dry seasons, and have a restricted root zone. Periodic wetness further limits their suitability. Simple drainage practices are adequate to remove surplus water in wet seasons, but more complex practices are needed to overcome poor soil qualities.

These soils are only moderately suited to general farm crops. They are well suited to truck crops and other specialized crops if conditions are favorable. The water table should be carefully controlled. Drainage systems need to be carefully designed, installed, and maintained to provide rapid removal of excess water during heavy rainfall. Heavy applications of lime and complete fertilizers should be added to obtain best yields of most crops. Cropping systems should keep soil-improving grasses and legumes on the soils at least two-thirds of the time. If cultivated crops are rotated with pasture, well-managed sod of high quality should occupy the land at least 4 years out of 6.

Highly productive warm-weather pastures of improved grasses can be established and maintained. Simple drainage systems are needed to remove excess water during wet seasons. Liberal applications of lime and fertilizer are needed also. Clovers can be grown successfully with grasses for winter pasture. Pastures should be established and managed according to good agronomy practices.

Capability unit Vws–1

The soils in this unit are poorly drained and very poorly drained. They occur mostly in flats or depressions, but some are intermixed with better drained soils on gentle slopes near the rivers. The soils are—

Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes.
Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes.
Grady, Bladen, and Coxville soils.
Grady fine sandy loam, thick surface.

The surface layer of these soils ranges from gray to black loamy fine sand to fine sandy loam, 4 to 12 inches thick. The subsoil is predominantly mottled, very plastic sandy clay loam to clay, although in places it is fine sand or fine sandy loam. Depth to the subsoil, except in the sandy areas, ranges from 6 to 18 inches but is less than 10 inches in most places.

These soils are moderate in natural fertility. In the surface layer, they range from high to low in organic-matter content. They have a high available moisture capacity. In most places their subsoil is slowly permeable to very slowly permeable and poorly aerated.

Use and management.—These soils are not suitable for cultivation. Excess water in the soil, which is very difficult to remove, is the dominant limitation, especially in low areas where the soils are very slowly permeable. The risk of periodic flooding is a limitation in areas adjacent to the major streams. Even if the soils were drained, they would be poorly suited to cultivation because their surface layer is fine textured and can be tilled safely only within a narrow range of moisture content.

Under intensive management these soils are capable of producing high-quality pastures. A drainage system designed to remove surface water rapidly is essential on the most poorly drained soils. If heavily limed and fertilized and adequately drained, the soils in this unit are well suited to clover-grass pastures for winter grazing. They are also well suited to several warm-weather grasses. Grazing should be rotated and controlled to permit healthy growth of grasses and legumes and to prevent puddling or packing of the surface soil by the animals. Most of the soils along the streams could produce good pasture, but floods might damage the pasture and endanger the livestock.

Capability unit Vws–2

The soils in this unit occur in shallow ponds, in poorly defined drainageways, in poorly drained flats, and in seepage areas on gentle slopes. The soils are—

Plummer fine sand, 0 to 2 percent slopes.
Plummer fine sand, 2 to 5 percent slopes.
Plummer fine sand, moderately shallow.
Plummer fine sand, depressions.
Rutlege fine sand.

The surface layer of these soils is gray to black fine sand 4 to 7 inches thick. It is underlain by a layer of light-gray to gray sand or fine sand more than 30 inches thick.

These soils are strongly acid and low in all of the essential plant nutrients. Some of the soils have high organic-matter content in their upper layers. The soils have a low available moisture capacity, and they are porous. Water and air would move rapidly through them, but in most places ground water is at or just below the surface during most of the year.

Use and management.—The suitability of these soils for agriculture is limited mainly by wetness. Other important limitations include sandy texture, low natural fertility, and low available moisture capacity.

Highly productive pastures of improved grasses can be maintained on these soils. Drainage systems are needed to remove excess surface water during wet seasons. Liberal applications of lime and fertilizer are also needed. Yields of grass are closely related to the amount of fertilizer used. Clover can be grown successfully with grass for winter pasture, but irrigation is needed to insure satisfactory growth.

Capability unit Vsw–1

Pomello fine sand is the only soil in this unit. It is a moderately well drained, sandy soil that occurs on low ridges and on slightly elevated islands in the flatwoods. This soil is primarily a thick bed of white quartz sand that has a thin surface layer stained gray or dark gray by organic matter. A pan stained by organic matter occurs in most places at a depth between 30 and 42 inches, and it is underlain by light-colored sand.

This soil has a very low available moisture capacity. It is very porous, highly leached, and droughty in dry seasons. Water moves rapidly through it. The water table level rises to within 2 feet of the surface during wet seasons.

Use and management.—Normally, this soil is too sandy, too low in fertility, and too droughty for cultivation, even under intensive management. Fair yields of improved grasses for pasture are possible if the soil is managed intensively. Bahiagrass and other deep-rooting, drought-resistant grasses grow moderately well only if the soil is heavily fertilized and limed and if grazing is carefully controlled.

Capability unit Vsw–2

This unit consists of poorly drained and somewhat poorly drained, deep, sandy soils that are affected by a seasonally high, fluctuating water table. The soils are—

Leon fine sand, 0 to 2 percent slopes.
Leon fine sand, loamy substratum, 0 to 5 percent slopes.

The surface layer ranges from 4 to 6 inches in thickness in most places but is as much as 12 inches thick in a few areas. It is gray to very dark gray, depending on the number of black organic particles, and it overlies a leached layer of gray to white fine sand 10 to 24 inches thick. At a depth of less than 30 inches the leached layer abruptly overlies a weakly to strongly cemented, brown to black pan stained by organic matter. In some places this pan is underlain by fine sand and in other places by fine-textured strata.

These soils are strongly acid and have a very low cation-exchange capacity. They are low in natural fertility and usually low in organic-matter content. Organic residues oxidize quickly. The soils have a very low available moisture capacity, and they are very porous and readily leached. Water and air move rapidly through them.

Use and management.—The restricted root zone, the droughtiness during normal dry seasons, and the hazard of periodic wetness combine to make these soils unsuitable for cultivation. Highly productive pastures of improved grasses, however, can be maintained on these soils. Simple drainage systems are needed to remove excess water that accumulates during wet seasons. Liberal applications of lime and fertilizer are also needed. Grass yields are closely related to the amount of fertilizer used. Clovers can be grown successfully with grasses for winter pasture, but irrigation is needed to insure satisfactory growth.

Capability unit VIe–1

Fellowship loamy fine sand, 8 to 12 percent slopes, is the only soil in this unit. It is a slightly eroded soil that was derived from thin deposits of sand overlying clayey, phosphatic material.

The upper layers of this soil are loamy fine sand and less than 30 inches thick. The subsoil is plastic sandy clay loam to clay. It varies in texture and thickness within short disances. The underlying geologic material is stratified sand and clay with numerous phosphatic pebbles.

This soil has a moderately high available moisture capacity. It is waterlogged for short periods after heavy rainfall, because water moves very slowly through the subsoil. Runoff is rapid; consequently, erosion is a hazard unless the soil is protected by permanent, close-growing vegetation. Effective control of erosion is difficult to put into practice because slopes are steep.

Use and management.—This soil is too steep for safe cultivation but, like the soils in capability unit IVe–1, is suited to improved pasture. Since it is steeper than the soils in unit IVe–1, more intensive management is needed to get a good protective cover. Cool-season grasses and legumes, and summer grasses, including pangolagrass, improved bermudagrass, and bahiagrass, grow well if the soil is adequately fertilized and limed.

Capability unit VIes–1

The soils in this unit are shallow or very shallow, moderately well drained and well drained, and slightly eroded to moderately eroded. Shallow gullies have formed in some eroded areas. The soils are—

Sandy and clayey land, sloping.
Susquehanna fine sand, 5 to 8 percent slopes.
Susquehanna fine sand, 5 to 8 percent slopes, eroded.
Susquehanna fine sand, 8 to 12 percent slopes.
Susquehanna-Blanton complex, 8 to 12 percent slopes.

The upper layers are gray and range from sand to fine sandy loam in texture and from 6 to 30 inches in thickness. They are underlain by a compact sandy clay and clay subsoil that grades to slowly permeable, highly mottled sandy clay and clay substrata. Intricate variations occur within some small areas.

These soils are strongly acid and low in organic-matter content and in natural fertility. They have low available moisture capacity in their root zone. The root zone is shallow because the fine-textured subsoil is slowly permeable, poorly aerated, compact, and otherwise unfavorable for root development.

Use and management.—The soils in this unit are not suitable for cultivation because they are susceptible to erosion and have other unfavorable characteristics. If they must be cultivated, they require very intensive conservation treatment. Each individual field should be studied carefully and treatment planned accordingly.

Moderately good improved pastures can be grown on these soils, some of which are similar to soils in capability unit IVse–6. Most tame grasses adapted to the Florida climate can be grown, but their growth is stunted during dry seasons because roots cannot penetrate deeply. Most legumes are not well adapted, but the more drought-resistant ones can grow successfully on the deeper soils if the soils receive good management. To prevent erosion, the soils should be seeded as soon as possible after the land has been prepared, and quick growth should be encouraged. Regular use of fertilizer and periodic liming are necessary for satisfactory growth. Active gullies should receive special attention; water should be diverted away from them and an adequate, protective sod established. Intricate local variations in the soils are reflected in differences in plant growth.

Capability unit VIse–1

Blanton fine sand, high, 8 to 12 percent slopes, is the only soil in this unit. It is a well-drained, strongly acid, deep, sandy soil. Fine sand extends to a depth of 30 inches or more.

The soil is very low in natural fertility and low in organic-matter content. It has a very low available moisture capacity and is very porous and readily leached. Water and air move rapidly through it.

Use and management.—This soil has several severe limitations that make it generally unsuitable for cultivation and seriously restrict its suitability for other uses. Because of steep slopes, erosion is a serious hazard unless the soil is well protected by vegetation. The poor qualities of this soil make it difficult to establish such vegetation.

This soil, though steeper, is similar to soils in capability units IVse–2, IVse–4, and IVse–5. Under unusually intensive management, it can be used for very limited cultivation of close-growing crops. It is not well suited to high-quality improved pasture, but under good management it produces fair yields of deep-rooting, drought-resistant grasses. Production is difficult to maintain at a constant level, however, because the soil is droughty and readily leached. If good cover is to be maintained, grazing must be restricted more on this soil than on similar soils that are on gentler slopes.

Capability unit VIse–2

Arredondo fine sand, 8 to 12 percent slopes, is the only soil in this unit. It is a well-drained soil that developed from fine sand overlying and influenced by phosphatic material. The surface and subsurface layers consist of more than 42 inches of fine sand. Erosion caused by both water and wind is slight to moderate.

This soil is medium acid, low in organic-matter content, and low in natural fertility. It has a low available moisture capacity and is very porous. Water and air move rapidly through it. During normal dry seasons the soil is droughty.

Use and management.—This soil has several severe limitations that make it generally unsuitable for cultivation and seriously restrict its suitability for other uses. Because of steep slopes, erosion is a very serious hazard and gullies form readily unless the soil is well protected by a good cover of vegetation. Poor soil qualities make it difficult to establish such cover.

Under unusually intensive management, this soil may be used to very limited extent for close-growing cultivated crops. It is not well suited to high-quality improved pasture, but under good management it produces fair yields of deep-rooting, drought-resistant grasses. Production is difficult to maintain, however, because the soil is droughty and readily leached. If good cover is to be maintained throughout the year, grazing must be restricted more on this soil than on similar soils that are on gentler slopes.

Capability unit VIIe–1

Zuber loamy fine sand, 8 to 35 percent slopes, is the only soil in this unit. It is a moderately deep to deep, well-drained soil that developed from stratified phosphatic sand and clay. It is slightly eroded to moderately eroded.

The upper layers consist of loamy fine sand and are less than 30 inches thick. They are underlain by a firm to friable sandy clay loam subsoil. Stratified sand and clay occur below the subsoil.

This soil is medium acid to strongly acid, low to medium in organic-matter content, and moderate to high in natural fertility. It has a moderate to high available moisture capacity and is moderately permeable to slowly permeable. The root zone is moderately deep.

Use and management.—This soil is unsuitable for cultivation primarily because of the very severe hazard of erosion. Furthermore, if it were cultivated, adequate erosion control practices could not be applied because of the steep slopes, nor could farm equipment be operated effectively. For the same reason, this soil is not suited to improved pasture or to hay. Seeding, liming, fertilizing, water management practices, and other practices needed to maintain an effective sod cover usually are not practical on this soil. If it must be used as pasture, this soil must be managed carefully. While pasture is being established, the soil must be protected by gully stablization, diversion ditches, or strip planting on the contour. It must be adequately limed and fertilized to insure rapid initial growth and satisfactory growth thereafter. Overgrazing and undue trampling in critical areas should be avoided.

Capability unit VIIws–1

This unit consists of poorly drained and very poorly drained soils on stream bottoms, and wet seepy soils on

steep slopes. Many areas are made up of contrasting soils. The soils in this unit are—

Alluvial land.
Plummer, Bladen, and Rains soils, 5 to 17 percent slopes.

These soils vary widely in texture and in organic-matter content. Most of them have poor soil qualities. Those on bottom lands are subject to periodic flooding by stream overflow.

Use and management.—Without major reclamation work, these soils are not suitable for cultivated crops, and they are of limited suitability for improved pasture and hay. Improved grass and clover grow well in most areas but are subject to serious damage by floods on the bottom lands. Thus, the frequency and duration of floods greatly affects the suitability of these soils for improved grasses and clover.

Capability unit VIIws–2

Peat that consists of very strongly acid to extremely acid organic material is in this unit. It was derived from the remains of trees, grasses, lilies, and other plants, and it occurs in wet depressions and swamps where outlets for surplus water are poor. Most areas are small and covered with dense swampy vegetation. In a typical profile more than 12 inches of brown or reddish-brown woody and felty material overlies sand and clay.

Use and management.—Since drainage outlets would be difficult to establish in most areas and the dense growth would be expensive to remove, peat is best suited to trees and to use as a wildlife refuge.

Capability unit VIIse–1

Blanton fine sand, high, 12 to 35 percent slopes, is the only soil in this unit. It is a well-drained, deep soil. Fine sand or loamy sand extends to a depth of 30 inches or more. It is slightly eroded on slopes of more than 12 percent.

This soil is low in natural fertility. It has a low available moisture capacity, is very porous, and leaches readily. Water and air move rapidly through it.

Use and management.—This soil is not suitable for cultivation or for improved pasture, primarily because of poor soil qualities but also because of the very severe erosion hazard. If it were cultivated or used as pasture, adequate erosion control practices could not be applied, and farm equipment could not be operated effectively because of the steep slopes. This soil can be planted to native grasses for limited grazing.

Capability unit VIIse–2

Mine pits and dumps are in this unit. Most areas are composed of loose sand or raw geologic material.

Use and management.—These areas are not suitable for cultivation or for improved pasture. They have little or no agricultural value. They erode severely if left unprotected.

Unclassified

Swamp, a miscellaneous land type, was not included in the capability grouping, because excess water or thick vegetation make it inaccessible for close examination.

Use of the Soils for Woodland [3]

The area that is now Suwannee County was covered with lush, virgin forest before it was settled. Land was cleared for farming operations during the last half of the 1800's. During this period, and in the early 1900's, the lumber industry clear-cut large areas of woodland. Nevertheless, timber and forest products still contribute to the county's economy. Pulpwood, sawlogs, poles and piling, fenceposts, gum, and veneer are some of the major products.

In 1959, more than 45 percent of the county (approximately 197,200 acres) was in commercial forests. Most of this acreage was owned either by farmers or by individuals who received the major part of their income from other than the wooded land they own. The woodlands in general can be improved greatly and thereby bring more income to the owners and contribute to the economy of the county.

Hardwoods greatly outnumber pines. The hardwoods, however, are of low grade in many large areas. Their quality could be improved and greater volume growth encouraged. Pines have a ready market in a variety of products. In 1960, over 30,000 cords of pulpwood were cut from pine forests in the county. Improved management could greatly increase this figure.

In the past few years, a considerable acreage of abandoned farmland has been planted to pine trees (fig. 17); additional acreage was put in trees under the Soil Bank program; and tree farming, as such, has been on the increase.

General Woodland Management

One of the primary functions of good woodland is to protect the soil. A properly managed stand of trees can do much to prevent soil deterioration and to insure proper conservation of soil and water resources. Trees

Figure 17.—**Three-year-old slash pines on Blanton fine sand, low. Many acres of once cultivated land have been planted to slash pines in recent years.**

[3] By EDWARD D. HOLCOMBE, woodland conservationist, Soil Conservation Service.

slow the force of rainfall; thus, the water drops gently to the ground and the surface soil is able to absorb more moisture. Litter from forest cover also cushions the fall of raindrops and helps to hold the soil in place. Tree roots help to hold the soil against the erosive effects of surface runoff.

So that trees can do their part in conserving soil, proper management of woodlands is necessary. The minimum practices are discussed in the paragraphs that follow.

Fire protection.—Wildfires destroy trees and ground cover. This destruction can lessen the ability of the soil to absorb moisture and eventually lead to increased erosion. Fires also slow the growth of trees and cause wounds, which provide an entry for insects and disease.

The Florida Forest Service provides fire protection to the entire county. Individual landowners, however, can assist this agency by observing all rules of fire prevention. Landowners can also construct adequate firebreaks around and through their woodlands. Because these firebreaks can slow or stop a wildfire under normal conditions, they give good protection to the woodland. Care should be taken to provide protection against erosion when constructing these firebreaks.

Tree planting.—Since trees are crops, tree farming is an accepted operation just as any other phase of farming. Trees can be planted and can grow well under a variety of soil conditions. They grow well in eroded areas, on gully banks, on slopes too steep for safe cultivation, and in soils that are not suitable for cultivated crops. Owners of idle land should consider planting it to trees. The trees protect the soil and put it to a use that can provide some profit for the area.

Proper cutting practices.—Regulated cutting of woodlands will provide adequate protection to the soil and still bring economic gain to the landowner. Varying soil conditions, of course, call for different cutting operations, but the landowner can seek professional advice from State foresters in the county.

Woodland Suitability Grouping of Soils

The soils in Suwannee County vary greatly in their suitability for wood crops. Differences in slope and elevation, and in texture and available moisture capacity of the soil, largely determine the kinds of trees that can be grown on a particular site.

Perhaps the most important factors affecting the productivity of a soil for wood crops are the ability of the soil to retain moisture and the depth of the root zone. Other factors are thickness and texture of the surface layer, the content of organic matter, the depth of fine-textured material, and the depth to the water table.

Some soils are best suited to pine trees, and others, to hardwoods. On the best hardwood sites, it is not advisable to grow pines. On other sites, however, pines bring the best returns, even with the added expense of controlling competition from hardwoods. Sites at higher elevations generally are not suitable for commercial production of hardwoods.

To assist owners in planning the proper use and management of their woodlands, the soils in the county have been placed in 11 woodland suitability groups. Each group consists of soils that are about the same in productivity of trees and that have soil-related limitations requiring about the same woodland management. The 11 woodland suitability groups are listed in table 3 and described in the text.

Table 3 gives, in summary form, the estimated productivity (expressed as site index) of pine trees for 10 of the 11 woodland suitability groups. Woodland suitability group 11 is excluded because it consists of miscellaneous land types not suitable for planned production of wood crops. Table 3 also gives the relative severity of the soil-related limitations for all groups except woodland suitability group 11. The soil-related hazards and limitations to be considered in woodland management are plant competition, seedling mortality, equipment limitation, erosion hazard, and windthrow hazard. These limitations, and soil productivity for wood crops, are explained in the following paragraphs.

Productivity.—The amount of a given wood crop that a given soil can produce under a specified level of management is expressed as a site index. A site index is the average height, in feet, that the best (dominant and codominant) trees of a given species, growing on a specified soil, will reach in 50 years. The site index is not a direct indicator of potential productivity of a soil, but the higher the site index, the greater the yields of commercial timber. The site index is the criterion least affected by drought, fire, insects, disease, and other factors that restrict the development and productivity of trees.

The site indexes for slash pine, loblolly pine, and longleaf pine were converted to total merchantable volume, board feet (Doyle rule) and cords, in table 4. These conversions were made by reference to published research material on growth of pines.[4]

Plant competition.—A site that has been disturbed by fire, cutting, grazing, or other means may be invaded by undesirable trees, shrubs, or other plants. The invading plants compete with the desirable trees (fig. 18) and hinder their reestablishment and growth. Plant competition is rated as follows:

Slight.—No problem is apparent. Undesirable species will not impede natural regeneration and growth of desired species.

Moderate.—Competition generally will not impede adequate establishment of desired species. Development of a normal, fully stocked stand may take longer because establishment may be delayed and normal growth slowed. Some simple management practices can minimize the competition.

Severe.—Competition is so severe that natural regeneration cannot be relied upon to provide adequate restocking of desired species. Special management practices and site preparation are necessary. If seedlings are planted, competition must be controlled.

Seedling mortality.—Even when healthy seedlings are properly planted or occur naturally in adequate numbers, some of them will not survive if characteristics of

[4] UNITED STATES DEPARTMENT OF AGRICULTURE, VOLUME, YIELD, AND STAND TABLES FOR SECOND-GROWTH SOUTHERN PINES. U.S. Dept. Agr. Misc. Pub. 50, 202 pp. 1929. [Now out of print.]

TABLE 3.—*Woodland suitability groups, average site indexes, and ratings for major limitations and hazards affecting management*

Woodland suitability groups and soil symbols	Average site index			Plant competition	Seedling mortality	Equipment limitation	Erosion hazard	Windthrow hazard
	Longleaf pine	Slash pine	Loblolly pine					
Group 1: ArB, ArC, ArD, BfB, BfC, BfD, BfE, BhB, BtB, BtC, ChB, ChC, FmC, GaB, GaC, GfB, LaB, LaC, LdB.	80	91	85	Moderate to severe.	Severe	Slight to moderate.	Slight to moderate.	Slight.
Group 2: AsB, AsC	82	93	87	Moderate to severe.	Severe	Slight to moderate.	Slight to moderate.	Slight.
Group 3: BvB, BvC, BwB, BwC, BxB, BxC, ZuB, ZuC, ZuC2, ZuE.	75	95	85	Moderate	Slight	Slight	Moderate to severe.	Slight.
Group 4: AhA, AhB, AhC, AnA, AnB, AnC, HdB, HdC, SaB, ScC, SfB, SfC, SfC2, SfD, ShB, SnB, SnC, SnD.	75	85	85	Moderate	Slight	Moderate	Moderate to severe.	Moderate.
Group 5: BmB, BmC, BmD, BnB, BnC, BoB, BoC, KaB, KaC, KfB.	75	95	90	Moderate	Slight	Slight to moderate.	Moderate	Slight.
Group 6: BuA, BuB, LfA, LmA, Ln, Ph, Ps.	70	85	90	Severe	Moderate	Severe	Slight	Moderate.
Group 7: FfB, FfC, FfD	70	85	85	Moderate	Slight	Moderate to severe.	Moderate	Slight.
Group 8: Lo, Lp	80	100	100	Severe	Slight	Severe	Slight	Slight.
Group 9: Bb, Gr, Gx, Wf	75	90	85	Severe	Moderate to severe.	Severe	Slight	Moderate.
Group 10: PdA, PdB, Pf, Pm, PrD, Ru, Sd.	70	90	90	Severe	Moderate	Severe	Slight	Slight to moderate.
Group 11: Al, Pa, Sw	[1]							

[1] This group consists of miscellaneous land types not suitable for planned production of pine trees.

the soil are unfavorable. For both natural and planted seedlings, normal environmental factors are assumed in determining the ratings. Seedling mortality is rated as follows:

Slight.—Ordinary losses are less than 25 percent of the seedlings. Normally, satisfactory restocking can be expected.

Moderate.—Losses are between 25 and 50 percent. In places some replanting or reseeding to fill in openings is necessary. Natural reproduction is not always enough for adequate and immediate restocking.

Severe.—Losses ordinarily are more than 50 percent of the seedlings. Natural regeneration cannot be relied upon. Planting and replanting in places, preparing special seedbeds, and using superior planting techniques are needed to insure adequate and immediate restocking.

Equipment limitation.—Drainage, slope, soil texture, looseness, or other soil characteristics or topographic features restrict or prohibit the use of equipment commonly used in woodland management and harvesting. Different soils may require different kinds of equipment, or special methods of operation, or may be unsuitable for machine use at different seasons. Equipment limitation is rated as follows:

Slight.—Little or no restriction on the type of equipment that can be used or the time of year that equipment can be used.

Moderate.—Not all kinds of equipment can be used. Some periods of extreme wetness or dryness may temporarily restrict use. Periods of restricted use are not more than 3 months in the year.

Severe.—Equipment use is restricted for more than 3 months because of high water level or other unfavorable soil characteristics. Use of equipment could cause serious damage to the structure and stability of the soil.

Erosion hazard.—This hazard is rated according to the risk of erosion (both water and wind erosion) on

well-managed woodland that is not protected by special practices. The ratings are as follows:

Slight.—Little or no hazard. Level or nearly level soils generally are subject to slight erosion.

Moderate.—Medium to coarse-textured soils on gentle to moderate slopes exposed to direct rainfall or water are subject to moderate erosion. Some cover is essential, especially to prevent wind erosion.

Severe.—Soils that have a coarse-textured surface horizon and very slowly permeable subsurface horizons and are on moderate slopes will erode severely if not protected. Tree cover is essential.

Windthrow hazard.—Soil characteristics affect the development of tree roots and, consequently, determine the resistance of a tree to the force of the wind. Knowing the degree of the windthrow hazard is important when choosing trees to plant or favor and when planning release cuttings or harvest cuttings. The ratings are as follows:

Slight.—No problem is apparent, and root development is normal.

Moderate.—Root development is adequate; roots hold the tree firmly, except during periods of extreme wetness and during periods of greatest wind velocity.

Severe.—Root development is not adequate to hold trees firmly. Root restriction may result from a high water level, a layer of rock, or a hardpan.

The ratings in table 3 are based largely on the experience and judgment of local soil scientists, woodland conservationists, foresters, and landowners. They represent the latest information available at the time of publication but are tentative and subject to revision as more information becomes available.

***Figure 18.*—Scrub oaks on Blanton fine sand, high. These weed trees established themselves after the original longleaf pines were clear cut and the area had been burned repeatedly. The pine trees were unable to become reestablished because of competition from the scrub oaks.**

Woodland suitability group 1

This group consists of deep, somewhat excessively drained fine sands and loamy fine sands on ridges and broad, gently sloping uplands that are well above ground water level. The soils have a low available moisture capacity and are very droughty. They are—

- ArB Arredondo fine sand, 0 to 5 percent slopes.
- ArC Arredondo fine sand, 5 to 8 percent slopes.
- ArD Arredondo fine sand, 8 to 12 percent slopes.
- BfB Blanton fine sand, high, 0 to 5 percent slopes.
- BfC Blanton fine sand, high, 5 to 8 percent slopes.
- BfD Blanton fine sand, high, 8 to 12 percent slopes.
- BfE Blanton fine sand, high, 12 to 35 percent slopes.
- BhB Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes.
- BtB Blanton-Chiefland fine sands, 0 to 5 percent slopes.
- BtC Blanton-Chiefland fine sands, 5 to 8 percent slopes.
- ChB Chiefland fine sand, 0 to 5 percent slopes.
- ChC Chiefland fine sand, 5 to 8 percent slopes.
- FmC Fort Meade loamy fine sand, 5 to 8 percent slopes.
- GaB Gainesville loamy fine sand, 2 to 5 percent slopes.
- GaC Gainesville loamy fine sand, 5 to 8 percent slopes.
- GfB Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes.
- LaB Lakeland fine sand, 0 to 5 percent slopes.
- LaC Lakeland fine sand, 5 to 8 percent slopes.
- LdB Lakeland and Jonesville fine sands, 0 to 5 percent slopes.

These soils have an average site index of 91 for slash pine, 80 for longleaf pine, and 85 for loblolly pine. Loblolly pine, however, is not found in large numbers on these soils. The average annual yield from a 50-year-old, natural, unmanaged stand of pines is 310 board feet per acre for slash pine, 150 board feet per acre for longleaf pine, and 270 board feet per acre for loblolly pine, all by the Doyle rule.

Plant competition is moderate to severe. Control of scrub vegetation is needed on most sites for successful regeneration and growth of desirable plants.

Seedling mortality is severe because of droughtiness, and some replanting is almost always necessary.

The erosion hazard is slight to moderate. Wind erosion can be serious on prepared sites. Care should be taken to leave exposed as little soil as possible. Water erosion may be a problem on prepared sites on the steeper slopes.

Equipment limitation is slight to moderate. Operating some equipment during extreme dry weather is hazardous, especially on deep, sandy soils.

The windthrow hazard is slight.

Woodland suitability group 2

This group consists of somewhat excessively drained fine sands on ridges and gently sloping uplands. The surface is well above ground water level. The soils have a low available mositure capacity and are rapidly permeable. They have a low organic-matter content. The soils are—

- AsB Arredondo fine sand, moderately shallow, 0 to 5 percent slopes.
- AsC Arrendondo fine sand, moderately shallow, 5 to 8 percent slopes.

TABLE 4.—*Volume, yield, and stand data on fully stocked, unmanaged, normally growing stands of slash pine, loblolly pine, and longleaf pine* [1]

Tree	Site index	Age	Total height of average-sized dominants	Average diameter at breast height	Total merchantable volume		Basal area [3]	Total trees per acre [3]
					Cords [2]	Board feet (Doyle rule)		
		Years	*Feet*	*Inches*			*Square feet*	*Number*
Slash pine	80	20	48	4.9	35	(4)	148	1,090
		30	63	7.0	48	1,500	158	610
		40	73	8.7	58	6,000	161	380
		50	80	10.0	65	10,000	163	295
		60	85	10.8	69	12,500	164	250
	90	20	54	5.6	41	(4)	149	835
		30	71	8.0	54	4,000	159	470
		40	83	10.0	66	10,000	163	295
		50	90	11.4	73	15,000	165	220
		60	95	12.5	78	18,000	166	195
	100	20	61	6.4	46	3,500	150	625
		30	79	9.1	59	11,000	160	365
		40	92	11.4	72	14,500	164	225
		50	100	13.1	81	19,500	166	175
		60	106	14.2	86	23,000	167	150
Loblolly pine	80	20	43	5.0	22	(4)	129	950
		30	59	7.4	38	2,000	147	510
		40	72	9.2	51	6,000	156	345
		50	80	10.7	60	11,500	162	255
		60	85	12.0	66	16,000	165	210
	90	20	48	5.6	27	(4)	133	790
		30	67	8.2	46	4,000	152	420
		40	81	10.2	61	10,000	162	290
		50	90	12.0	71	16,500	167	220
		60	96	13.4	78	22,000	171	180
	100	20	54	6.1	32	500	138	690
		30	74	9.0	53	6,000	158	375
		40	90	11.2	71	14,500	168	255
		50	100	13.1	84	23,000	174	190
		60	107	14.6	92	29,500	178	155
Longleaf pine	60	20	31	3.3	8	(4)	79	1,290
		30	44	4.9	19	(4)	97	815
		40	53	6.0	27	500	108	575
		50	60	7.0	34	2,000	118	465
		60	65	7.8	40	3,500	124	395
		70	70	8.5	45	5,000	128	345
	70	20	36	3.8	14	(4)	92	1,150
		30	52	5.5	28	(4)	113	730
		40	62	6.8	39	2,000	127	515
		50	70	7.9	48	4,500	138	415
		60	77	8.8	55	7,000	145	355
		70	82	9.6	62	9,500	150	305
	80	20	41	4.3	20	(4)	102	1,050
		30	59	6.1	36	1,000	124	655
		40	71	7.6	49	4,000	140	465
		50	80	8.8	61	7,500	152	375
		60	87	9.8	70	11,500	160	315
		70	93	10.6	78	15,500	166	270
	90	20	46	4.7	26	(4)	109	910
		30	66	6.7	43	2,000	134	575
		40	80	8.3	59	6,500	150	405
		50	90	9.6	72	11,500	162	330
		60	98	10.7	84	17,000	170	275
		70	105	11.6	94	22,500	176	240

[1] Based on USDA Misc. Pub. 50. 1929. (Now out of print.)
[2] 1 cord equals 128 cubic feet of wood, bark, and air in a pile of stacked cordwood 4 feet wide, 4 feet high, and 8 feet long.
[3] Trees 2 inches in diameter at breast height and over.
[4] Volume not calculated because of small size of trees.

The average site index is 93 for slash pine, 87 for loblolly pine, and 82 for longleaf pine. A 50-year-old, natural, unmanaged stand of trees should yield annually 320 board feet per acre of slash pine, 290 board feet per acre of loblolly pine, and 165 board feet per acre of longleaf pine. Loblolly pine usually is not abundant on these soils.

Plant competition is moderate to severe; seedling mortality is severe; the erosion hazard is slight to moderate; equipment limitation is slight to moderate; and the windthrow hazard is slight.

Woodland suitability group 3

This group consists of deep, well-drained, strongly acid fine sands, loamy sands, and sandy loams that have a clayey subsoil. Permeability is rapid in the surface soil and moderately slow in the subsoil. The available moisture capacity is moderate, and natural fertility is moderately low. The soils are—

BvB Bowie fine sand, 2 to 5 percent slopes.
BvC Bowie fine sand, 5 to 8 percent slopes.
BwB Bowie fine sand, thick surface, 2 to 5 percent slopes.
BwC Bowie fine sand, thick surface, 5 to 8 percent slopes.
BxB Bowie-Blanton complex, 2 to 5 percent slopes.
BxC Bowie-Blanton complex, 5 to 8 percent slopes.
ZuB Zuber loamy fine sand, 2 to 5 percent slopes.
ZuC Zuber loamy fine sand, 5 to 8 percent slopes.
ZuC2 Zuber loamy fine sand, 5 to 8 percent slopes, eroded.
ZuE Zuber loamy fine sand, 8 to 35 percent slopes.

The average site index is 95 for slash pine, 85 for loblolly pine, and 75 for longleaf pine. Annual yields per acre from 50-year-old, natural, unmanaged stands should be 350 board feet for slash pine, 270 board feet for loblolly pine, and 120 board feet for longleaf pine.

Plant competition is moderate. Control of unwanted trees and shrubs usually is necessary to assure development of well-stocked stands of pine (fig. 19).

Erosion is a moderate to severe hazard on exposed slopes and along improperly located roads on slopes greater than 12 percent. Wind erosion could be a problem in open areas. Seedling mortality is slight.

Woodland suitability group 4

This group consists of deep, well drained to moderately well drained soils that have a sandy or loamy surface layer and a slowly to very slowly permeable subsoil. The available moisture capacity is moderate, and the organic-matter content is low. Acidity is medium to strong, but some soils have an alkaline subsoil. The soils are—

AhA Archer-Susquehanna fine sands, 0 to 2 percent slopes.
AhB Archer-Susquehanna fine sands, 2 to 5 percent slopes.
AhC Archer-Susquehanna fine sands, 5 to 8 percent slopes.
AnA Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes.
AnB Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes.
AnC Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes.
HdB Hernando fine sand, 2 to 5 percent slopes.
HdC Hernando fine sand, 5 to 8 percent slopes.
SaB Sandy and clayey land, gently sloping.
ScC Sandy and clayey land, sloping.
SfB Susquehanna fine sand, 2 to 5 percent slopes.
SfC Susquehanna fine sand, 5 to 8 percent slopes.
SfC2 Susquehanna fine sand, 5 to 8 percent slopes, eroded.
SfD Susquehanna fine sand, 8 to 12 percent slopes.

***Figure 19.*—Eleven-year-old slash pines on Bowie-Blanton complex (woodland suitability group 3). Control of unwanted trees and shrubs has aided the development of this well-stocked stand.**

ShB Susquehanna fine sand, thick surface, 2 to 5 percent slopes.
SnB Susquehanna-Blanton complex, 2 to 5 percent slopes.
SnC Susquehanna-Blanton complex, 5 to 8 percent slopes.
SnD Susquehanna-Blanton complex, 8 to 12 percent slopes.

The average site index is 85 for both slash pine and loblolly pine and 75 for longleaf pine. A 50-year-old, fully stocked, unmanaged, natural stand should yield annually 270 board feet per acre of loblolly pine, 250 board feet of slash pine, and 120 board feet of longleaf pine.

Plant competition is moderate. Unwanted trees and shrubs may have to be controlled to assure normal growth and development of established pines.

Windthrow is a moderate hazard wherever a dense, fine-textured subsoil limits root development.

Equipment use may be moderately limited on the steeper slopes in extreme weather.

Slopes steeper than 8 percent are subject to moderate or severe erosion. Open areas are subject to wind erosion.

Woodland suitability group 5

This group consists of moderately well drained, deep sands. The water table is normally 36 to 72 inches below the surface. Water rapidly moves downward through the surface soil. Fine-textured material is usually at a depth of 30 inches or more. The soils in this group are—

BmB Blanton fine sand, low, 0 to 5 percent slopes.
BmC Blanton fine sand, low, 5 to 8 percent slopes.
BmD Blanton fine sand, low, 8 to 12 percent slopes.
BnB Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes.
BnC Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes.

BoB Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes.
BoC Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes.
KaB Kanapaha fine sand, 0 to 5 percent slopes.
KaC Kanapaha fine sand, 5 to 8 percent slopes.
KfB Klej fine sand, 0 to 5 percent slopes.

The average site index is 95 for slash pine, 90 for loblolly pine, and 75 for longleaf pine. Loblolly pine is not found in great numbers on these soils. Annual yields per acre from a 50-year-old, unmanaged, natural stand average 350 board feet for slash pine, 300 board feet for loblolly pine, and 120 board feet for longleaf pine.

The most extensive soils in the county are in this group. Because of favorable moisture conditions in the lower profile, these soils are less droughty than associated soils in higher positions.

Plant competition is moderate. Unwanted trees and shrubs must be controlled in most places to assure normal development and growth of pine seedlings (fig. 20). Erosion is a moderate hazard on exposed slopes. Equipment limitations are slight to moderate.

Woodland suitability group 6

This group consists of somewhat poorly drained to poorly drained, deep, acid sands. The water table is normally 12 to 36 inches below the surface. The color of the surface layer ranges from gray to black. Leon and Pomello soils have an organic pan. The soils in this group are—

BuA Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes.
BuB Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes.
LfA Leon fine sand, 0 to 2 percent slopes.
LmA Leon fine sand, loamy substratum, 0 to 5 percent slopes.
Ln Leon and Ona fine sands.
Ph Plummer fine sand, high.
Ps Pomello fine sand.

The average site index is 90 for loblolly pine, 85 for slash pine, and 70 for longleaf pine. Annual yields per acre from a 50-year-old, unmanaged, natural stand average 300 board feet for loblolly pine, 250 board feet for slash pine, and 100 board feet for longleaf pine.

Surface drainage or water control will improve growth of pine trees on soils of this group.

Plant competition is severe. Established pine seedlings must be released from unwanted trees, shrubs, and vines.

Seedling mortality is moderate during periods of extreme wetness or dryness.

A high water table restricts root development and thereby increases the severity of the windthrow hazard, especially after heavy intermediate cuttings.

Figure 20.—**Natural stand of longleaf pines on Blanton-Bowie-Susquehanna complex (woodland suitability group 5). Pulpwood trees have been removed, in foreground, and understory eliminated through frequent burning.**

Soil wetness may restrict the operation of logging or planting equipment for as much as 3 or 4 months a year. Erosion is not a problem.

Woodland suitability group 7

The soils in this group are moderately well drained or somewhat poorly drained. They have a sandy surface layer and a moderately permeable to slowly permeable, clayey subsoil. They are moderately acid and influenced by phosphatic materials. Natural fertility is medium, and the available moisture capacity is high. The soils are—

FfB Fellowship loamy fine sand, 2 to 5 percent slopes.
FfC Fellowship loamy fine sand, 5 to 8 percent slopes.
FfD Fellowship loamy fine sand, 8 to 12 percent slopes.

The average site index is 85 for both slash pine and loblolly pine, and 70 for longleaf pine. A 50-year-old, natural, unmanaged stand should yield annually 250 board feet per acre of slash pine, 100 board feet per acre of longleaf pine, and 270 board feet per acre of loblolly pine.

Trees can be planted or seeded with reasonable success throughout most of the year. It is necessary to eliminate or control competing plants at times.

Woodland suitability group 8

This group consists of slightly wet land types in depressions. Their surface layer is composed of undifferentiated soil material that has moved from adjacent areas. Normally the color and the texture vary considerably from place to place. Permeability is moderate in the surface layer and moderate to rapid in the subsoil. The available moisture capacity and natural fertility vary but are generally high. Land types mapped in this group are—

Lo Local alluvial land.
Lp Local alluvial land, phosphatic.

Site indexes average 100 for slash pine and loblolly pine, and 80 for longleaf pine. These land types also yield good-quality hardwoods. Annual yields from 50-year-old, natural, unmanaged stands average 460 board feet per acre for loblolly pine, 390 board feet for slash pine, and 150 board feet for longleaf pine.

Plant competition is severe, and special site preparation is needed for the normal development and growth of seedlings. Natural reproduction cannot be relied upon. Planted seedlings may need release from competition even after site preparation.

Equipment use may be restricted most of the year. Some areas are subject to flooding after heavy rains. The floods, however, are of short duration.

Woodland suitability group 9

This group consists of poorly drained or very poorly drained sandy soils that have a moderately permeable to slowly permeable, acid, clayey subsoil. These soils have a relatively high available moisture capacity and moderate natural fertility. They are—

Bb Bayboro fine sandy loam.
Gr Grady fine sandy loam, thick surface.
Gx Grady, Bladen, and Coxville soils.
Wf Weston fine sand, dark subsoil variant.

The average site index is 90 for slash pine, 85 for loblolly pine, and 75 for longleaf pine. Annual yields at age 50 from an unmanaged, natural stand average 300 board feet per acre for slash pine, 270 board feet per acre for loblolly pine, and 120 board feet per acre for longleaf pine.

Drainage or water control is necessary for best growth; without it seedling mortality may be moderate to severe. Site preparation is essential for development of healthy seedlings.

The use of equipment is restricted on all but well-drained roads. The root zone may be restricted by a high water table and a poorly aerated, clayey subsoil.

Woodland suitability group 10

This group consists of poorly drained or very poorly drained, deep, sandy soils. The soils are leached; generally they are rapidly permeable and coarse textured to a depth of more than 30 inches. The water table may be near the surface during periods of normal rainfall, but otherwise the available moisture capacity is moderately high. The soils in this group are—

PdA Plummer fine sand, 0 to 2 percent slopes.
PdB Plummer fine sand, 2 to 5 percent slopes.
Pf Plummer fine sand, depressions.
Pm Plummer fine sand, moderately shallow.
PrD Plummer, Bladen, and Rains soils, 5 to 17 percent slopes.
Ru Rutlege fine sand.
Sd Scranton fine sand.

The site indexes vary, but if moisture is controlled they should be 90 for slash pine and loblolly pine, and 70 for longleaf pine. Annual yields from a 50-year-old, unmanaged, natural stand should be 280 to 320 board feet per acre for slash and loblolly pines, and 100 board feet for longleaf pine.

Water control is necessary for best growth. Many areas are too wet for pines and must be drained if used for pines. The water table is high most of the year. Plant competition is severe, and site preparation is usually necessary. The equipment limitation may be severe for long periods because of wetness.

Woodland suitability group 11

This group consists of land types that are not generally suited to planned production of pine trees. These land types, except for Peat, are better suited to high-quality hardwoods. At present, no detailed study of site indexes has been made for hardwoods. These land types are wet throughout most of the year. They are—

Al Alluvial land.
Pa Peat.
Sw Swamp.

Use of the Soils for Wildlife [5]

The kind and number of wildlife within an area are influenced by the soils in the area. Basically, the capability of the soils to produce desirable food and cover determines the suitability of an area for different kinds of wildlife.

In addition to the characteristics of the soils, topography, agricultural development, extent of natural habitats, and presence of open water also determine wildlife populations.

[5] By DAVID P. POWELL, soil specialist for interpretation, and H. R. BISSLAND, biologist, Soil Conservation Service.

After naming plants suitable for food and cover for the main game species in Suwannee County, this section discusses the wildlife potential of the county.

Choice Food and Cover for Wildlife

The main kinds of wildlife in Suwannee County are white-tailed deer, eastern wild turkey, bobwhite (quail), mourning dove, gray and fox squirrel, and rabbit. Opossum, raccoon, skunk, and nongame birds are also common throughout the county.

Deer.—Choice foods for deer are acorns, greenbrier, saw-palmetto, gallberry, bracken, moss, mushrooms, pineland three-awn, yellow-eyed grass, clovers, golden-aster, goldenrod, alder, pipewort, yaupon, and other native shrubs and herbs for browsing. For habitats, deer require extensive wooded areas and areas where there is not much farming.

Turkey.—Choice foods for turkey are insects, acorns, pawpaws, yellow-eyed grass, blackberries, browntop millet, clover leaves, corn, cowpeas, peanuts, dogwood fruits, seed from Pensacola bahiagrass and carpetgrass, oats, pine seed, and soybeans. For habitats, wild turkey require extensive wooded areas where there is not much farming. They need surface water for daily drinking and swamp areas for roosting.

Bobwhite (quail).—Choice foods for bobwhite are acorns, pine seed, blackberries, wild black cherries, dogwood fruits, seeds of annual and bicolor lespedezas, beggarweed (tickclover), ragweed, and many cultivated crops, including soybeans, cowpeas, browntop millet, corn, and peanuts. Bobwhite eat many insects also. They have a limited range and require food and shelter within a relatively small areas. They thrive where general farming is practiced and fence rows and small woodlots are common but are also found in wild, open areas that have not been cultivated.

Dove.—Choice foods for dove are browntop millet, corn, peanuts, cowpeas, soybeans, ragweed, pine seed, croton seed, and seed from other wild plants. These birds do not eat insects. They roam widely and therefore do not need water near the feeding ground, but they do need water daily. They thrive in open farmland and feed in large, open fields and in woodlands.

Squirrel, Gray.— Choice foods for gray squirrel are acorns, hickory nuts, pine seed, chinquapins, pecans, corn, small fruits, and mushrooms. These animals also eat larvae and insects. They like protection and are principally woodland animals but are common in Live Oak and in other towns, and in public parks throughout the county.

Squirrel, Fox.—Choice foods for fox squirrel are the same as for gray squirrel. These are strictly woodland animals, preferring areas of live oaks, ponded areas of cypress, and areas of pine and oak. They do not like populated places.

Wildlife Suitability by Soil Association

Each soil has specific capability for producing desirable plants. In a large area, however, the suitability of the soils for different kinds of plants and, consequently, for different kinds of wildlife is determined by the pattern of soils within the area and the capability of the soils in the pattern.

Using the soil associations, which are patterns of soils, shown on the general soil map at the back of this report, is a convenient way to interpret the suitability of the soils for wildlife. Because they are similar in their suitability for wildlife, soil associations 5 and 6 are discussed together. The nine soil associations are described generally in the section "General Soil Map."

Soil association 1

The soils in the Blanton (high)-Lakeland association are well-drained to excessively drained, deep, droughty sands. They are mostly gently undulating but are steeper and dunelike in places. Drainageways, ponds, or other areas of open water are almost entirely absent. Much of the acreage is cutover woodland on which only a sparse cover of scrub oak and wiregrass remains. In many places this association adjoins association 8, which is also made up of extensive undeveloped areas.

A large area of this association occurs on the high ground that borders the Suwannee River and Santa Fe River flood plains and extends in a wide band across the southern part of the county just north of O'Brien. This area supports a small number of deer, turkey, bobwhite, and squirrel. Food plants for wildlife are limited because the soils are droughty and low in natural fertility. The wildlife can be increased by using good management in growing suitable food plants. There is little potential for lakes or ponds for fish in these areas.

Smaller areas of this association, in the eastern part of the county between Live Oak and Wellborn, are partly cultivated or are surrounded by farmland. Fair to good stands of pine trees occur in these areas. Bobwhite, dove, and squirrel are found, but not in great numbers. Their number can be increased, however, by planting suitable food crops and by using other good management practices. Because they are too small and too close to open farmland, the areas are not suitable for deer and turkey. A few lakes to the east of Live Oak produce only a limited number of fish because of low natural fertility and encroachment by water weeds. These lakes can be improved by good management.

Soil association 2

The Blanton-Chiefland association occurs as a broad, nearly level, sandy area in the southern part of the county. The soils are well drained to excessively drained; they are underlain by limestone. Most of the acreage is used agriculturally. Watermelons, tobacco, peanuts, chufas, corn, and small grains are the commonly grown crops. Cultivated fields on open farmland, small woodlots, fence rows of vegetation, and fallowed fields provide good habitats for bobwhite and dove. The soils and land use are well suited to these birds. Watering sites are available at the bottom of sinks and in depressions. The wildlife can be increased appreciably by planting more of the choice-food crops and by using other good management practices.

There are no streams or ponds in this area, and little potential exists for the development of fish ponds.

Soil association 3

The most extensive areas of the Arredondo-Kanapaha association are in the northern part of the county. The soils on gently sloping to steep hillsides are among the most fertile in the county. Those on steeper slopes are wet and seepy. Most of the acreage has been cleared for cultivation. Commonly grown crops are watermelons, corn, peanuts, tobacco, cowpeas, and small grains. The cultivated fields; pastures; fence rows of trees, shrubs, and grasses; and small woodlots provide good habitats for bobwhite and dove. The soils and land use are well suited to these birds. Watering sites are adequate. The wildlife can be increased appreciably by planting more of the choice food crops (fig. 21) and by using other good management practices.

A few natural drains occur within this association but there are no large streams or natural ponds. There is little potential for fish-pond development.

Soil association 4

The soils in the Blanton (low) association are moderately well drained, deep sands. They are nearly level or gently sloping. The water table is normally 3 to 5 feet below the surface; consequently, many small areas are wet. This association is most common in the east-central part of the county; other areas are in the southern and northwestern parts. Most areas have been cleared and are used for cultivation or as pasture. Watermelons, corn, small grains, cowpeas, peanuts, and tobacco are the principal crops. Small woodlots are common, and many fields have fence rows of vegetation. These areas are well suited to bobwhite and dove, but their suitability can be improved if more choice food crops are planted and other wildlife management practices are followed.

The few ponds in this association are near Wellborn. They are shallow and choked with aquatic weeds but can be improved for fish if the weeds are controlled and other management practices are followed. Peacock Lake, Bethea Lake, Lowe Lake, and a few others are deep and clear, and good for fishing.

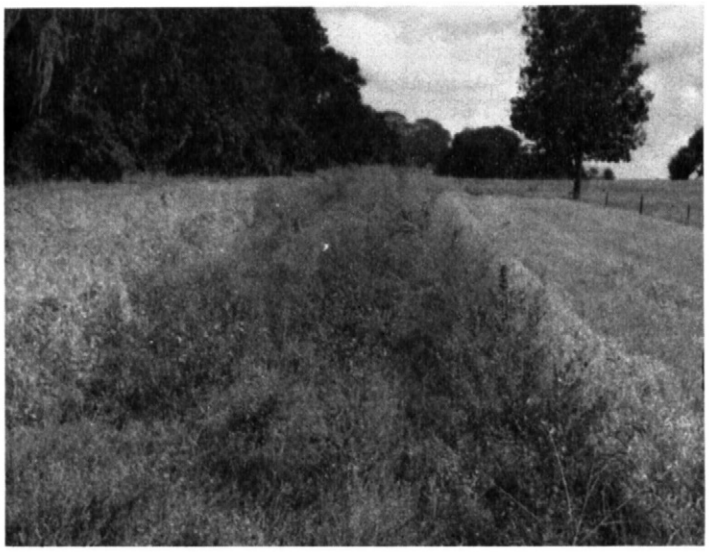

Figure 21.—**A field border of combine pea, thunberg lespedeza, and browntop millet on Arredondo fine sand. Supplemental plantings of choice food crops, such as this, can increase numbers of wildlife.**

Soil associations 5 and 6

The Blanton (low)-Susquehanna-Bowie association and the Susquehanna-Bowie association occur in large areas throughout the central part of the county. Most areas are gently undulating and consist of moderately well drained sands overlying clay substrata. Small swampy places occur throughout these areas. Much of the acreage has been cleared and is used for general farming. Principal crops are tobacco, corn, watermelons, cowpeas, and small grains. Woodlots, fence rows of trees or shrubs, and idle fields are common. The areas are well suited to bobwhite and dove. Good wildlife management together with good farm management can increase the number of these birds.

There are no well-defined streams or lakes, but small, wet depressions are common. Some of these are suitable sites for small, excavated ponds. Under good management, such ponds could produce large numbers of fish.

Soil association 7

The Leon-Plummer association is composed principally of nearly level flatwoods interspersed with small swampy areas. The soils are highly leached, somewhat poorly drained sands. The water table normally is within 36 inches of the surface. Most of the acreage supports an open growth of pine trees and an understory of wiregrass, saw-palmetto, waxmyrtle, and gallberry. The low, swampy areas support cypress, bay, maple, and other wetland hardwoods. Much of the acreage is burned periodically. This association is well suited to bobwhite and squirrel. Numbers of these wildlife are low, however, because of poor management. They can be increased appreciably if burning is controlled and choice food crops are planted.

Small, shallow, grassy ponds can be improved for fish if deepened and fertilized, and if aquatic plants are controlled. Some low, swampy areas are suitable sites for dug ponds.

Soil association 8

The Blanton-Kalmia-Swamp association is made up of highly variable soils occurring along the flood plains of the Suwannee and Santa Fe Rivers. The area ranges from a few feet to nearly a mile in width. It is almost entirely wooded. Swampy places that stay wet most of the time have a dense growth of wetland hardwoods, vines, and shrubs. Higher lying places support pine trees. The entire area is periodically flooded.

These soils support fairly large numbers of gray and fox squirrel. Good management can increase their number. The number of white-tailed deer and eastern wild turkey can be increased substantially if adequate cover is provided and other good management practices are applied.

Soil association 9

The Alluvial land-Swamp association consists mostly of small swamps or ponded areas. Much of the acreage

is covered with water for most of the year. Most of the soils are highly leached and sandy. There are shallow to thick deposits of peat in some areas. The vegetation is cypress and other swampland hardwoods. None of the areas have been cleared. These areas provide cover and a limited supply of food to many kinds of wildlife. Gray and fox squirrel and other game species can be increased if good management is applied.

Engineering Characteristics of the Soils [6]

Soil engineering is well established today. It is, in a broad sense, a subdivision of structural engineering, for it deals with soil as foundation material and as structural material. To the engineer, soil is a natural material that varies widely from place to place. The engineering properties of this material also vary widely, even within the boundaries of a single project. Generally, soil is used in the condition in which it occurs in the locality. A large part of soil engineering, however, involves selecting the best possible soil or soils for each construction project. In doing so, engineers determine the engineering properties of the soils at a proposed site and correlate them with construction requirements.

The characteristics of the soils in Suwannee County are described in detail in the section "Descriptions of the Soils." Those characteristics that affect engineering are interpreted in this section for engineers and others concerned with use of soil material in construction. Special emphasis has been placed on engineering properties as related to agricultural structures. The section "Formation and Classification of Soils" also contains information that can be of value in planning engineering work.

Information in this section is useful in—

1. Selecting and developing sites for industry, business, homes, and recreation.
2. Selecting locations for highways, pipelines, and airports.
3. Determining the suitability of the soils for agricultural drainage systems, farm ponds, irrigation systems, and diversion terraces.
4. Locating sand for construction purposes.
5 Correlating pavement performance with kinds of soils and thus developing information that will aid in designing and maintaining pavements.
6. Determining whether or not vehicles and construction equipment can be moved over the soils.
7. Making maps and reports that can be used readily by engineers.

Engineers from the Florida State Road Department and from the Soil Conservation Service collaborated with the soil scientists in preparing this part of the report. These engineers interpreted laboratory tests and field data and determined the effect of the soils on engineering practices.

The interpretations are necessarily generalized and do not eliminate the need for sampling and testing the soil material in place at the proposed site of a project; they should be used primarily in planning more detailed field investigations.

At many construction sites, the soil material varies greatly from horizon to horizon. Also, several different soils may be found within short distances. The maps, soil descriptions, and other data in this report can be used in planning detailed engineering surveys of the soils at construction sites. By using this information, the engineer can concentrate on the most suitable soils. After observing the behavior of the soils in place under varying conditions and testing soil samples in the laboratory, the engineer should be able to anticipate, to some extent, the properties of individual soils wherever they are mapped.

The terminology in this report is that used by agriculturalists. Some terms have a special meaning to soil scientists and may be unfamiliar to engineers. These terms and others are defined in the Glossary at the back of this report.

The engineering data are presented in three tables. Table 5 provides data resulting from laboratory analyses of several representative soils; table 6 lists all the soils in the county and provides estimates of soil properties significant in engineering; and table 7 lists all the soils and mentions those characteristics that affect specified engineering practices.

Engineering Classification Systems

The engineering classification systems now most widely used are the American Association of State Highway Officials (AASHO) system [7] and the Unified system.[8] Both classify soil material according to gradation and plasticity characteristics

The AASHO system is used by most highway engineers. It places soil material in seven principal groups. The groups range from A–1, which consists of gravelly soils of high bearing capacity, to A–7, which consists of clayey soils that have low strength when wet. Within each group the relative engineering value of the soil material is indicated by a group index number. The numbers range from 0 for the best material to 20 for the poorest. Table 5, in the next to last column, shows the group index numbers of the soils tested. The numbers are in parentheses following the AASHO soil group symbol.

The Unified Soil Classification system is preferred by some engineers. This system classifies soil material as coarse grained (eight classes), fine grained (six classes), or highly organic (one class). The last column of table 5 shows the Unified classification of the soils tested.

Table 6 shows the estimated classification of all soils in the county according to both systems.

[6] DAVID P. POWELL, soil specialist for interpretation, Soil Conservation Service; JAMES W. NORRIS, agricultural engineer, Soil Conservation Service; and WILLIAM GARTNER, JR., engineer of research, Florida State Road Department, assisted in preparing this section.

[7] AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. STANDARD SPECIFICATIONS FOR HIGHWAY MATERIALS AND METHODS OF SAMPLING AND TESTING (THE CLASSIFICATION OF SOILS AND SOIL-AGGREGATE MIXTURES FOR HIGHWAY CONSTRUCTION PURPOSES, DESIGNATION: M 145–49). Pt. 1, Ed. 8. 1961.

[8] WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS. UNIFIED SOIL CLASSIFICATION SYSTEM. Tech. Memo. No. 3–357, v. 1 1953.

TABLE 5.—*Engineering*

[Tests performed by Bureau of Public Roads in accordance with standard

Soil name and location of sample	Parent material	Bureau of Public Roads report No.	Depth	Horizon
			Inches	
Archer fine sand:				
SW¼SE¼NW¼ sec. 8, T. 6 S., R. 14 E. (Modal)	Limestone and limonitic clay.	S37204	0 to 5	A1
		S37205	21 to 29	D1
		S37206	29 to 41	D2
SE. cor. of SW¼SE¼NW¼ sec. 18, T. 5 S., R. 14 E. (Modal)	Limestone and limonitic clay.	S37201	0 to 4	A1
		S37202	12 to 21	B3/D
		S37203	31 to 39	D2
Center of NW¼SW¼ sec. 10, T. 6 S., R. 14 E. (Sandy substratum)	Limestone.	S37207	0 to 9	Ap
		S37208	13 to 25	B2
		S37209	25 to 34	C
Center of NE¼NE¼NW¼ sec. 9, T. 6 S., R. 14 E. (Thicker sandy surface layer)	Limestone.	S37210	0 to 8	Ap
		S37211	21 to 24	B/D
		S37212	24 to 32	D1
Arredondo fine sand:				
SW¼SE¼ sec. 13, T. 2 S., R. 14 E. (Modal)	Phosphatic sand.	S37213	0 to 8	A1
		S37214	14 to 50	B2
NE¼NW¼ sec. 8, T. 4 S., R. 14 E. (Shallow phase)	Phosphatic sand.	S37215	0 to 6	A1
		S37216	26 to 36	A32
		S37217	43 to 54	C1
SE¼SW¼ sec. 10, T. 2 S., R. 14 E. (Less phosphatic and higher water table)	Phosphatic sand.	S37218	0 to 9	Ap
		S37219	25 to 43	A22
		S37220	43 to 78	C1
Bowie fine sand:				
NE¼NE¼SW¼ sec. 2, T. 4 S., R. 13 E. (Modal)	Acid clay.	S37221	11 to 24	A22
		S37222	24 to 30	B2
		S37223	41 to 55	D1 or C1
NW. cor. of NW¼NE¼SW¼ sec. 35, T. 2 S., R. 13 E. (Modal)	Acid clay.	S37224	0 to 7	Ap
		S37225	25 to 32	B21
		S37226	55 to 67	D3
NE¼NE¼ sec. 28, T. 3 S., R. 13 E. (Lighter textured)	Acid clay.	S37227	0 to 6	A1
		S37228	24 to 30	B2
		S37229	30 to 52	D1
NE. cor. of NW¼SE¼ sec. 3, T. 4 S., R. 13 E. (Lighter textured substratum)	Acid clay.	S37230	0 to 6	A1
		S37231	23 to 32	B2
		S37232	38 to 62	D1
Chiefland fine sand:				
SE¼NE¼ sec. 20, T. 6 S., R. 15 E. (Modal)	Acid sand over limestone.	S37245	0 to 5	A1
		S37246	5 to 26	C1
		S37247	49 to 56	D12
NW¼NE¼ sec. 15, T. 6 S., R. 14 E. (Deep phase)	Acid sand over limestone.	S37248	0 to 5	A1
		S37249	5 to 27	C1
		S37250	48 to 72+	C22
SW¼NE¼ sec. 20, T. 6 S., R. 15 E. (Shallow phase)	Acid sand over limestone.	S37251	0 to 7	Ap
		S37252	16 to 36	C2
		S37253	36 to 39	D1
Hernando fine sand:				
Center of NW¼NE¼ sec. 9, T. 6 S., R. 14 E. (Modal)	Limestone and limonitic clay.	S37254	0 to 3	A1
		S37255	3 to 12	A2
		S37256	24 to 34	D1

test data

procedures of American Association of State Highway Officials (AASHO)]

Mechanical analysis [1]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—							
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.			AASHO [2]	Unified [3]
100	97	45	33	15	8	5	[4] NP	[4] NP	A-4(2)	SM.
100	99	81	72	57	49	47	52	30	A-7-6(18)	CH.
100	99	94	88	69	54	50	50	30	A-7-6(18)	CL.
100	96	18	13	10	6	4	NP	NP	A-2-4(0)	SM.
100	97	44	42	41	40	37	52	28	A-7-6(8)	SC.
100	98	57	56	55	54	52	71	43	A-7-6(15)	CH.
100	85	13	10	8	7	5	[4] NP	[4] NP	A-2-4(0)	SM.
100	84	31	28	26	24	21	29	11	A-2-6(0)	SC.
100	82	34	32	30	29	27	37	18	A-2-6(2)	SC.
100	95	16	12	8	4	2	NP	NP	A-2-4(0)	SM.
100	96	38	34	28	25	24	32	16	A-6(2)	SC.
100	98	60	58	55	53	52	68	40	A-7-6(16)	CH.
100	80	14	13	10	6	4	NP	NP	A-2-4(0)	SM.
100	81	13	12	9	6	4	NP	NP	A-2-4(0)	SM.
100	93	19	16	13	9	6	NP	NP	A-2-4(0)	SM.
100	92	19	16	14	12	10	NP	NP	A-2-4(0)	SM.
100	98	53	52	50	47	44	46	21	A-7-6(8)	[5] ML-CL.
100	92	10	8	7	4	2	NP	NP	A-3(0)	SP-SM.
100	91	7	5	5	4	2	NP	NP	A-3(0)	SP-SM.
100	90	7	5	4	4	2	NP	NP	A-3(0)	SP-SM.
100	99	9	8	6	3	2	NP	NP	A-3(0)	SP-SM.
----------	100	30	29	28	28	26	34	14	A-2-6(1)	SC.
----------	100	24	24	24	24	23	31	12	A-2-6(0)	SC.
100	97	12	8	5	2	1	NP	NP	A-2-4(0)	SP-SM.
100	97	26	23	21	18	17	25	8	A-2-4(0)	SC.
100	98	49	47	46	44	43	70	42	A-7-6(11)	SC.
100	98	13	11	8	4	2	NP	NP	A-2-4(0)	SM.
100	98	28	26	25	22	20	26	10	A-2-4(0)	SC.
100	98	42	41	40	39	38	47	23	A-7-6(6)	SC.
100	99	10	8	7	6	2	NP	NP	A-3(0)	SP-SM.
100	99	36	35	32	30	29	37	14	A-6(1)	SM-SC.
99	98	50	50	46	44	43	49	17	A-7-5(6)	SM.
100	96	10	7	5	3	1	NP	NP	A-3(0)	SP-SM.
100	96	8	5	3	1	1	NP	NP	A-3(0)	SP-SM.
100	97	27	26	25	24	22	30	13	A-2-6(0)	SC.
100	90	11	8	6	3	1	NP	NP	A-2-4(0)	SP-SM.
100	90	9	6	3	1	1	NP	NP	A-3(0)	SP-SM.
100	90	8	4	2	1	1	NP	NP	A-3(0)	SP-SM.
100	96	7	6	4	2	1	NP	NP	A-3(0)	SP-SM.
100	96	7	6	4	2	1	NP	NP	A-3(0)	SP-SM.
100	94	17	16	15	13	11	21	4	A-2-4(0)	SM-SC.
100	93	12	10	7	4	2	NP	NP	A-2-4(0)	SP-SM.
100	95	32	29	26	24	23	31	14	A-2-6(1)	SC.
100	95	41	39	37	35	33	43	24	A-7-6(5)	SC.

TABLE 5.—*Engineering*

Soil name and location of sample	Parent material	Bureau of Public Roads report No.	Depth	Horizon
Hernando fine sand—Continued			*Inches*	
Center of NW¼SE¼ sec. 18, T. 5 S., R. 14 E. (Sandy textured)	Limestone and limonitic clay.	S37257	8 to 24	A2
		S37258	27 to 33	B2
		S37259	33 to 54	D1
NE. part of SW¼SE¼ sec. 3, T. 6 S., R. 14 E. (Lighter textured substratum and no lime)	Deposit of acid clay and sand within limestone formation.	S37260	0 to 6	Ap
		S37261	21 to 32	B2
		S37262	51 to 70+	C2
Susquehanna fine sand:				
SE. part of SW¼NE¼NW¼ sec. 1, T. 4 S., R. 13 E. (Modal)	Acid clay.	S37263	5 to 10	A12
		S37264	14 to 24	B3/D
		S37265	45 to 56+	D3
SW. cor. of SW¼SW¼SW¼ sec. 6, T. 4 S., R. 14 E. (Modal)	Acid clay.	S37266	0 to 8	A1
		S37267	8 to 12	B2/D
		S37268	36 to 52+	D3
Center of NE¼SE¼SE¼ sec. 34, T. 1 S., R. 12 E. (Thin B horizon)	Acid clay.	S37269	3 to 7	A2
		S37270	10 to 15	B2/D
		S37271	51 to 72+	D3
NW¼NW¼ sec. 26, T. 3 S., R. 14 E. (Sandy lower horizons)	Acid clay.	S37272	0 to 3	A1
		S37273	13 to 57	D1
		S37274	57 to 63	D2
SW¼ sec. 21, T. 2 S., R. 13E. (Thinner A1 horizon)	Acid clay	S37275	3 to 8	A2
		S37276	8 to 14	B2
		S37277	14 to 36	C1
NW. cor. of SW¼NW¼NE¼ sec. 35, T. 3 S., R. 13 E. (Texture of B/D horizons)	Acid clay.	S37278	0 to 6	A1
		S37279	21 to 32	B2
		S37280	57 to 72+	D3
Weston fine sand:				
SE. part of NE¼NW¼NE¼ sec. 10, T. 2 S., R. 13 E. (Modal)	Acid clay.	S37233	0 to 4	A11
		S37234	11 to 19	A3
		S37235	40 to 56	D2
NW¼SE¼SE¼ sec. 13, T. 4 S., R. 14 E. (Modal)	Acid clay.	S37236	5 to 15	A12
		S37237	15 to 22	A/D
		S37238	35 to 52+	D2
NW. cor. of NW¼NE¼SW¼ sec. 33, T. 3 S., R. 14 E. (Lighter texture)	Acid clay.	S37239	0 to 6	A11
		S37240	21 to 24	B2
		S37241	24 to 60	C1
Center of SE¼NE¼SW¼ sec. 4, T. 4 S., R. 15 E. (Wetter)	Acid clay and sand.	S37242	0 to 5	A1
		S37243	21 to 33	B2
		S37244	48 to 72	D2
Zuber loamy fine sand:				
NE¼NE¼SE¼ sec. 18, T. 2 S., R. 15 E. (Modal)	Weathered phosphatic materials.	S37281	0 to 5	Ap
		S37282	23 to 32	B32
		S37283	48 to 57	D2
NE. cor. of NE¼NE¼SW¼ sec. 20, T. 2 S., R. 14 E. (Modal)	Weathered phosphatic materials.	S37284	0 to 7	A1p
		S37285	24 to 30	B22
		S37286	56 to 82	C3 or D3
NE¼SE¼ sec. 2, T. 4 S., R. 14 E. (Thin surface layer and clayey substratum)	Weathered phosphatic materials.	S37287	0 to 4	Ap
		S37288	4 to 14	B/C1
		S37289	40 to 72+	D2

[1] According to AASHO Designation: T 88–57, "Mechanical Analysis of Soils," in "Standard Specifications for Highway Materials and Methods of Sampling and Testing," pt. 2, Ed. 8 (1961), published by the American Association of State Highway Officials. Results by this procedure frequently differ somewhat from 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 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

test data—Continued

Mechanical analysis [1]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—							
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.			AASHO [2]	Unified [3]
100	96	10	7	4	2	1	NP	NP	A-3(0)	SP-SM.
100	97	32	28	25	22	21	32	14	A-2-6(1)	SC.
100	98	41	38	36	35	34	47	27	A-7-6(6)	SC.
100	96	13	10	8	5	3	NP	NP	A-2-4(0)	SM.
100	97	32	30	28	26	24	32	13	A-2-6(1)	SC.
100	98	22	19	16	12	10	21	3	A-2-4(0)	SM.
100	98	11	8	6	4	4	NP	NP	A-2-4(0)	SP-SM.
100	99	65	64	62	61	60	73	39	A-7-5(17)	MH-CH.
100	99	66	64	61	60	59	84	52	A-7-5(17)	CH.
100	97	7	6	3	2	1	NP	NP	A-3(0)	SP-SM.
100	99	51	50	48	47	46	59	30	A-7-6(12)	MH-CH.
----------	100	50	49	48	46	45	58	34	A-7-6(11)	SC.
100	96	15	12	18	5	3	NP	NP	A-2-4(0)	SM.
100	98	56	55	54	53	52	59	30	A-7-6(14)	MH-CH.
100	97	49	47	46	45	43	71	47	A-7-6(11)	SC.
100	98	15	11	7	4	2	NP	NP	A-2-4(0)	SM.
100	99	41	38	35	33	31	39	20	A-6(4)	SC.
100	98	18	16	15	14	12	NP	NP	A-2-4(0)	SM.
100	96	13	10	6	4	2	NP	NP	A-2-4(0)	SM.
100	98	45	43	42	41	38	52	26	A-7-6(7)	SC.
100	99	67	66	64	62	60	74	31	A-7-5(18)	MH.
100	98	11	8	6	3	2	NP	NP	A-2-4(0)	SP-SM.
100	98	35	33	32	32	30	34	16	A-2-6(1)	SC.
100	98	41	39	37	36	35	48	26	A-7-6(6)	SC.
100	97	11	8	4	3	2	NP	NP	A-2-4(0)	SP-SM.
100	97	15	12	10	9	7	NP	NP	A-2-4(0)	SM.
100	99	28	26	23	22	21	29	11	A-2-6(0)	SC.
100	97	13	9	5	3	2	NP	NP	A-2-4(0)	SM.
100	98	36	32	28	25	23	26	9	A-4(0)	SC.
100	99	65	61	54	47	44	45	21	A-7-6(11)	CL.
100	98	14	10	6	3	1	NP	NP	A-2-4(0)	SM.
100	99	28	25	23	20	19	29	12	A-2-6(0)	SC.
100	99	33	30	28	27	26	36	16	A-2-6(1)	SC.
100	99	14	10	6	4	1	NP	NP	A-2-4(0)	SM.
100	99	29	26	23	23	22	27	11	A-2-6(0)	SC.
100	99	25	21	18	18	16	22	7	A-2-4(0)	SM-SC.
100	92	16	14	12	9	6	NP	NP	A-2-4(0)	SM.
98	92	26	24	22	20	18	23	7	A-2-4(0)	SM-SC.
100	99	36	35	34	33	32	35	16	A-6(2)	SC.
96	89	15	12	8	5	4	NP	NP	A-2-4(0)	SM.
100	97	36	34	31	27	24	34	12	A-6(1)	SM-SC.
----------	100	35	34	33	32	31	46	24	A-2-7(3)	SC.
95	92	11	10	8	6	4	NP	NP	A-2-4(0)	SP-SM.
100	98	39	38	37	35	33	40	16	A-6(2)	SM-SC.
----------	100	43	43	42	42	40	50	24	A-7-6(6)	SM-SC.

[2] Based on AASHO Designation: M 145–49, "The Classification of Soils and Soil-aggregate Mixtures for Highway Construction Purposes," in "Standard Specifications for Highway Materials and Methods of Sampling and Testing," pt. 1, Ed. 8 (1961), published by the American Association of State Highway Officials.

[3] Based on "The Unified Soil Classification System," Technical Memorandum No. 3-357, v. 1 (1953) of the Waterways Experiment Station, Corps of Engineers.

[4] NP stands for nonplastic.

[5] Soil Conservation Service and Bureau of Public Roads have agreed to consider that all soils having plasticity indexes within 2 points from A-line are to be given a borderline classification. Examples of such borderline classifications are ML–CL, SP–SM, and SM–SC.

729–251—65——5

TABLE 6.—*Estimated physical properties*

[Dashes indicate that soil has variable characteristics

Map symbol	Soil	Description of soil	Depth to seasonally high water table	Depth from surface
			Feet	*Inches*
Al	Alluvial land	Alluvial material that has variable characteristics		
AhA	Archer-Susquehanna fine sands, 0 to 2 percent slopes.	Archer soils consist of less than 19 inches of fine sand to loamy fine sand, underlain by a sandy clay loam to clay subsoil. In places, limestone is at a depth ranging from 30 inches to 6 feet. These soils occur on undulating uplands indented by numerous sinks. (See Susquehanna fine sand for properties of the Susquehanna soils.)	10+	0 to 12
AhB	Archer-Susquehanna fine sands, 2 to 5 percent slopes.			12 to 40
AhC	Archer-Susquehanna fine sands, 5 to 8 percent slopes.			40+
AnA	Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes.	Archer soils consist of 18 to 30 inches of fine sand to loamy fine sand, underlain by a sandy clay loam to clay subsoil. In places, limestone is at a depth ranging from 30 inches to 6 feet. (See Susquehanna fine sand for properties of the Susquehanna soils.)	10+	0 to 24
AnB	Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes.			24 to 48
AnC	Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes.			48+
ArB	Arredondo fine sand, 0 to 5 percent slopes.	Thirty inches or more of well-drained, loose fine sand over stratified layers of sandy loam or sandy clay. Fine-textured material begins at a depth of 30 to 42 inches in the shallow phases. Substrata contain phosphatic pebbles or gravel.	10+	0 to 72
ArC	Arredondo fine sand, 5 to 8 percent slopes.			72 to 90
ArD	Arredondo fine sand, 8 to 12 percent slopes.			
AsB	Arredondo fine sand, moderately shallow, 0 to 5 percent slopes.			
AsC	Arredondo fine sand, moderately shallow, 5 to 8 percent slopes.			
Bb	Bayboro fine sandy loam	Poorly to very poorly drained soil. The loamy fine sand or fine sandy loam surface soil is less than 18 inches thick. The clay subsoil is acid, very plastic, and slowly permeable. This soil occurs on nearly level, low uplands, and in depressions.	0	0 to 12
				12 to 60
BfB	Blanton fine sand, high, 0 to 5 percent slopes.	Thirty inches or more of moderately well drained to excessively drained, loose fine sand over stratified layers of sandy loam to sandy clay. Fine-textured material begins at a depth of 30 to 42 inches in the shallow phases. In some places, limestone underlies thin clayey substrata. In areas of the Blanton-Chiefland complex, limestone is at a depth of 42 to 60 inches.	10+	0 to 72
BfC	Blanton fine sand, high, 5 to 8 percent slopes.			72 to 108
BfD	Blanton fine sand, high, 8 to 12 percent slopes.			
BfE	Blanton fine sand, high, 12 to 35 percent slopes.			
BhB	Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes.	See description above	10+	0 to 36
				36 to 72
BmB	Blanton fine sand, low, 0 to 5 percent slopes.	See description above	2	0 to 60+
BmC	Blanton fine sand, low, 5 to 8 percent slopes.			
BmD	Blanton fine sand, low, 8 to 12 percent slopes.			
BnB	Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes.	See description above	2	0 to 36
BnC	Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes.			36 to 48
BtB	Blanton-Chiefland fine sands, 0 to 5 percent slopes.	See description above	4	0 to 48
BtC	Blanton-Chiefland fine sands, 5 to 8 percent slopes.			48+

significant to engineering

or that properties have not been estimated]

Texture classification			Percentage passing sieve—		Permeability	Available moisture	Reaction	Shrink-swell potential
USDA	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					Inches per hour	*Inches per inch of soil*	*pH value*	
Fine sand to loamy fine sand	SM	A-2 or A-4	100	15 to 45+	5.0 to 10.0	0.092	5.1 to 6.0	Low.
Fine sandy clay to clay	SC, CL, or CH.	A-6 or A-7	100	40 to 90	0.2 to 0.8	.133	5.1 to 6.0	Medium to high.
Limestone								
Fine sand to loamy fine sand	SM–SP or SM.	A-2	100	10 to 30	5.0 to 10.0	.092	5.1 to 6.0	Low.
Fine sandy clay loam to clay	SC, CL, or CH.	A-6 or A-7	100	40 to 75	0.2 to 0.8	.133	5.1 to 6.0	Medium to high.
Limestone								
Fine sand	SP–SM or SM.	A-3 or A-2	98	7 to 19	10+	.066	5.1 to 6.0	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC to ML–CL.	A-4 or A-6	95	35 to 55	0.2 to 5.0	.100	5.1 to 6.0	Low.
Fine sandy loam	SM–SC or SM.	A-2 or A-4	100	20 to 50	0.2 to 0.8	.117	5.1 to 5.5	Low to medium.
Silty clay to clay	CL or CH	A-6 or A-7	100	75 to 90	0.05 to 0.2	.133	5.1 to 5.5	Medium to high.
Fine sand	SP–SM or SM.	A-2 or A-3	100	5 to 15	10+	.055	5.0 to 5.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A-2 or A-6	100	35 to 50	0.8 to 5.0	.117	5.0 to 5.5	Low to medium.
Fine sand	SP–SM or SM.	A-2 or A-3	100	5 to 15	10+	.055	5.0 to 5.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A-4 or A-6	100	35 to 50	0.8 to 5.0	.117		Low to medium.
Fine sand	SP–SM or SM.	A-2 or A-3	100	5 to 15	10+	.055	5.0 to 5.5	Low.
Fine sand	SP–SM or SM.	A-2 or A-3	100	5 to 15	10+	.05	5.0 to 5.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A-4 or A-6	100	35 to 50	0.8 to 5.0	.117		Low.
Fine sand	SP–SM or SM.	A-2 or A-3	100	5 to 15	10+	.055	5.1 to 5.5	Low.
Limestone								

TABLE 6.—*Estimated physical properties*

Map symbol	Soil	Description of soil	Depth to seasonally high water table	Depth from surface
BoB	Blanton-Bowie-Susquehanna complex, 2 to 5 percent slopes.	Somewhat poorly drained to well-drained fine sand to loamy fine sand underlain by sand and clay. These soils occur on gentle to sloping uplands. (See individual soils of this complex for physical properties.)		
BoC	Blanton-Bowie-Susquehanna complex, 5 to 8 percent slopes.			
BuA	Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes.	Poorly drained to well-drained fine sand and loamy fine sand, 6 to 42 inches or more thick, underlain by sand and clay. These nearly level and gently sloping soils occur near the Suwannee River. (See Blanton fine sand for physical properties of the Blanton soil in this complex. Kalmia and Leaf soils were not mapped separately in Suwannee County; estimated physical properties are not given for these soils.)		
BuB	Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes.			
			Feet	*Inches*
BvB	Bowie fine sand, 2 to 5 percent slopes.	Less than 18 inches of well-drained fine sand and 6 to 12 inches of friable, well-aerated fine sandy loam to sandy clay. These soils occur on gently sloping to sloping areas.	6	0 to 10 10 to 25 25 to 42+
BvC	Bowie fine sand, 5 to 8 percent slopes.			
BwB	Bowie fine sand, thick surface, 2 to 5 percent slopes.	The 18- to 30-inch, well-drained soil is fine sand, and the 6- to 24-inch, friable, well-aerated subsoil is fine sandy loam to sandy clay. These soils occur in gently sloping to sloping areas.	6	0 to 24 24 to 36 36 to 48
BwC	Bowie fine sand, thick surface, 5 to 8 percent slopes.			
BxB	Bowie-Blanton complex, 2 to 5 percent slopes.	Moderately well drained to well drained fine sands, 6 to 42 inches or more in thickness, underlain by sand or friable sandy clay loam. Blanton soils are sandy to a depth of more than 30 inches. (See individual soils of this complex for physical properties.)		
BxC	Bowie-Blanton complex, 5 to 8 percent slopes.			
ChB	Chiefland fine sand, 0 to 5 percent slopes.	Loose, well-drained sand or fine sand over limestone. In most places, the layer of fine sand is 30 to 48 inches deep; in a few places, it is 20 to 30 inches deep. A layer of fine sandy loam or fine sandy clay loam is between the sandy surface soil and the limestone in places.	10	0 to 36 36 to 42 42+
ChC	Chiefland fine sand, 5 to 8 percent slopes.			
FfB	Fellowship loamy fine sand, 2 to 5 percent slopes.	The loamy fine sand surface soil, which is less than 18 inches thick, and the plastic sandy clay or sandy clay loam subsoil, which is 6 to 24 inches thick, overlie slowly permeable, stratified layers of clay, sandy clay, and gravelly clay. Many phosphatic and sandstone pebbles are scattered throughout the profile in some places.	[1] 10+	0 to 14 14 to 20 20 to 72
FfC	Fellowship loamy fine sand, 5 to 8 percent slopes.			
FfD	Fellowship loamy fine sand, 8 to 12 percent slopes.			
FmC	Fort Meade loamy fine sand, 5 to 8 percent slopes.	Thirty inches or more of well-drained, loose loamy fine sand over stratified layers of sandy loam to sandy clay. Fine-textured material begins at a depth of 30 to 42 inches in the shallow phases. Phosphatic pebbles or stones are in the substrata.	10+	0 to 36 36 to 72 72+
GaB	Gainesville loamy fine sand, 2 to 5 percent slopes.			
GaC	Gainesville loamy fine sand, 5 to 8 percent slopes.			
GfB	Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes.			
Gr	Grady fine sandy loam, thick surface.	Poorly drained and very poorly drained soils. A thin, fine-textured surface soil overlies slowly permeable, acid sandy clay or clay. These soils occur in depressions or in ponds. Grady, Bladen, and Coxville soils have thinner first and second horizons than Grady fine sandy loam, thick surface.	0	0 to 20 20 to 30 30 to 42
Gx	Grady, Bladen, and Coxville soils.			

significant to engineering—Continued

Texture classification			Percentage passing sieve—		Permeability	Available moisture	Reaction	Shrink-swell potential
USDA	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					Inches per hour	*Inches per inch of soil*	*pH value*	
Fine sand	SP–SM	A–2 or A–3	100	5 to 15	10+	0.092	5.1 to 5.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A–2	100	20 to 35	0.8 to 5.0	.100	5.1 to 5.5	Low.
Fine sandy clay to clay loam.	SM, SC, or CL.	A–6 or A–7	100	40 to 55	0.05 to 0.8	.117	5.1 to 5.5	Medium to high.
Fine sand	SP–SM or SM.	A–2–4	100	10 to 15	10+	.092	5.1 to 5.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A–2	100	20 to 35	0.8 to 5.0	.100	5.1 to 5.5	Low.
Fine sandy clay to clay	SM, SC, or CL.	A–6 or A–7–6.	100	40 to 60	0.05 to 0.8	.117	5.1 to 5.5	Medium to high.
Fine sand	SP–SM	A–2 or A–3	100	7 to 12	10+	.055	5.1 to 6.5	Low.
Fine sandy loam to fine sandy clay loam.	SM–SC or SC.	A–2	100	15 to 30	0.2 to 2.5	.070	6.6 to 7.3	Low.
Limestone								
Loamy fine sand	SM or SM–SC.	A–2	90 to 100	20 to 35	5.0 to 10.0	.092	5.1 to 6.0	Low.
Fine sandy clay loam to fine sandy clay.	SM–SC to SC.	A–6 or A–7	90 to 100	35 to 50	0.2 to 0.8	.133	5.1 to 6.0	Medium to high.
Clay	CL or CH	A–6 or A–7	90 to 100	50 to 85	Less than 0.05.	.133	5.1 to 6.0	High.
Loamy fine sand	SM	A–2	98 to 100	15 to 30	10+	.066	5.1 to 6.0	Low.
Loamy fine sand to fine sandy loam.	SM–SC or SM.	A–2 or A–4	98 to 100	15 to 45	5.0 to 10+	.092	5.1 to 6.0	Low.
Fine sandy clay loam	SM–SC or SC.	A–2 or A–6	98 to 100	30 to 50	0.2 to 5.0	.100	5.1 to 6.0	Low.
Fine sandy loam	SM or SM–SC.	A–4	100	35 to 50	2.5 to 5.0	.092	5.1 to 5.5	Medium.
Fine sandy clay loam	SC or CL	A–4	100	40 to 55	0.2 to 5.0	.100	5.1 to 5.5	Medium.
Clay	CL or CH	A–7	100	50 to 65	0.2 to 0.8	.108	5.1 to 5.5	High.

TABLE 6.—*Estimated physical properties*

Map symbol	Soil	Description of soil	Depth to seasonally high water table	Depth from surface
			Feet	*Inches*
HdB	Hernando fine sand, 2 to 5 percent slopes.	Fine sand to loamy fine sand, less than 18 inches thick, underlain by sandy clay or clay subsoil. Limestone is at a depth ranging from 30 inches to 4 feet. These gently sloping to sloping soils occur in areas indented by numerous sinks.	10+	0 to 12
HdC	Hernando fine sand, 5 to 8 percent slopes.			12 to 24
				24 to 38
				38+
KaB	Kanapaha fine sand, 0 to 5 percent slopes.	Moderately well drained, loose fine sand, 42 inches or more deep. These nearly level or gently sloping soils occur on low-lying uplands.	1 to 3	0 to 42
KaC	Kanapaha fine sand, 5 to 8 percent slopes.			42 to 72
KfB	Klej fine sand, 0 to 5 percent slopes.			
LaB	Lakeland fine sand, 0 to 5 percent slopes.	Well-drained, loose fine sand, 42 inches or more deep, underlain in places by thin layer of fine sandy loam or fine sandy clay loam. Below this is limerock.	10+	0 to 52
LaC	Lakeland fine sand, 5 to 8 percent slopes.			52 to 72
LdB	Lakeland and Jonesville fine sands, 0 to 5 percent slopes.			
LfA	Leon fine sand, 0 to 2 percent slopes	Somewhat poorly drained, deep, strongly acid sand underlain by sand or by clayey material; stained organic pan within 30 inches of the surface. In the loamy substratum phase, a fine-textured horizon is at a depth between 30 and 42 inches. These are nearly level soils.	0 to 2	0 to 23
LmA	Leon fine sand, loamy substratum, 0 to 5 percent slopes.			23 to 29
Ln	Leon and Ona fine sands.			29 to 72
Lo	Local alluvial land	Alluvial material in depressions on uplands; thickness and texture variable.	(2)	Variable
Lp	Local alluvial land, phosphatic.			
Mp	Mine pits and dumps	Variable soil material in strip mines, pits, and dumps		
Pa	Peat	Organic soil material derived from remains of grasses, lilies, and woody plants.	(3)	0 to 60
PdA	Plummer fine sand, 0 to 2 percent slopes.	Somewhat poorly drained, poorly drained, and very poorly drained, strongly acid soils occurring in ponds and adjacent slightly higher areas. The surface soil consists of more than 30 inches of sand. In the moderately shallow phase, fine-textured substrata are at a depth of 30 to 42 inches. Plummer fine sand, depressions, is covered with water during wet seasons.	0	0 to 72
PdB	Plummer fine sand, 2 to 5 percent slopes.			
Pm	Plummer fine sand, moderately shallow.			
Ph	Plummer fine sand, high.			
Pf	Plummer fine sand, depressions.			
PrD	Plummer, Bladen, and Rains soils, 5 to 17 percent slopes.	Wet, seepy soils on short breaks or hillsides		
Ps	Pomello fine sand	Nearly level, deep, moderately well drained, very strongly acid sand; stained organic pan at a depth below 30 inches.	2	0 to 39
				39 to 45
				45 to 58
Ru	Rutlege fine sand	Somewhat poorly drained to very poorly drained, acid sand 42 inches or more deep, occurring in ponds and the adjacent slightly higher areas. Upper 10 to 18 inches is high in organic-matter content.	0 to 2	0 to 10
Sd	Scranton fine sand.			10 to 50
				50 to 72
SaB	Sandy and clayey land, gently sloping	Soils of variable texture, structure, color, drainage, and depth.	6	
ScC	Sandy and clayey land, sloping.			

significant to engineering—Continued

Texture classification			Percentage passing sieve—		Permeability	Available moisture	Reaction	Shrink-swell potential
USDA	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					Inches per hour	*Inches per inch of soil*	*pH value*	
Fine sand to loamy fine sand	SP–SM or SM.	A–2	100	10 to 15	10+	0.092	5.1 to 5.5	Low.
Fine sandy clay loam	SC	A–2 or A–6	100	30 to 50	0.2 to 0.8	.117	5.5 to 6.0	Medium to high.
Sandy clay to clay	CH or MH	A–7	100	40 to 90	Less than 0.2.	.133	6.1 to 7.3	High.
Limestone								
Fine sand	SP–SM or SM.	A–2 or A–3	100	5 to 15	10+	.066	5.1 to 5.5	Low.
Fine sand to fine sandy loam	SM–SC or SM.	A–2–4 or A–4.	100	20 to 40	2.5 to 10+	.092	4.5 to 5.0	Low.
Fine sand	SP–SM or SM.	A–2 or A–3	100	5 to 15	10+	.050	5.1 to 5.5	Low.
Fine sand to fine sandy loam	SM–SC or SM.	A–2 or A–4	100	15 to 45	5.0 to 10+	.092	5.5 to 7.3	Low.
Fine sand	SP or SP–SM.	A–3	100	4 to 7	10+	.033	4.5 to 5.0	Low.
Fine sand	SP–SM or SM.	A–2 or A–3	100	8 to 15	0.8 to 5.0	.050	4.5 to 5.0	Low.
Fine sand	SP or SP–SM.	A–3	100	2 to 10	10+	.042	4.5 to 5.0	Low.
Sand to loamy fine sand							5.1 to 5.5	Low.
Peat	Pt				10+		Below 4.5	
Fine sand	SP–SM	A–3	100	5 to 10	10	.042	4.6 to 5.5	Low.
Fine sand	SP or SP–SM.	A–3	100	2 to 7	10+	.033	4.5 to 5.0	Low.
Fine sand	SP–SM or SM.	A–3	100	8 to 15	2.5 to 5.0	.050	Below 4.5	Low.
Fine sand	SP or SP–SM.	A–3	100	2 to 10	10+	.042	4.5 to 5.0	Low.
Fine sand	SP–SM or SM.	A–2 or A–3	100	10 to 15	5.0 to 10.0	.092	4.6 to 5.5	Low.
Fine sand	SP–SM	A–3	100	5 to 10	10+	.033	5.1 to 5.5	Low.
Fine sandy clay loam to fine sandy loam.	SC or CL	A–2 or A–6	100	20 to 55	0.8 to 2.5	.117	5.1 to 5.5	Low to medium.
Variable							5.1 to 5.5	

TABLE 6.—*Estimated physical properties*

Map symbol	Soil	Description of soil	Depth to seasonally high water table	Depth from surface
			Feet	*Inches*
SfB	Susquehanna fine sand, 2 to 5 percent slopes.	Less than 18 inches of fine sand or loamy fine sand over dense, very slowly permeable sandy clay and clay; soils occur extensively in gently sloping to sloping areas.	10+	0 to 8
SfC	Susquehanna fine sand, 5 to 8 percent slopes.			8 to 16
SfC2	Susquehanna fine sand, 5 to 8 percent slopes, eroded.			16 to 52
SfD	Susquehanna fine sand, 8 to 12 percent slopes.			
ShB	Susquehanna fine sand, thick surface, 2 to 5 percent slopes.			
SnB	Susquehanna-Blanton complex, 2 to 5 percent slopes.	Somewhat poorly drained to excessively drained fine sand and loamy sand underlain by sand or clay; soils are on gentle to sloping uplands. (See individual soils of this complex for physical properties.)		
SnC	Susquehanna-Blanton complex, 5 to 8 percent slopes.			
SnD	Susquehanna-Blanton complex, 8 to 12 percent slopes.			
Sw	Swamp	Land type consisting of swampy soil of varied characteristics; surface layer is high in organic-matter content.	0	
Wf	Weston fine sand, dark subsoil variant.	Poorly drained soil occurring on nearly level low uplands and in depressions. The surface soil is 14 to 30 inches of fine sand; it is underlain by a stratified, dominantly plastic, slowly permeable clay subsoil.	0	0 to 16 16 to 22 22 to 52
ZuB	Zuber loamy fine sand, 2 to 5 percent slopes.	The surface soil is less than 18 inches of loamy fine sand; the subsoil is 12 to 30 inches of fine sandy clay loam. It overlies slowly permeable fine sandy clay. In places, there are many phosphatic and sandstone rocks.	10	0 to 14
ZuC	Zuber loamy fine sand, 5 to 8 percent slopes.			14 to 44
ZuC2	Zuber loamy fine sand, 5 to 8 percent slopes, eroded.			44 to 123
ZuE	Zuber loamy fine sand, 8 to 35 percent slopes.			

[1] Seepy areas on some hillsides. [2] Subject to seasonal flooding. [3] Water on surface.

significant to engineering—Continued

Texture classification			Percentage passing sieve—		Permeability	Available moisture	Reaction	Shrink-swell potential
USDA	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					Inches per hour	*Inches per inch of soil*	*pH value*	
Fine sand to fine sandy loam	SP–SM or SM.	A–2 or A–3	100	7 to 15	10+	0.092	5.1 to 5.5	Low.
Clay	SC, CH, or MH.	A–7	100	45 to 70	0.2 to 0.8	.133	5.1 to 5.5	High.
Clay	SC, CH, or MH.	A–7	100	45 to 70	Less than 0.2.	.133	4.5 to 5.0	High.
Fine sand	SP–SM or SM.	A–2	100	10 to 15	10+	.092	5.1 to 5.5	Low.
Sandy clay	SM or SC	A–2	100	15 to 35	0.2 to 0.8	.100	5.1 to 5.5	Low to medium.
Clay	SC, CL, or CH.	A–2 or A–7	100	25 to 65	Less than 0.2.	.117	5.1 to 5.5	Medium to high.
Loamy fine sand	SM or SP–SM.	A–2	95	10 to 15	5.0 to 10.0	.092	5.6 to 6.0	Low.
Fine sandy loam to fine sandy clay loam.	SM, SC, or CL.	A–2 or A–6	90	25 to 40	0.2 to 2.5	.100	5.6 to 6.0	Low to medium.
Fine sandy clay	SC or CL	A–2, A–6, or A–7.	75 to 95	35 to 55	0.2 to 0.8	.117	4.5 to 5.5	Medium to high.

TABLE 7.—*Engineering*

[Dashes indicate that soil features affecting

Map symbol	Soil	Suitability as source of—			Soil features adversely affecting—	
		Topsoil	Sand	Road fill	Highway location	Dikes or levees
Al	Alluvial land	Variable	Variable	Variable	Variable. High water table; subject to frequent flooding.	Variable
AhA	Archer-Susquehanna fine sands, 0 to 2 percent slopes.	Fair	Poor	Surface soil, fair; subsoil, poor.	Limestone near surface in places; numerous lime sinks; plastic clay subsoil.	
AhB	Archer-Susquehanna fine sands, 2 to 5 percent slopes.					
AhC	Archer-Susquehanna fine sands, 5 to 8 percent slopes.					
AnA	Archer-Susquehanna fine sands, thick surface, 0 to 2 percent slopes.					
AnB	Archer-Susquehanna fine sands, thick surface, 2 to 5 percent slopes.					
AnC	Archer-Susquehanna fine sands, thick surface, 5 to 8 percent slopes.					
ArB	Arredondo fine sand, 0 to 5 percent slopes.	Good	Fair to good.	Fair to good.	Deep sand; poorly graded; some areas have sandy clay substrata; soft sandstone gravel under some areas.	
ArC	Arredondo fine sand, 5 to 8 percent slopes.					
ArD	Arredondo fine sand, 8 to 12 percent slopes.					
AsB	Arredondo fine sand, moderately shallow, 0 to 5 percent slopes.					
AsC	Arredondo fine sand, moderately shallow, 5 to 8 percent slopes.					
Bb	Bayboro fine sandy loam	Fair to good.	Not suitable.	Poor	High water table; slowly permeable, plastic clay subsoil; low position.	Plastic clay subsoil; high shrink-swell potential; cracks when dry.
BfB	Blanton fine sand, high, 0 to 5 percent slopes.	Fair	Fair to good.	Fair to good.	Deep sand; poorly to well graded; sandy clay substrata at depth of 30 to 42 inches in moderately shallow phase.	Deep sand; high permeability; sandy clay substrata at depth of 30 to 42 inches in moderately shallow phase.
BfC	Blanton fine sand, high, 5 to 8 percent slopes.					
BfD	Blanton fine sand, high, 8 to 12 percent slopes.					
BfE	Blanton fine sand, high, 12 to 35 percent slopes.					
BhB	Blanton fine sand, high, moderately shallow, 0 to 5 percent slopes.					
BmB	Blanton fine sand, low, 0 to 5 percent slopes.					
BmC	Blanton fine sand, low, 5 to 8 percent slopes.					
BmD	Blanton fine sand, low, 8 to 12 percent slopes.					
BnB	Blanton fine sand, low, moderately shallow, 0 to 5 percent slopes.					
BnC	Blanton fine sand, low, moderately shallow, 5 to 8 percent slopes.					

interpretations

engineering practices have not been estimated]

Soil features adversely affecting—Continued						Remarks
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Reservoir area	Embankment					
Position along natural drains; variable material.	Variable	High water table; subject to frequent flooding.				Usually occurs along streams.
Sandy surface; few sandy lenses in substrata; porous limestone substrata; sand-filled sinks.	High shrink-swell potential; sandy lenses in substrata.	Slow internal drainage; high erodibility.	Moderate intake rate; slow permeability in subsoil; some small areas have restricted root zone; moderate available moisture capacity.			Underlain by limerock in places; lime sinks common; high erodibility.
High permeability; more than 10 feet to water table.	High permeability.	Naturally good drainage.	Low available moisture capacity.			Not extensive in county; substrata contains phosphatic pebbles on gravel.
Slow permeability; high water table; low position.	Plastic clay subsoil; high shrink-swell potential; cracks when dry.	Slow permeability; low position; natural outlets usually not available.	Low position; high water table.			Drainage accomplished through drainage wells in places.
High permeability; depth to water table more than 10 feet in high phases.	High permeability; fairly stable sand if used on flat slopes.	Not needed in high phase.	Low available moisture capacity.			Variable depth to water table; more than 10 feet in high phases and near the surface in some areas of low phases.

TABLE 7.—*Engineering*

Map symbol	Soil	Suitability as source of—			Soil features adversely affecting—	
		Topsoil	Sand	Road fill	Highway location	Dikes or levees
BtB	Blanton-Chiefland fine sands, 0 to 5 percent slopes.					
BtC	Blanton-Chiefland fine sands, 5 to 8 percent slopes.					
BoB	Blanton - Bowie - Susquehanna complex, 2 to 5 percent slopes.	See individual soils of this complex for engineering interpretations.				
BoC	Blanton - Bowie - Susquehanna complex, 5 to 8 percent slopes.					
BuA	Blanton-Kalmia-Leaf complex, 0 to 2 percent slopes.	See Blanton fine sand for engineering interpretations of the Blanton soil in this complex.				
BuB	Blanton-Kalmia-Leaf complex, 2 to 5 percent slopes.					
BvB	Bowie fine sand, 2 to 5 percent slopes.	Good	Fair	Good	Sandy clay material to depth of 20 to 36 inches.	
BvC	Bowie fine sand, 5 to 8 percent slopes.					
BwB	Bowie fine sand, thick surface, 2 to 5 percent slopes.					
BwC	Bowie fine sand, thick surface, 5 to 8 percent slopes.					
BxB	Bowie-Blanton complex, 2 to 5 percent slopes.	See individual soils of this complex for engineering interpretations.				
BxC	Bowie-Blanton complex, 5 to 8 percent slopes.					
ChB	Chiefland fine sand, 0 to 5 percent slopes.	Good	Fair	Good	Sand underlain by limestone at a depth of about 4 feet; occasional lime sinks.	Highly permeable sand; limerock at depth of 42 inches or more.
ChC	Chiefland fine sand, 5 to 8 percent slopes.					
FfB	Fellowship loamy fine sand, 2 to 5 percent slopes.	Good	Not suitable.	Poor	Plastic clay substrata; gravelly substrata in places; steep slopes; seepage on hillsides.	Slowly permeable, plastic clay substrata; high shrink-swell potential.
FfC	Fellowship loamy fine sand, 5 to 8 percent slopes.					
FfD	Fellowship loamy fine sand, 8 to 12 percent slopes.					
FmC	Fort Meade loamy fine sand, 5 to 8 percent slopes.	Good	Fair to good.	Good	Deep loamy sand; sandy clay or gravelly substrata; sandy clay at depth of 30 to 42 inches in moderately shallow phase.	Deep, permeable loamy sand; gravelly substrata.
GaB	Gainesville loamy fine sand, 2 to 5 percent slopes.					
GaC	Gainesville loamy fine sand, 5 to 8 percent slopes.					
GfB	Gainesville loamy fine sand, moderately shallow, 0 to 5 percent slopes.					

interpretations—Continued

Soil features adversely affecting—Continued						Remarks
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Reservoir area	Embankment					
Kalmia and Leaf soils were not mapped separately in Suwannee County and engineering interpretations for these soils are not given.						
Slow permeability in substrata; water table at depth of 6 feet.	----------	Naturally good drainage.	----------	----------	----------	Generally well suited to engineering practices.
Permeable sand underlain by cavernous limestone; water table at depth of more than 10 feet.	Permeable sand; fair stability; limerock at depth of 42 inches or more.	Naturally good drainage.	Rapid intake rate; low available moisture capacity.	----------	----------	Porous limestone underlies these soils within 4 feet of the surface; poor source of sand where poorly graded.
Occasional sand lenses in slowly permeable clay substrata; porous underlying limestone; water table at depth of more than 10 feet.	Plastic clay substrata; high shrink-swell potential; sandstone pebbles in places.	Good surface drainage; restricted internal drainage; seepage on some hillsides.	Low intake rate	Not suited to terraces; high erodibility.	High erodibility	Some areas require excavation of plastic clay and replacement with less plastic material for roadbeds.
Moderately high permeability; water table at depth of more than 10 feet.	Moderately high permeability; gravelly substrata.	Naturally good drainage.	Low to moderate available moisture capacity.	----------	----------	Phosphatic pebbles or gravel in substrata.

TABLE 7.—*Engineering*

Map symbol	Soil	Suitability as source of—			Soil features adversely affecting—	
		Topsoil	Sand	Road fill	Highway location	Dikes or levees
Gr Gx	Grady fine sandy loam, thick surface. Grady, Bladen, and Coxville soils.	Good	Not suitable.	Poor	High water table; slowly permeable, plastic clay subsoil; low depressed position.	Plastic clay subsoil; high shrink-swell potential; fair strength and stability.
HdB HdC	Hernando fine sand, 2 to 5 percent slopes. Hernando fine sand, 5 to 8 percent slopes.	Good	Poor; shallow.	Surface soil, fair; subsoil, poor.	Limestone near surface in places; numerous sinks.	
KaB KaC KfB	Kanapaha fine sand, 0 to 5 percent slopes. Kanapaha fine sand, 5 to 8 percent slopes. Klej fine sand, 0 to 5 percent slopes.	Fair	Fair	Good	Loose sand; seasonally high water table.	Highly permeable surface soil 42 inches or more deep.
LaB LaC LdB	Lakeland fine sand, 0 to 5 percent slopes. Lakeland fine sand, 5 to 8 percent slopes. Lakeland and Jonesville fine sands, 0 to 5 percent slopes.	Fair to good.	Fair to good.	Fair	Deep sands	Deep, highly permeable, loose sand.
LfA LmA Ln	Leon fine sand, 0 to 2 percent slopes. Leon fine sand, loamy substratum, 0 to 5 percent slopes. Leon and Ona fine sands.	Poor to fair.	Fair to good.	Fair to good.	Loose sand; high water table; organic pan.	Loose sand substrata; high water table.
Lo Lp	Local alluvial land Local alluvial land, phosphatic.	Good	Variable			
Mp	Mine pits and dumps	Variable				
Pa	Peat	Poor	Not suitable.	Not suitable.	Deep peat deposit	Not suitable
PdA PdB Pf Ph Pm	Plummer fine sand, 0 to 2 percent slopes. Plummer fine sand, 2 to 5 percent slopes. Plummer fine sand, depressions. Plummer fine sand, high. Plummer fine sand, moderately shallow.	Poor	Fair to good.	Fair to good.	Loose sand; high water table; low position; periodically ponded; strongly acid.	Loose sand; high water table.
PrD	Plummer, Bladen, and Rains soils, 5 to 17 percent slopes.	Poor	Poor	Poor	Seepy areas	

interpretations—Continued

Soil features adversely affecting—Continued						Remarks
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Reservoir area	Embankment					
Slow permeability; high water table; low depressional position.	Plastic clay subsoil; high shrink-swell potential; fair strength and stability for impervious cores.	Slow permeability; low position; natural outlets usually not available.	Low position; high water table; slow permeability.			Drainage accomplished through drainage wells in places.
Slowly permeable substrata; lime sinks; porous underlying limestone.	Permeable sandy surface soil.	Slowly permeable subsoil; seepy areas; numerous sand-filled sinks.	Variable thickness and irregular slopes.			Porous limerock fairly near the surface; numerous sand-filled sinks.
Highly permeable sand 42 inches or more deep; seasonally high water table.	Loose sand on surface; clayey material at depth of 42 inches or more; seasonally high water table.	Loose sand; slopes unstable in cuts; rapid permeability.	Low available moisture capacity; seasonally high water table.			Low areas suitable for excavated pit reservoirs.
High permeability; water table at depth of more than 10 feet.	Loose, permeable sand.	Naturally good drainage.	Low available moisture capacity.			
Deep, permeable sand; high water table.	Loose, permeable sand; organic pan; high water table.	Highly permeable, loose sand; slopes unstable in cuts; organic pan.	Nearly level; low available moisture capacity; high water table.		Nearly level; loose sand.	Suitable for excavated pits; can be subirrigated.
						Subject to seasonal flooding.
High water table; low position.	Not suitable	Small pond areas; poor natural outlets.	High available moisture capacity; very porous; low position.			Small pond areas; not suitable for construction; remove from foundations.
Highly permeable surface soil; high water table.	Loose sand; high water table.	Loose sand; unstable slopes in cuts; low position; rapid permeability.	Nearly level; low available moisture capacity; high water table.		Low position	Suitable for excavated pit reservoirs; finer textured substrata at a depth of 30 to 42 inches in moderately shallow phase; can be subirrigated.
Seepy slopes		Sloping surface; variable substrata.				Wet, seepy land on short breaks on hillsides.

TABLE 7.—*Engineering*

Map symbol	Soil	Suitability as source of—			Soil features adversely affecting—	
		Topsoil	Sand	Road fill	Highway location	Dikes or levees
Ps	Pomello fine sand	Poor	Good	Fair to good.	Loose sand; nearly level; relatively high water table.	Deep, loose sand; high permeability; relatively high water table.
Ru	Rutlege fine sand	Good	Fair to good.	Fair	Thick, highly organic surface soil; loose sand substratum; high water table; strongly acid.	Surface soil high in organic-matter content; loose sand substrata; high water table.
Sd	Scranton fine sand.					
SaB	Sandy and clayey land, gently sloping.	Variable				
ScC	Sandy and clayey land, sloping.					
SfB	Susquehanna fine sand, 2 to 5 percent slopes.	Poor	Not suitable.	Very poor	Shallow to plastic clay subsoil; seepage on hillsides; steep slopes in places.	High shrink-swell potential.
SfC	Susquehanna fine sand, 5 to 8 percent slopes.					
SfC2	Susquehanna fine sand, 5 to 8 percent slopes, eroded.					
SfD	Susquehanna fine sand, 8 to 12 percent slopes.					
ShB	Susquehanna fine sand, thick surface, 2 to 5 percent slopes.					
SnB	Susquehanna-Blanton complex, 2 to 5 percent slopes.					
SnC	Susquehanna-Blanton complex, 5 to 8 percent slopes.					
SnD	Susquehanna-Blanton complex, 8 to 12 percent slopes.					
Sw	Swamp	Variable				
Wf	Weston fine sand, dark subsoil variant.	Good	Not suitable.	Poor	High water table; very plastic, very slowly permeable clay subsoil.	High shrink-swell potential; clay subsoil; high water table.
ZuB	Zuber loamy fine sand, 2 to 5 percent slopes.	Good	Not suitable.	Poor	Shallow to plastic clay substrata; gravelly substrata in places; steep slopes in places; seepage on hillsides.	Slowly permeable, plastic clay substrata; medium to high shrink-swell potential.
ZuC	Zuber loamy fine sand, 5 to 8 percent slopes.					
ZuC2	Zuber loamy fine sand, 5 to 8 percent slopes, eroded.					
ZuE	Zuber loamy fine sand, 8 to 35 percent slopes.					

interpretations—Continued

Soil features adversely affecting—Continued						Remarks
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Reservoir area	Embankment					
Deep, permeable sand; high water table.	Loose, permeable sand; organic pan; high water table.	Loose sand; unstable slopes in cuts; organic pan.	Low available water capacity; relatively high water table.	----------	----------	Generally not well suited to excavated pits; normal high water table, 3 feet; low water table, 6 feet.
Permeable surface soil; high water table.	Surface soil high in organic-matter content; loose sand substrata; high water table.	Loose sand; unstable slopes in cuts; high water table.	Nearly level; low to moderately high available water capacity; high water table.	----------	Rutlege fine sand occurs in natural draws.	Suitable for excavated pits; may be suitable for subirrigation.
----------	----------	----------	----------	----------	----------	
Permeable sandy strata in low places.	High shrink-swell potential.	Slow internal drainage.	Restricted root zone; some steep slopes; subsoil has slow intake rate.	Shallow; erodible; plastic clay subsoil.	----------	Sand lenses in substrata in some areas.
----------	----------	----------	----------	----------	----------	
----------	High shrink-swell potential; high water table.	Slow permeability; low position.	High water table; low position.	Low, nearly level position.	----------	Suitable for excavated pits and reservoirs.
Water table at depth of more than 10 feet.	Plastic clay substrata; medium to high shrink-swell potential; stony or gravelly substrata in places.	Good surface drainage; restricted internal drainage; seepage on some hillsides.	Low intake rate.	Irregular slopes; erodible subsoil.	----------	Some areas require excavation of plastic clay and replacement with less plastic material for roadbeds.

Soil Test Data

Samples of the principal soil types in eight soil series were tested to help evaluate the soils for engineering purposes (table 5). Each soil series was sampled in at least three locations, and some in four. Test data from different locations show some variation in physical characteristics but probably not the maximum variation in the B and C horizons of each of the soil series. All samples were taken from a depth of less than 6 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil material in deep cuts in rolling or hilly areas.

The engineering soil classifications in table 5 are based on mechanical analysis and on tests that determine the liquid limit and the plastic limit of soils. The mechanical analysis was made by combined sieve and hydrometer methods. The results are useful in determining the relative proportions of the different sized particles. The percentages of clay obtained by the hydrometer method are not used for naming soil textural classes, since soil scientists determine percentage of clay by the pipette method.

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

Soil Properties Significant to Engineering

The estimates in table 6 are based on field observations and, for some soils, on laboratory tests. The interpretations apply only to the soils in Suwannee County.

The depth to the seasonally high water table is the approximate distance, in feet, from the surface to the free water in the soil during the normal wet season of the year.

Permeability was estimated from the results of tests on saturated, undisturbed cores 3 inches in diameter and 3 inches high, with 1-inch head of water and that tension provided by a 60-centimeter column of water.

The available water capacity, measured in inches per inch of soil, is an approximation of the amount of capillary water in the soil that is available to plants when the downward flow caused by gravity has practically stopped. In sand, it is approximately the total amount of water held in the soil; in clay, it may be considerably less than the total amount.

The shrink-swell potential indicates the volume change to be expected when the soil material dries (shrinking) and when it takes in moisture (swelling). This potential is based on volume-change tests. In general, soils classified as CH and A–7 have a high shrink-swell potential. Clean sands and gravels (single-grain structure) and other soils having small amounts of nonplastic to slightly plastic soil materials have a low shrink-swell potential.

Engineering Interpretations

Table 7 shows features of soils that affect the selection, design, or application of various kinds of land treatment and rates the suitability of the soils for these different purposes. Statements in this table are based on the known or estimated physical qualities of the soils and represent the judgment and opinions of engineers and soil scientists who have worked in the county or in other counties where the soils are similar.

The suitability of the soil material for road fill depends largely on the texture of the soil material and its natural water content. Highly plastic soil material is rated poor, depending on the natural water content and the difficulty of handling, drying, and compacting the soil material.

Locating highways calls for careful consideration as to the kind of soil material and the need for drainage. In some soils in Suwannee County, a high water table, bedrock near the surface, presence of highly plastic clays or highly erodible soils in cut sections, flooding, sloughing or sliding, and seepage have to be considered in determining the location of highways.

Suwannee limestone, which underlies much of the county (see section "Geology, Physiography, and Drainage"), has a high percentage of hard limestone that is mined for cement aggregate and road material. Though the Suwannee limestone stratum underlies Susquehanna, Bowie, Blanton, and other soils, it is suitable for mining only where the stratum is thick enough and the overburden of Hawthorn and Pleistocene materials is thin enough to make mining operations economically feasible. Ocala limestone, a soft limestone used extensively for pavement base in highways, is near enough the surface to be economically mined in the southern part of the county under Jonesville, Chiefland, Archer, Hernando, and similar soils.

Formation and Classification of Soils [9]

This section has two main parts. The first part describes the factors of soil formation and their effect on the soils in Suwannee County. In the second part, the soil series are placed in great soil groups and the morphology of the soils is discussed.

Factors of Soil Formation

Soil is produced by forces of weathering and soil formation that act on the parent material deposited or accumulated by geologic agencies. The characteristics of the soil depend on five major factors: (1) The climate under which the soil material has accumulated and has existed since accumulation; (2) the physical and mineralogical composition of the parent material; (3) the relief, or lay of the land; (4) the plant and

[9] JAMES R. MOORE, soil specialist for correlation, Soil Conservation Service, and T. C. MATHEWS, assistant soil surveyor, University of Florida Agricultural Experiment Stations, assisted in the preparation of this section.

animal life in and on the soil; and (5) the length of time these forces have acted on the material. The influences of climate on soil and plants depends not only on temperature, rainfall, and humidity but also on the physical characteristics of the soil or soil material and on the relief. Relief, in turn, strongly influences drainage, aeration, runoff, and exposure to sun and wind.

The five soil-forming factors are interdependent; each modifies the effect of the others. Any one of the five factors may have more influence than the others on the development of a soil and may account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly developed horizons. This strong effect of parent material, however, is modified greatly in some places by the effects of the climate, by relief, and by the plant and animal life in and on the soil. When a soil develops, more than one of the five factors influence the development, but in some places all but one factor may have little effect.

Climate

Temperature and rainfall influence the rate at which rocks weather and minerals decompose. They also influence leaching, eluviation, and illuviation. Climate affects the kinds of plants and animals that live in a region.

The climate of Suwannee County is humid and temperate. Summers are long and warm, and winters are mild. Rainfall is abundant. Generally it is well distributed throughout the year, but the heaviest rainfall occurs in June, July, August, and September. Freezing and thawing in this county have little effect on weathering and the soil-forming processes. The mild climate induces biological activity throughout the year. Because the abundant rainfall continuously leaches and translocates soluble materials, the soils contain only small amounts of organic matter and soluble plant nutrients. Climate is relatively uniform throughout the county and is not a major factor in producing differences among the soils.

Parent material

The parent, or geologic, materials of the soils in Suwannee County consist of (1) interbedded and unconsolidated sand and clay, (2) unconsolidated beds of marly clay and consolidated limestone, and (3) material washed from soils derived from those parent materials. Thick sand deposits of the Pleistocene Age are the parent materials of many of the soils in Suwannee County. Stratified sand and sandy clay of the Hawthorn formation are the parent materials of most of the soils that have a fine-textured subsoil. A few soils in the southern part of the county formed from limestone of the Suwannee formation. These materials are all of marine origin.

The parent materials in the county differ widely in mineral and chemical composition and in their physical constitution. Most of the main differences, such as those between sand, silt, and clay, can be observed in the field. Differences in mineralogical and chemical composition are important to soil formation and to present physical and chemical characteristics. Most of these differences can be determined only by careful laboratory examination. The chemical and mineralogical nature of the sediments have not been studied enough to determine how it relates to differences among the soils. Many differences among soils of the county appear to reflect original differences in the geological materials. Thus, parent materials seem to have been important in causing differences among the soils in the county.

The subsection "Geology, Physiography, and Drainage," in this report, gives additional information about parent materials.

Relief

The relief of the soils in Suwannee County is largely determined by the decay of the underlying formations of limestone, the degree of erosion of the Hawthorn formation, the old shore lines of the receding seas, and to a small extent the effects of dissection of rivers and smaller streams. Relief influences soil formation through its effect on drainage, runoff, erosion, moisture content, temperature, and plant cover. Its influence is modified by the other four factors of soil formation. The degree of soil development under the same conditions depends largely on the amount of water passing through the soil. Normal development takes place on gentle slopes where drainage is good and runoff is not excessive. On steep slopes, development may be slow because of reduced percolation of water through the soil, rapid erosion, or lack of water for the growing plants that aid soil formation.

Ninety-three percent of the county's acreage is nearly level to gently sloping, about 6 percent is sloping, and 1 percent is strongly sloping to steep. The sloping areas generally occur in a sandy ridge that extends from Ichetucknee Springs to a few miles north of O'Brien. Another large sloping area, in the northern part of the county extends from Suwannee Springs to Ellaville. The steep slopes are on short breaks around lakes, streams, and lime sinks.

Drainage in Suwannee County is principally through the sandy soils into underlying cavernous limestone. A few short streams terminate in cavities between limestone or in lakes or swales. Many large and small lime sinks occur in the county, and there are a few natural lakes in the northeastern part. The piezometric surface of water stored in the underlying limestone ranges from about 20 feet above mean sea level along the rivers to 60 feet above mean sea level near Wellborn. Free ground water reaches the Suwannee, Sante Fe, and Ichetucknee Rivers by way of limestone aquifers and numerous large springs.

Living organisms

Trees, shrubs, grasses, burrowing animals, earthworms, micro-organisms, and other plants and animals that live on and in the soil are active in the soil-forming process. The changes that these organisms bring about depend on, among other things, the kinds of life and the life processes peculiar to each. The kinds of plants and animals that live on and in the soil are determined by the environment, including climate, parent material, relief, and age of the soil, and also by the effect the organisms themselves have on the environment. Living organisms furnish organic matter to the soil and bring plant nutrients from the lower horizons to the upper horizons.

The original vegetation on the better drained soils in the county consisted mainly of longleaf pine, wiregrass, low shrubs, vines, and some hardwoods. That of swampy areas consisted of blackgum, cypress, sweetbay, scattered slash pine, and other water-tolerant hardwoods.

Organic matter from the various plants decomposes rather rapidly because temperature, moisture content, micropopulation of the soil, and the organic material itself are favorable to decomposition. Most of the soils contain a small amount of organic matter, and this is mostly in the upper part of the A horizon. Vegetation is relatively uniform throughout the county and, therefore, is not a major factor in producing differences among the soils.

Time

Time is required for soil to form. How much time depends on where the process of soil formation must start. Generally, much more time is needed for parent material to accumulate than for different horizons to form in the profile. The length of time needed for soil to develop also depends on the other factors of soil formation.

The age of soils varies considerably. Mature soils have well-developed profiles with clearly defined horizons or layers. Except for Regosols, soils on less sloping areas are generally more developed than those on stronger slopes. On stronger slopes the surface material has been less stable. Geologic erosion has removed soil material so rapidly that there has been little soil development and the depth to bedrock in some places has remained shallow. Alluvial soils have little horizon development primarily because new soil material is deposited each time a stream overflows.

Classification of Soils

Soils are classified in progressively more inclusive categories on the basis of profile characteristics. Beginning with the most inclusive, or highest, these categories are the order, the suborder, the great soil group, the family, the series, and the type. The suborder and family categories have never been fully developed and thus have been little used. The lowest categories, series and type, are explained in the section "How Soils are Mapped and Classified." Also explained is the soil phase, which is a subdivision of the soil type made on basis of factors significant in management but not significant in taxonomic classification.

In the highest category, all the soils in the county are grouped into three orders—zonal, intrazonal, and azonal. Each of these orders is made up of many great soil groups. In a great soil group are soils that have fundamental characteristics in common.

The zonal soil order consists of those great soil groups that have soils with well-developed characteristics that reflect the influence of the active factors of soil formation. The active factors are climate and living organisms, chiefly vegetation. The one great soil group in the zonal order in Suwannee County is the Red-Yellow Podzolic. It occupies 16 percent of the county.

The intrazonal order consists of those great soil groups that have soils with distinct, genetically related horizons that reflect the dominating influence of some local factor of topography or parent material over the effects of climate and living organisms. The intrazonal soils in this county are members of the Ground-Water Podzol, Low-Humic Gley, Humic Gley, and Planosol great soil groups. Soils of this order cover 7 percent of the county.

The azonal order consists of great soil groups made up of soils that lack well-developed profile characteristics that reflect the influence of age. The azonal soils in this county are members of the Regosol and Alluvial great soil groups. They make up about 77 percent of the acreage in the county.

In table 8 the soil series of this county are arranged by order and great soil group, and some distinguishing characteristics of each soil series are shown. Following the table, the characteristics of each great soil group and series are described in detail, and a representative profile of a soil in each series is given.

TABLE 8.—*Classification of the soil series by order and great soil group, and significant characteristics of the soil series*

Order, great soil group, and series	Relief	Parent material	Drainage class	Degree of profile development
ZONAL ORDER				
Red-Yellow Podzolic soils:				
Archer	Nearly level to sloping	Sand and clay influenced by limestone.	Moderately well drained	Moderate.
Bowie	Gently sloping to sloping	Unconsolidated, acid sand and clay.	Well drained	Strong.
Hernando	Gently sloping to sloping	Unconsolidated sand and clay influenced by limestone.	Well drained to moderately well drained.	Moderate.
Kalmia	Nearly level	Sediment from unconsolidated, acid sand and clay.	Well drained to moderately well drained.	Strong.
Zuber	Gently sloping to steep	Unconsolidated, phosphatic sand and clay.	Well drained to moderately well drained.	Strong.
Intergrading toward Low-Humic Gley soils—				
Susquehanna	Gently sloping to strongly sloping.	Unconsolidated, acid sand and clay.	Somewhat poorly drained	Weak.

TABLE 8.—*Classification of the soil series by order and great soil group, and significant characteristics of the soil series*—Con.

Order, great soil group, and series	Relief	Parent material	Drainage class	Degree of profile development
INTRAZONAL ORDER				
Ground-Water Podzols:				
Leon	Nearly level	Unconsolidated, acid sand and clay.	Somewhat poorly drained	Strong.
Ona	Nearly level	Unconsolidated, acid sand and clay.	Somewhat poorly drained to poorly drained.	Moderate.
Pomello	Nearly level	Unconsolidated, acid sand	Moderately well drained	Strong.
Low-Humic Gley soils:				
Bladen	Nearly level	Unconsolidated, acid sand and clay.	Poorly drained	Moderate.
Coxville	Nearly level	Unconsolidated, acid sand and clay.	Poorly drained	Moderate.
Grady	Nearly level	Unconsolidated, acid sand and clay.	Poorly drained to very poorly drained.	Moderate.
Plummer	Nearly level	Unconsolidated, acid sand	Poorly drained to very poorly drained.	Weak.
Rains	Nearly level	Unconsolidated sand and clay.	Very poorly drained	Moderate.
Weston	Nearly level	Sediment from stratified, acid sand and clay.	Poorly drained	Moderate.
Humic Gley soils:				
Bayboro	Nearly level	Unconsolidated, acid, marine clay.	Very poorly drained	Moderate.
Fellowship	Gently to strongly sloping.	Unconsolidated, phosphatic clay.	Moderately well drained	Moderate.
Rutlege	Nearly level	Unconsolidated, acid sand	Very poorly drained	Weak.
Scranton	Nearly level	Unconsolidated, acid sand	Somewhat poorly drained to poorly drained.	Weak.
Planosols:				
Leaf	Nearly level	Sediment from acid sand and clay.	Poorly drained	Moderate.
Bog soils:				
Peat	Level	Organic material	Very poorly drained	Weak.
AZONAL ORDER				
Regosols:				
Arredondo	Nearly level to strongly sloping.	Unconsolidated, phosphatic fine sand.	Well drained to excessively drained.	Weak.
Blanton	Nearly level to steep	Unconsolidated, acid fine sand.	Moderately well drained to well drained.	Weak.
Chiefland	Gently sloping to sloping	Unconsolidated sand influenced by limestone.	Well drained to excessively drained.	Weak.
Fort Meade	Sloping	Unconsolidated, phosphatic loamy fine sand.	Well drained to excessively drained.	Weak.
Gainesville	Gently sloping to sloping.	Unconsolidated, phosphatic loamy fine sand.	Well drained to excessively drained.	Weak.
Jonesville	Nearly level to gently sloping.	Unconsolidated sand influenced by limestone.	Well drained to excessively drained.	Weak.
Kanapaha	Nearly level to sloping	Unconsolidated, phosphatic fine sand.	Moderately well drained to somewhat poorly drained.	Weak.
Klej	Nearly level to gently sloping.	Unconsolidated, acid fine sand.	Moderately well drained	Weak.
Lakeland	Nearly level to sloping	Unconsolidated, acid fine sand.	Well drained to excessively drained.	Weak.
Alluvial soils:				
Alluvial land	Nearly level	Recent alluvial sediment of variable texture.	Poorly drained to very poorly drained.	Weak.
Local alluvial land	Nearly level	Sediment of variable texture from surrounding acid soils.	Well drained to moderately well drained.	Weak.
Local alluvial land, phosphatic.	Nearly level	Sediment of variable texture from surrounding phosphatic soils.	Well drained to moderately well drained.	Weak.

Red-Yellow Podzolic soils

This great soil group consists of well-developed, well-drained zonal soils that formed under forest in a climate ranging from warm-temperate humid to tropical humid. These soils have a thin organic-mineral A1 horizon underlain by a light-colored, leached A2 horizon that is underlain, in turn, by a red, yellowish-red, or yellow, more clayey B horizon. The parent material is more or less siliceous. Coarse reticulate streaks or mottles of red, yellow, brown, and light gray occur in the deeper horizons. The soils in this group developed through the processes of laterization and podzolization.

These soils generally have a low cation-exchange capacity, and they contain small amounts of feldspar, vermiculite, gibbsite, and montmorillonite. The subsoil has moderate to strong, angular and subangular blocky structure and colors of medium to high chroma.

A detailed description of Red-Yellow Podzolic soils in Suwannee County follows.

ARCHER SERIES: This series consists of moderately well drained Red-Yellow Podzolic soils derived from thin layers of acid, marine sand overlying clay or sandy clay, influenced in part by limestone that occurs within 4 feet of the surface. These soils are nearly level to strongly sloping. They are moderately eroded in a few small areas. The A1 horizon is gray to very dark gray loamy fine sand. At a depth of 4 to 8 inches it overlies the grayish-brown or pale-brown loamy fine sand A2 horizon. The subsoil, or B horizon, is pale-brown to yellowish-brown or red clay loam or clay, usually mottled with brown and yellow. The depth to the B horizon normally ranges from 6 to 18 inches, but in places the range is from 18 to 30 inches. The IIC horizon is clay mottled with red, gray, yellow, and brown.

Profile of Archer loamy fine sand, 2 to 5 percent slopes, in an undisturbed area covered with wiregrass, sedges, blackberry briers, loblolly pine, and live oak (1½ miles north of Branford on south line SW¼SE¼NW¼ sec. 8, T. 6 S., R. 14 E.):

A1—0 to 5 inches, very dark gray (10YR 3/1) loamy fine sand; weak, granular structure; very friable when moist; many fine roots; very strongly acid; boundary clear and smooth.

A2—5 to 9 inches, pale-brown (10YR 6/3), mixed with very dark gray and dark-gray (10YR 3/1 and 4/1), loamy fine sand; weak, granular structure; very friable when moist; some fine roots; very strongly acid; boundary abrupt and smooth.

B2t—9 to 14 inches, pale-brown (10YR 6/3) to light yellowish-brown (10YR 6/4) clay with many, medium, prominent, red (2.5YR 4/6) mottles and common, fine, distinct, yellowish-brown (10YR 5/6) mottles; firm when moist; discontinuous, common clay films; weak, medium, subangular blocky structure; very strongly acid; boundary gradual and wavy.

C1—14 to 21 inches, grayish-brown (10YR 5/2) clay with common, medium, prominent, red (2.5YR 5/6) mottles, few, fine, prominent, weak-red (10R 5/4) mottles, and few, fine, distinct, yellow (10YR 7/8) mottles; very firm when moist; angular blocky structure; strongly acid; boundary gradual and wavy.

C2—21 to 29 inches, gray (10YR 6/1) to light-gray (10YR 6/1) or light brownish-gray (10YR 6/2) clay with common, medium, distinct, brownish-yellow (10YR 6/6) mottles, common, medium, prominent, red (2.5YR 4/6) mottles, and few, fine, prominent, weak-red (10R 5/4) mottles; firm when moist; angular blocky structure; medium acid; boundary gradual and wavy.

C3—29 to 41 inches, gray (10YR 6/1) to light-gray (10YR 6/1) clay with common, medium, distinct, yellow (10YR 7/8) mottles and few, medium, prominent, light reddish-brown (2.5YR 6/4) mottles; very firm when moist; strong slickensides; angular blocky structure; medium acid; boundary gradual and wavy.

IIC4—41 to 52 inches +, gray (10YR 6/1) to light-gray (10YR 6/1) clay mixed with particles of limerock; common, medium, distinct, yellow (10YR 7/6) mottles and few, fine, distinct, yellow (2.5Y 8/6) mottles; very firm when moist; tree roots; angular blocky structure; mildly alkaline.

BOWIE SERIES: The soils in this series are well-drained Red-Yellow Podzolic soils that have an A horizon of acid, marine sand, a B horizon of fine sandy loam or sandy clay loam, a IIB horizon of fine sandy clay loam and a IIC horizon of clay. Typically, the fine-textured material is at a depth of less than 18 inches, but in this county it occurs in most places at a depth of 18 to 30 inches. Most Bowie soils are gently sloping to sloping.

Profile of Bowie fine sand, 2 to 5 percent slopes, in pasture of Pensacola bahiagrass (4 miles south of U. S. Highway No. 90, on east side of State Highway No. 49, SE¼NW¼ sec. 17, T. 3 S., R. 14 E.):

Ap—0 to 5 inches, grayish-brown (10YR 5/2) fine sand; medium organic-matter content; many fine grass roots; loose when moist; single grained; very strongly acid; clear, smooth boundary.

A2—5 to 10 inches, pale-brown (10YR 6/3) fine sand; medium organic-matter content; many fine grass roots; single grained; loose when moist; very strongly acid; clear, smooth boundary.

B1—10 to 13 inches, yellowish-brown (10YR 5/6) fine sandy loam; many fine grass roots; weak, medium, angular and subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

B24t—13 to 21 inches, yellowish-brown (10YR 5/6) fine sandy clay loam; weak, medium, angular and subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

B22t—21 to 25 inches, yellowish-brown (10YR 5/6) fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, angular and subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

IIB23t—25 to 30 inches, yellowish-brown (10YR 5/6), heavy fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/6) mottles and few, medium, prominent, reddish-yellow (7.5YR 6/8) mottles; moderate, medium, angular and subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

IIC—30 to 38 inches +, yellowish-brown (10YR 5/6) fine sandy clay with common, medium, prominent, red (2.5YR 5/8) mottles, common, medium, prominent, gray (N 5/0) mottles, and common, medium, prominent, red (10R 5/6) mottles; moderate, medium, angular and subangular blocky structure; firm; very strongly acid.

HERNANDO SERIES: This series consists of well drained and moderately well drained Red-Yellow Podzolic soils derived from thin layers of acid, marine sand overlying thin layers of fine sandy loam or fine sandy clay loam. The clayey layers are influenced in part by limestone. The slope range is 0 to 8 percent. The stronger slopes normally surround limesinks and depressions. The A1 horizon is dark-gray to grayish-brown fine sand 3 to 6 inches thick. The A2 horizon is pale-brown to very pale brown fine sand 12 to 18 inches thick. The B21t and B22t horizons are yellowish-brown to brownish-yellow fine sandy loam or fine sandy clay loam 6 to 12 inches thick.

The fine sandy clay IIB23t horizon is mottled with yellow, gray, and brown.

Profile of Hernando fine sand, 2 to 5 percent slopes, in an undisturbed area of sedges, wiregrass, longleaf pine, sumac, bluejack oak, and live oak (center of NW¼NE¼ sec. 9, T. 6 S., R. 14 E.):

A1—0 to 3 inches, dark-gray (10YR 4/1) fine sand; single grained; loose when moist; many roots; very strongly acid; clear, smooth boundary.

A2—3 to 12 inches, brown (10YR 5/3) fine sand; single grained; loose when moist; strongly acid; abrupt, smooth boundary.

B21t—12 to 16 inches, yellowish-brown (10YR 5/6) fine sandy clay loam with few, fine, prominent, red (2.5YR 4/6) mottles; moderate, medium, subangular blocky structure; friable; medium acid; clear, smooth boundary.

B22t—16 to 24 inches, light yellowish-brown (10YR 6/4) fine sandy clay loam with many, medium, prominent, red (2.5YR 4/6) mottles and few, fine, distinct, light brownish-gray (10YR 6/2) mottles; moderate, medium, subangular blocky structure and weak, medium, angular blocky structure; firm when moist; strongly acid; clear, smooth boundary.

IIB23t—24 to 34 inches, yellow (10YR 7/6) fine sandy clay with many, medium, distinct, light-gray (10YR 7/2) mottles, common, medium, distinct, yellowish-brown (10YR 5/8) mottles, and few, fine, prominent, reddish-brown (2.5YR 5/4) mottles; strong, medium, angular and subangular blocky structure; very firm when moist and very sticky when wet; clay films; medium acid; gradual, wavy boundary.

IIC—34 to 38 inches, yellow (10YR 7/8), marly clay with few, common, distinct, light brownish-gray (10YR 6/2) mottles and few, fine, distinct, yellowish-brown (10YR 5/8) mottles; strong, medium, subangular blocky structure; sticky when wet and slightly hard when dry; effervesces with 5 percent HCL.

R—38 inches +, limestone.

KALMIA SERIES: This series consists of deep, well-drained Red-Yellow Podzolic soils on stream terraces. The soils developed from medium-textured material washed from upland soils. Occasionally they are flooded. The slope range is 0 to 5 percent. The A1 horizon is gray to dark-gray loamy fine sand 3 to 6 inches thick, and the A2 horizon is grayish-brown loamy fine sand 4 to 8 inches thick. The B horizon is yellowish-brown fine sandy loam in the upper part; it grades to silty clay loam and then, in the lower part, to fine sandy clay loam or sandy loam. The total thickness of the B horizon is approximately 36 inches. The IIC horizon is light yellowish-brown loamy fine sand to sandy clay loam.

Profile of Kalmia loamy fine sand, 2 to 5 percent slopes, in an undisturbed area covered with saw-palmetto, wiregrass, loblolly pine, scrub sand oak, huckleberry, and sparkleberry (SE¼SE¼ sec. 29, T. 2 S., R. 11 E.):

A1—0 to 4 inches, gray (10YR 5/1) loamy fine sand; single grained; very friable; very strongly acid; gradual, smooth boundary.

A2—4 to 9 inches, grayish-brown (10YR 5/2 loamy fine sand; single grained; very friable; very strongly acid; clear, smooth boundary.

B1—9 to 14 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, subangular blocky structure; very friable; very strongly acid; gradual, smooth boundary.

B21t—14 to 24 inches, yellowish-brown (10YR 5/4), light silty clay loam; moderate, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary.

IIB22t—24 to 36 inches, yellowish-brown (10YR 5/4), light sandy clay loam; weak, medium to coarse, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary.

IIB23—36 to 46 inches, yellowish-brown to light yellowish-brown (10YR 5/4 to 6/4) sandy loam; structureless to weak, coarse, subangular blocky structure; very friable; very strongly acid; clear, smooth boundary.

IIC—46 to 50 inches, light yellowish-brown (10YR 6/4) loamy fine sand; structureless; very friable; very strongly acid.

ZUBER SERIES: This series consists of well drained to moderately well drained Red-Yellow Podzolic soils derived from thin layers of acid, marine loamy fine sand and fine sandy clay loam overlying phosphatic material. These soils are gently to strongly sloping and, in places, are moderately eroded. The A1p horizon is very dark gray to very dark grayish-brown loamy fine sand 5 to 8 inches thick. It overlies an A2 horizon of yellowish-brown loamy fine sand 8 to 12 inches thick. The B horizon is yellowish-brown fine sandy clay loam about 18 inches thick. It overlies a C or IIC horizon of clay or fine sandy clay. Phosphatic pebbles occur on the surface and throughout the profile in many places.

Profile of Zuber loamy fine sand, 5 to 8 percent slopes, eroded, in a cultivated field (about 1 mile east of Live Oak city limits and ⅛ mile north of narrow paved road in the northeastern corner of NE¼NE¼SW¼ sec. 20, T. 2 S., R. 14 E.):

A1p—0 to 7 inches, very dark grayish-brown to dark grayish-brown (10YR 3/2 to 4/2) loamy fine sand; fine, granular structure; very friable when moist; medium organic-matter content; few, fine roots; phosphatic and ferruginous rock fragments ¼ to 1 inch in diameter are common; medium acid; boundary clear and wavy.

A2—7 to 11 inches, yellowish-brown (10YR 5/4) loamy fine sand; fine, granular structure; very friable when moist; medium acid; boundary clear and wavy.

A3—11 to 14 inches, yellowish-brown (10YR 5/8) loamy fine sand; fine, granular structure; very friable when moist; many phosphatic and ferruginous rocks; medium acid; boundary clear and wavy.

B1—14 to 18 inches, yellowish-brown (10YR 5/8) fine sandy loam; friable when moist; many fine pores and fine root holes, with few clay films around them; weak, medium or fine, subangular blocky structure; medium acid; boundary clear and wavy.

B21t—18 to 24 inches, yellowish-brown (10YR 5/8) fine sandy clay loam; weak, medium or fine, subangular blocky structure; friable when moist; few fine pores and fine root holes, with few clay films around them; medium acid; boundary clear and wavy.

B22t—24 to 30 inches, yellowish-brown (10YR 5/8) fine sandy clay loam; weak (weaker than in B21), medium or fine, subangular blocky structure; friable when moist; few fine pores and root holes, with clay films around them; medium acid; boundary clear and wavy.

B3—30 to 33 inches, yellowish-brown (10YR 5/4), light fine sandy clay loam with common, faint, light yellowish-brown (10YR 6/4) and pale-brown (10YR 6/3) mottles and few, medium, distinct, yellowish-red (5YR 5/8) mottles; weak (weaker than in B22), medium or fine, subangular blocky structure; friable when moist; few fine pores without observable clay films; strongly acid; boundary clear and wavy.

C1—33 to 44 inches, light-gray (10YR 7/1) fine sandy clay loam with common, fine, prominent, yellowish-red (5YR 5/8) mottles and few, fine, prominent, red (2.5YR 5/6) mottles; weak, medium, angular blocky structure; friable when moist; very strongly acid; boundary clear and wavy.

IIC2—44 to 56 inches, light-gray (5Y 7/1) fine sandy clay with common, coarse, distinct, strong-brown (7.5YR 5/8) mottles and few, fine, prominent, weak-red (10R 5/3) mottles; slickensides are common; weak, medium, angular blocky structure (formed by intersecting slickensides); firm when moist; very strongly acid; boundary gradual and wavy.

SUSQUEHANNA SERIES: The soils in this series are classified as Red-Yellow Podzolic soils, but they intergrade toward Low-Humic Gley soils. They were derived from thin layers of acid, marine sand and thick layers of acid clay. The soils are somewhat poorly drained to moderately well drained. The slope range is 0 to 12 percent. The A1 horizon is dark-gray to very dark gray fine sand 3 to 8 inches thick. The A2 horizon is brown or light brownish-gray fine sand usually 4 to 16 inches thick. Some profiles lack an A2 horizon. The A1 and A2 horizons overlie the IIB horizon of mottled clay. The depth to this horizon is normally 18 inches or less but in places is 18 to 30 inches.

Profile of Susquehanna fine sand, 2 to 5 percent slopes, in an undisturbed area covered with wiregrass, longleaf pine, live oak, and ticklegrass (about ¼ mile southeast of junction of Pine Mount-Lake City highway and Live Oak-Branford highway in southwestern part of SW¼ sec. 6, T. 4 S., R. 14 E.):

A1—0 to 8 inches, gray (10YR 5/1) to dark-gray (10YR 4/1) fine sand; many clean grains of sand; single grained; loose when moist; strongly acid; boundary abrupt and smooth. (A one-half inch layer of brown (10YR 5/3) fine sand is between the A1 horizon and the IIB21t horizon.)

IIB21t—8 to 12 inches, brown (10YR 5/3) clay with common, medium, distinct, strong-brown (7.5YR 5/6) and few, fine, prominent, red (10R 4/6) mottles; firm when moist; clay films; weak, medium, subangular blocky structure; strongly acid; boundary clear and smooth.

IIB22t—12 to 16 inches, brown (10YR 5/3) clay with common, medium, distinct, light-gray (10YR 7/2) mottles, common, medium, prominent, red (2.5YR 4/8) mottles, and few, fine, prominent, reddish-yellow (5YR 6/8) and red (10R 4/6) mottles; very firm when moist; weak, medium, subangular blocky structure; strongly acid; boundary clear and wavy.

IIB3—16 to 26 inches, light brownish-gray (10YR 6/2) clay with many, medium, distinct, light-gray (10YR 7/1) mottles, many, coarse, prominent, red (2.5YR 4/8) mottles, common, medium, distinct, light yellowish-brown (10YR 6/4) mottles, and common, medium, prominent, dark-red (10R 3/6) mottles; very firm when moist; common slickensides; moderate, medium, subangular blocky structure; very strongly acid; boundary gradual and wavy.

IIC1—26 to 36 inches, light-gray (10YR 7/1) clay; common, medium, distinct, yellowish-red (5YR 4/8) and brownish-yellow (10YR 6/8) mottles, common, medium, prominent, red (10R 5/6) mottles, and common, coarse, prominent, dark-red (darker than 10R 3/6) mottles; very firm when moist; common slickensides; weak, medium, angular blocky structure; very strongly acid; boundary gradual and wavy.

IIC2—36 to 52 inches +, light-gray (10YR 7/1) clay with common, medium, distinct, brownish-yellow (10YR 6/8) mottles, common, fine, prominent, weak-red (10R 5/4) mottles, and common, coarse, prominent, dark-red (darker than 10R 3/6) mottles; very firm when moist; many strong slickensides on broad faces; weak, medium, angular blocky structure; very strongly acid. (Irregular patches of gray (N 5/0) about 5 inches thick in the IIC3 horizon.)

Ground-Water Podzols

This great soil group consists of intrazonal soils that developed from sandy material in a humid climate. The soils have a thin organic layer underlain by strongly leached, light-gray sand that, in turn, is underlain by a dark-brown or dark reddish-brown to black organic pan or stained layer. These are somewhat poorly drained, nearly level soils on uplands. They are moderately deep to deep and strongly acid to very strongly acid.

A detailed description of Ground-Water Podzols in Suwannee County follows.

LEON SERIES: The soils in this series are Ground-Water Podzols that formed from thick beds of marine sand underlain in places by acid, marine sandy clay loam. The soils are characterized by a leached layer and an organic pan at a depth of less than 30 inches. Leon soils are nearly level to gently sloping. They occur mostly in the flatwoods in the eastern part of the county but also as small areas in many other places. They have a dark-gray to light-gray, salt-and-pepper A1 horizon 2 to 6 inches thick; a gray to white fine sand A2 horizon 4 to 24 inches thick; and a reddish-brown to black, weakly cemented fine sand Bh horizon. The C horizon is pale-brown fine sand with yellowish-brown mottles. Normally it extends to a depth of 36 to 48 inches, but in places it is thin and underlain by a fine-textured IIC horizon.

Profile of Leon fine sand, 0 to 2 percent slopes, in an undisturbed, nearly level, somewhat poorly drained area where the vegetation consists chiefly of palmetto, longleaf pine, and wiregrass (2½ miles west of Wellborn just south of U. S. Highway No. 90 in NW¼SW¼ sec. 7, T. 3 S., R. 15 E.):

A1—0 to 7 inches, gray (N 5/0) fine sand with many clean sand grains; single grained; loose; many roots; low in organic-matter content; very strongly acid; clear, smooth boundary.

A2—7 to 23 inches, light-gray (N 7/0) fine sand; single grained; loose; very strongly acid; gradual, wavy boundary.

Bh—23 to 29 inches, very dark brown (10YR 2/2) fine sand; massive; firm; weakly cemented; few krotovinas; very strongly acid; gradual, wavy boundary.

C1—29 to 39 inches, very pale brown (10YR 7/4) fine sand with few, fine, distinct, yellowish-brown (10YR 5/4) splotches; single grained; loose; very strongly acid; gradual, wavy boundary.

C2—39 to 54 inches +, pale-yellow (2.5Y 7/4) fine sand; single grained; loose; very strongly acid.

ONA SERIES: This series consists of somewhat poorly drained, strongly acid Ground-Water Podzols that formed from thick beds of marine sand underlain in places by fine sandy loam and fine sandy clay loam. Ona soils are nearly level and occur in the flatwoods section of the county. Their A horizon is black to dark-gray fine sand 5 to 8 inches thick. It overlies a brown to dark reddish-brown, stained Blh horizon that grades to a gray to very pale brown C horizon of fine sand. The C horizon gets lighter colored with depth.

Profile of Ona fine sand, 0 to 2 percent slopes, in a nearly level area covered with wiregrass, broomsedge, sawpalmetto, myrtle, and gallberry and recently planted to slash pine (2 miles east of Houston just north of railroad track paralleling U. S. Highway No. 90 in NW¼ NW¼ sec. 12, T. 3 S., R. 14 E.):

A1—0 to 6 inches, black (10YR 2/1) fine sand with many clean sand grains; single grained; loose when moist; many fine roots; extremely acid; clear, smooth boundary.

A2—6 to 8 inches, dark-gray (10YR 4/1) fine sand; single grained; loose when moist; extremely acid; abrupt, smooth boundary.

B1h—8 to 12 inches, dark reddish-brown (5YR 3/3) fine sand; weak and moderate, angular blocky structure; friable; extremely acid; diffuse, irregular boundary.

C1—12 to 21 inches, very pale brown (10YR 8/4) fine sand with few, fine, distinct, yellow (10YR 7/6) mottles; single grained; nonsticky; strongly acid; gradual, wavy boundary.
C2—21 to 36 inches, very pale brown (10YR 8/4) fine sand with common, medium, distinct, yellow (10YR 7/6) mottles and few, fine, prominent, yellowish-red (5YR 5/8) mottles; single grained; nonsticky when wet; very strongly acid; gradual, wavy boundary.
C3—36 to 54 inches +, white (10YR 8/2) fine sand with few, fine, distinct, yellow (10YR 7/8) mottles and brown (7.5YR 5/2) mottles; single grained; nonsticky when wet; very strongly acid.

POMELLO SERIES: This series consists of better drained Ground-Water Podzols. These soils formed from a thick bed of acid, marine sand. They are coarse textured, rapidly permeable, and somewhat droughty, and they have an organic pan. The water table is near the surface during wet seasons and at a depth of 5 or 6 feet during dry seasons. The gray to light-gray, salt-and-pepper A1 horizon is 1 to 6 inches thick. It grades to a white or light-gray A2 horizon that extends to a depth below 30 inches. The Blh horizon (organic pan) is dark reddish-brown or dark grayish-brown, cemented fine sand 4 to 12 inches thick. It grades to the pale-brown fine sand of the C horizon.

Profile of Pomello fine sand (0 to 5 percent slopes) in an undisturbed area of wiregrass, longleaf pine, turkey oak, and saw-palmetto (5.2 miles northwest of Live Oak on northeast side of Adams Bridge Road, SE¼SE¼ sec. 29, T. 1 S., R. 13 E.):

A1—0 to 5 inches, gray (N 5/0) fine sand; single grained; loose; low organic-matter content; very strongly acid; clear, smooth boundary.
A2—5 to 39 inches, white (N 8/0) fine sand; single grained; loose; very strongly acid; gradual, wavy boundary.
B2h—39 to 45 inches, dark reddish-brown (5YR 2/2 and 3/3) fine sand; weak, massive; very friable; extremely acid; gradual, wavy boundary.
C—45 to 58 inches +, pale-brown (10YR 6/3) fine sand; single grained; loose; very strongly acid.

Low-Humic Gley soils

This great soil group consists of intrazonal soils that developed under impeded drainage. The soils are somewhat poorly drained to poorly drained. Their surface horizon is thin and moderately high in organic-matter content; it overlies mottled gray and brown, gleylike, mineral horizons that differ very little in texture.

Low-Humic Gley soils in Suwannee County have a thin surface layer that ranges from sand to fine sandy loam in texture and from weak, medium, crumb structure to structureless. In color the subsoil ranges from very dark gray to predominantly gray with mottles, and in texture this layer ranges from fine sand to clay. The characteristics of these soils are fairly well developed and reflect the influence of nearly level relief, a high water table, and impeded drainage more strongly than the influence of climate and living organisms. The native vegetation is mainly swamp forest.

A detailed description of the soils in the Low-Humic Gley group in Suwannee County follows.

BLADEN SERIES: This series consists of poorly drained, strongly acid, Low-Humic Gley soils in flats or depressions. These soils formed from beds of marine sand and clay; the clay beds are at a depth of less than 14 inches. The A1 horizon is gray to very dark gray fine sandy loam 3 to 6 inches thick; it overlies the gray to light gray A2 horizon, which is 6 to 10 inches thick. The B horizon is yellowish-brown and gray clay, which grades to the gray to light-gray, mottled clay of the C horizon.

Profile of Bladen fine sandy loam, 0 to 2 percent slopes, in an undisturbed area of wiregrass, carpetgrass, gallberry, and slash pine (SW¼NE¼ sec. 23, T. 1 S., R. 13 E.):

A1—0 to 5 inches, dark-gray (10YR 4/1) fine sandy loam; weak, medium, crumb structure; very friable when moist; very strongly acid; clear, smooth boundary.
A2—5 to 13 inches, light brownish-gray (10YR 6/2) fine sandy loam; weak, medium, crumb structure; very friable when moist; very strongly acid; gradual, wavy boundary.
B1g—13 to 16 inches, brown (10YR 5/8) fine sandy clay loam; moderate, medium, angular and subangular blocky structure; friable; strongly acid; clear, wavy boundary.
B2g—16 to 24 inches, yellowish-brown (10YR 5/8) and gray (10YR 6/1) sandy clay; medium, angular blocky structure; firm; strongly acid; gradual, wavy boundary.
Cg—24 to 48 inches, gray (10YR 6/1) to light-gray (10YR 6/1) clay with common, coarse, distinct and few, fine, distinct, brownish-yellow (10YR 6/8) mottles, and few, medium, prominent, red (10R 4/6) mottles; moderate, medium, angular blocky structure; firm; very strongly acid.

COXVILLE SERIES: This series consists of poorly drained, strongly acid, Low-Humic Gley soils formed from beds of dominantly fine-textured, marine material. The soils are on nearly level, broad flats. The A1 horizon is dark-gray to very dark gray loamy fine sand 2 or 3 inches thick. It grades to an A2 horizon of gray to grayish-brown loamy fine sand 6 to 8 inches thick. The B horizon is gray clay or fine sandy clay about 4 to 8 inches thick. It grades to a B22 or IIC horizon of highly mottled, gray or light-gray clay.

Profile of Coxville loamy fine sand, 0 to 2 percent slopes, in an undisturbed area covered chiefly with water oaks, live oaks, may haw, sparkleberry lobblolly pine, sedges, yaupon, and French mulberry (about 2 miles northwest of Branford in SW¼NW¼ sec. 5, T. 6 S., R. 14 E.):

A1—0 to 2 inches, dark-gray (10YR 4/1) to very dark gray (10YR 3/1) loamy fine sand or very fine sand; single grained; loose when moist; many roots; very strongly acid; clear, smooth boundary; 1 to 3 inches thick.
A2—2 to 9 inches, gray (10YR 5/1) to grayish-brown (10YR 5/2) loamy fine sand or very fine sand; single grained; loose when moist; few roots; very strongly acid; clear, smooth boundary; 6 to 8 inches thick.
B21t—9 to 13 inches, gray (10YR 6/1) fine sandy clay or clay with common, medium, distinct, strong-brown (7.5 YR 5/6) mottles and light olive-brown (2.5Y 5/6) mottles; moderate, medium, angular blocky structure; sticky when wet, firm when moist; few roots; very strongly acid; gradual, wavy boundary; 4 to 8 inches thick.
B22t—13 to 58 inches, gray (10YR 5/1) clay with few, fine, distinct, red (10R 4/6) mottles; strong, very fine, subangular blocky structure (flaky); very firm when moist, plastic when wet; few roots; clay films; very strongly acid; gradual, wavy boundary; 40 to 50 inches thick.
IIC—58 to 72 inches, light-gray (10YR 7/1) fine sandy clay with few, fine, distinct, very pale brown (10YR 7/4) and yellow (10YR 7/6) mottles and few, fine, prominent, pale-red (10R 6/4) mottles; moderate, medium, angular blocky structure and moderate, coarse, angular blocky structure; very firm and hard; few roots; very strongly acid.

GRADY SERIES: This series consists of poorly drained and very poorly drained, strongly acid, Low-Humic Gley

soils that formed from sediments of marine sand and clay. These soils occur in small ponds or depressions, including filled-in limesinks. They have a gray to very dark gray A horizon 3 to 10 inches thick. It grades to a dark-gray or very dark grayish-brown Bt horizon that is 6 to 20 inches thick. The depth to the Bt horizon normally is less than 18 inches, but in places it is 18 to 30 inches. The IIC horizon is gray clay with a few red and common yellowish-brown mottles. The limestone material is generally at too great a depth to affect soil acidity.

Profile of Grady fine sandy loam (0 to 2 percent slopes) in a depression, which sometimes fills with water, in a pasture covered with many kinds of water-tolerant weeds and grasses (about 14 miles southeast of Live Oak in the northwest corner of NE¼NE¼ sec. 7, T. 4 S., R. 15 E.):

Ap—0 to 6 inches, very dark gray (10YR 3/1) fine sandy loam; very fine, crumb structure; loose; very strongly acid; boundary clear and smooth.

A2—6 to 7 inches, light-gray (10YR 7/1) and gray (10YR 5/1) fine sandy loam; very fine, crumb structure; loose; very strongly acid; boundary abrupt and smooth.

B21t—7 to 11 inches, dark-gray (10YR 4/1) and very dark grayish-brown (10YR 3/2), heavy sandy clay loam; weak, subangular blocky structure; firm; very strongly acid; boundary gradual and wavy.

IIB22t—11 to 14 inches, mixed dark-gray (10YR 4/1) and yellowish-brown (10YR 5/6), heavy fine sandy clay or clay with few, fine, prominent, red (2.5YR 5/6) mottles; weak, subangular blocky structure; firm; very strongly acid; boundary gradual and wavy.

IIC—14 to 54 inches +, gray (10 YR 5/1) clay with few, fine, prominent, red (2.5YR 5/6) mottles and common, medium, distinct, yellowish-brown (10YR 5/8) mottles; moderate, medium, angular blocky structure and moderate, medium, subangular blocky structure; slickensides; very firm; very strongly acid.

Plummer series: This series consists of Low-Humic Gley soils that developed from thick, unconsolidated beds of acid, marine sand. These soils are deep, poorly drained to very poorly drained, coarse-textured, and very strongly acid. Normally they occur in nearly level, ponded areas and on seepy, gentle to steep slopes, which in many places border lakes or streams; but they are also in slightly higher areas where the fluctuating water table is slightly lower than is normal for the Plummer series. The A horizon is gray to black fine sand. At a depth of 2 to 6 inches it overlies a C horizon of light-gray to gray fine sand. The C horizon is mottled in places with pale yellow or pale brown. Normally it extends to a depth of more than 42 inches. The depth to the underlying fine-textured IIC horizon may be several feet, but in places it is only 30 to 42 inches.

Profile of Plummer fine sand, 0 to 2 percent slopes, in a nearly level, undisturbed area covered with blackgum, slash pine, wiregrass, and gallberry (2 miles west of Wellborn and 1¼ miles north of U.S. Highway No. 90 in NW¼SE¼ sec. 6, T. 3 S., R. 15 E.):

A1—0 to 4 inches, dark-gray (10YR 4/1) fine sand: single grained; loose; very strongly acid; clear, smooth boundary.

C1g—4 to 20 inches, gray (10YR 6/1 to light-gray (10YR 6/1) fine sand with common, medium, faint, light brownish-gray (10YR 6/2) splotches; single grained; loose; strongly acid; gradual, wavy boundary.

C2g—20 to 37 inches, light-gray (10YR 7/2) fine sand with common, medium, faint, white (10YR 8/1) splotches; single grained; loose; strongly acid; gradual, wavy boundary.

C3g—37 to 48 inches +, light-gray (10YR 7/2) fine sand with common, medium, distinct, yellowish-brown (10YR 5/8) mottles; single grained; loose; strongly acid.

Rains series: This series consists of poorly drained to very poorly drained, strongly acid Low-Humic Gley soils that developed from beds of marine sand, sandy loam, and sandy clay loam. These soils occur on flats or on the rim of slopes at the head of drainageways. In a few places they receive seepage. Rains soils have an A1 horizon of gray to very dark gray fine sand 3 to 6 inches thick. It overlies an A2 horizon of light-gray fine sand 8 to 12 inches thick. The B horizon is gray fine sandy clay loam; it grades to light-gray fine sandy loam mottled with brown, yellow, and yellowish brown. These soils are not extensive in Suwannee County. They are mapped only with Plummer and Bladen soils as an undifferentiated soil group.

Profile of Rains fine sand, 5 to 17 percent slopes, in an undisturbed area covered with gallberry, wiregrass, carpetgrass, longleaf pine, and some palmetto and myrtle bush (NE¼NE¼ sec. 33, T. 3 S., R. 15 E):

A1—0 to 5 inches, dark-gray (10YR 4/1) fine sand; structureless; loose when moist; very strongly acid; boundary clear and smooth.

A2—5 to 17 inches, light-gray (10YR 7/2) fine sand; structureless; loose when moist; very strongly acid; boundary clear and abrupt.

B2g—17 to 21 inches, gray (10YR 5/1) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; strongly acid; boundary gradual and wavy.

Cg—21 to 40 inches, light-gray (10YR 7/1) fine sandy loam mixed with lenses of sandy clay loam; common, medium, distinct, pale-brown (10YR 6/3) mottles, few, coarse, yellow (10YR 7/8) mottles, and common, medium, brownish-yellow (10YR 6/6)) mottles; weak, medium, angular and subangular blocky structure; friable; strongly acid.

Weston series: This series consists of Low-Humic Gley soils that developed from acid, marine sand and clay in small depressions. The soils are poorly drained. They have a dark-gray to black, sandy A11 horizon less than 8 inches thick and an A12 horizon that normally is lighter gray or grayish-brown sand or loamy sand 4 to 12 inches thick. Below this layer is mottled, dark-gray sandy clay. The substratum consists of prominently mottled clay in which there are lenses and pockets of coarser material.

Profile of Weston fine sand, dark subsoil variant, in an area where slopes range from 0 to 2 percent (NW¼NE¼ sec. 10, T. 2 S., R. 13 E.):

A11—0 to 7 inches, very dark gray (10YR 3/1) fine sand; weak, fine, granular structure; very friable when moist; many fine roots; strongly acid; boundary clear and smooth.

A12—7 to 11 inches, very dark grayish-brown (10YR 3/2) fine sand; weak, fine, granular structure; friable; boundary clear and wavy.

A3—11 to 16 inches, gray (10YR 5/1) fine sandy loam; weak, fine, granular structure; friable; strongly acid; boundary abrupt and wavy.

IIB21tg—16 to 22 inches, dark-gray (10YR 4/1) sandy clay with few, fine, distinct, yellowish-red (5YR 5/8), strong-brown (7.5YR 5/8), and dark-red (2.5YR 3/6) mottles; massive; plastic when wet, hard when dry; pockets of gray (10YR 5/1) sandy clay loam to fine sandy loam; strongly acid; boundary gradual and wavy.

IIB22tg—22 to 36 inches, very dark gray (10YR 3/1) and dark-gray (10YR 4/1) clay with common, medium, prominent, dark-red (2.5YR 3/6) and yellowish-red (5YR 5/8) mottles; weak, coarse, angular blocky structure; plastic when wet, hard when dry; pockets of gray (10YR 5/1) and dark-gray (10YR 4/1) sandy clay loam to fine sandy loam; strongly acid; boundary gradual and wavy.

IICg—36 to 48 inches +, black (10YR 2/1) clay with common, medium, prominent, dark-red (2.5YR 3/6), strong-brown (7.5YR 5/8), and brownish-yellow (10YR 6/6) mottles; weak, coarse, angular blocky structure; pockets of dark-gray (10YR 4/1) and gray (10YR 5/1) sandy clay loam to fine sandy loam; plastic when wet, hard when dry; strongly acid.

Humic Gley soils

This great soil group consists of intrazonal soils that are poorly drained and hydromorphic. The soils have moderately thick dark-colored horizons over gleyed mineral horizons.

Bayboro, Fellowship, Rutlege, and Scranton soils represent the Humic Gley great soil group in Suwannee County. A detailed description of these soils follows.

BAYBORO SERIES: This series consists of Humic Gley soils that developed from thick beds of acid, marine clay and sandy clay. The soils are deep, strongly acid, and very poorly drained. Usually they occur in nearly level depressed areas. The Ap horizon is very dark gray to black fine sandy loam 8 to 18 inches thick. It grades to a B1 horizon of dark-gray to dark grayish-brown silty clay loam 4 to 8 inches thick. The B1 horizon overlies a B2g horizon of gray silty clay or clay with dark to light-gray or brown mottles. The C horizon is dark-gray or very dark gray silty clay or silt loam with patches of dark-gray clay or silty clay. It is at a depth of about 36 inches.

Profile of Bayboro fine sandy loam (0 to 2 percent slopes) in a nearly level, very poorly drained area covered with buttonwood, dogfennel, and other water-tolerant grasses (old bulb farm on former lake bottom in southeast corner NE¼NW¼ sec. 23, T. 2 S., R. 14 E.):

Ap—0 to 13 inches, very dark gray (10YR 3/1) fine sandy loam; medium, fine, crumb structure; friable; many roots; strongly acid; clear smooth boundary.

B1g—13 to 17 inches, dark-gray (10YR 4/1) silty clay loam with common, medium, faint, gray (10YR 5/1) splotches; strong, fine, crumb structure and moderate, medium, subangular blocky structure; firm when moist; very strongly acid; clear, wavy boundary.

B2g—17 to 24 inches, gray (10YR 5/1) silty clay with common, medium, faint, dark-gray (10YR 4/1) and light-gray (10YR 6/1) splotches; moderate, medium, subangular blocky structure and weak, medium, angular blocky structure; very sticky when wet, very hard when dry, and very firm when moist; very strongly acid; clear, wavy boundary.

B3g—24 to 36 inches, very dark gray (10YR 3/1) silt loam with patches of clay; common, medium, faint, dark-gray (10YR 4/1) mottles; weak, medium, crumb structure; friable when moist; very strongly acid; gradual, wavy boundary.

C1—36 to 42 inches, dark-gray (10YR 4/1) silty clay with common, medium, distinct, light brownish-gray (10YR 6/2) mottles and few, fine, distinct, brownish-yellow (10YR 6/8) mottles; moderate, medium, subangular blocky structure; very sticky when wet; very hard when dry, very firm when moist; very strongly acid; clear, wavy boundary.

C2—42 to 48 inches, very dark gray (10YR 3/1) silt loam with patches of clay or silty clay; common, medium, faint, dark-gray (10YR 4/1) mottles; weak, medium, crumb structure; firm when moist; very strongly acid.

FELLOWSHIP SERIES: This series consists of moderately well drained to somewhat poorly drained Humic Gley soils that formed from thin beds of sand and sandy clay weathered from phosphatic material. The soils are nearly level to moderately steep, and they are stony in places. The A horizon is black to very dark gray loamy fine sand 8 to 14 inches thick. The B horizon is dark-gray fine sandy clay loam; it overlies the C horizon, which is gray sandy clay.

Profile of Fellowship loamy fine sand, 5 to 8 percent slopes, in an undisturbed area of longleaf pine and wiregrass (2 miles north of Live Oak on Jasper highway in NW¼NW¼ sec. 7, T. 2 S., R. 14 E.):

A11—0 to 4 inches, black (10YR 2/1) loamy fine sand or fine sandy loam; weak, medium, crumb structure; loose; high in organic-matter content; slightly acid; clear, wavy boundary.

A12—4 to 14 inches, very dark gray (10YR 3/1) loamy fine sand or fine sandy loam; weak, medium, crumb structure; loose; medium acid; clear, wavy boundary.

B2—14 to 20 inches, dark-gray (10YR 4/1) fine sandy clay loam; strong, medium, subangular blocky structure; firm; medium acid; clear, irregular boundary.

C1g—20 to 30 inches, gray (10YR 5/1) fine sandy clay; yellowish-brown (10YR 5/8) mottles; weak, medium, angular and subangular blocky structure; firm; medium acid; gradual, irregular boundary.

C2g—30 to 36 inches +, gray (10YR 5/1) fine sandy clay; many, prominent, coarse, yellowish-brown (10YR 5/8) mottles; weak, medium, blocky structure; firm; medium acid.

RUTLEGE SERIES: This series consists of Humic Gley soils that developed from thick beds of acid, marine sand. The soils are deep, strongly acid, and very poorly drained. They occur in nearly level or ponded areas. The A1 horizon is very dark gray or black fine sand 8 to 12 inches thick. It grades to the dark-gray to gray fine sand of the C horizon, which is about 3 to 5 feet thick. The C horizon abruptly overlies the gray silty clay loam of the IIC horizon. This horizon is mottled with brown, reddish brown, or yellowish brown.

Profile of Rutlege fine sand in a small pond about 1½ miles west of Wellborn (SW¼NW¼ sec. 18, T. 3 S., R. 15 E.):

A1—0 to 8 inches, black (N 2/0) fine sand; single grained; loose; many roots; high in organic-matter content; strongly acid; gradual, smooth boundary.

A21—8 to 21 inches, dark-gray (N 4/0) fine sand; single grained; loose; strongly acid; abrupt, smooth boundary.

C1g—21 to 56 inches, gray (N 5/0) fine sand; single grained; loose; strongly acid; abrupt, smooth boundary.

IIC2g—56 to 66 inches, gray (5YR 6/1) silty clay loam with common, medium, distinct, reddish-brown (5YR 5/4) mottles; moderate, medium, angular blocky structure; firm; strongly acid.

SCRANTON SERIES: This series consists of deep, strongly acid, poorly drained to somewhat poorly drained Humic Gley soils that formed from thick beds of marine sand. The soils have an A1 horizon of very dark gray to black fine sand 7 to 18 inches thick. It grades to a very dark gray A12 horizon. The C horizon is pale-brown or very pale brown fine sand mottled with shades of yellow or grayish brown.

Profile of Scranton fine sand in an undisturbed area where the slopes range from 0 to 2 percent and the

vegetation consists chiefly of wiregrass, gallberry, waxmyrtle, longleaf pine, and some saw-palmetto (northeastern part of NW¼SE¼ sec. 26, T. 2 S., R. 14 E.):

A1—0 to 8 inches, black (10YR 2/1) fine sand with few clean grains of sand; weak, medium, crumb structure; very friable when moist; many roots; extremely acid; clear, smooth boundary.

A12—8 to 18 inches, very dark gray (10YR 3/1) fine sand; weak, medium, crumb structure; very friable when moist; some roots; very strongly acid; gradual, wavy boundary.

C1—18 to 22 inches, pale-brown (10YR 6/3) fine sand; single grained; loose when moist; strongly acid; gradual, wavy boundary.

C2—22 to 41 inches, very pale brown (10YR 7/3) fine sand with many, medium, distinct, yellow (10YR 7/6) mottles and common, medium, distinct, very pale brown (10YR 8/4) mottles; granular structure; loose when moist; strongly acid.

C3—41 to 48 inches, pale-brown (10YR 6/3) fine sand with common, medium, distinct, yellow (10YR 7/6) and grayish-brown (10YR 5/2) mottles; granular structure; loose when moist; strongly acid.

Planosols

Planosols are intrazonal soils that have one or more horizons sharply contrasting to an adjacent horizon because of compactness, cementation, or high clay content. These soils formed under fairly varied climate and vegetation similar to that under which associated zonal soils formed. In most places Planosols have a fluctuating water table.

Leaf soils are the only Planosols in Suwannee County. They are poorly drained and formed in alluvium on stream terraces. The contrast between the A and B horizons is sharp and abrupt because of difference in consistence and texture.

A detailed description of Leaf soils follows.

Leaf series: This series consists of poorly drained, strongly acid Planosols that developed from fine-textured material washed from upland soils. Leaf soils are on nearly level stream terraces; they flood during periods of excessively heavy rainfall. The A1 horizon is dark-gray to very dark gray loamy fine sand 3 to 6 inches thick. It grades to the grayish-brown to pale-brown loamy fine sand of the A21 horizon, which is 6 to 12 inches thick. The B and C horizons are light brownish-gray clay highly mottled with shades of red and brown.

Profile of Leaf loamy fine sand, 0 to 2 percent slopes, in an undisturbed area of loblolly pine, oaks, red maple, blackgum, sweetgum, and sparkleberry (NE¼SE¼ sec. 32, T. 2 S., R. 11 E.):

A1—0 to 3 inches, dark-gray (10YR 4/1) loamy fine sand; weak, crumb structure; loose when dry, very friable when moist; very strongly acid; clear, smooth boundary.

A21—3 to 6 inches, grayish-brown (10YR 5/2) loamy fine sand; weak, crumb structure; loose when dry, very friable when moist; very strongly acid; gradual, wavy boundary.

A22—6 to 14 inches, pale-brown (10YR 6/3) loamy fine sand with common, medium, faint, light yellowish-brown (10 YR 6/4) mottles and common, medium, distinct, light-gray (10YR 7/1) mottles; weak, crumb structure; loose when dry, very friable when moist; very strongly acid; gradual, wavy boundary.

B21g—14 to 18 inches, light brownish-gray (10YR 6/2) sandy clay with common, medium, distinct, yellowish-brown (10R 5/8) mottles and common, medium, distinct, strong-brown (7.5YR 5/6) mottles; hard when dry, firm when moist; very strongly acid; gradual, wavy boundary.

B22g—18 to 24 inches, light brownish-gray (10YR 6/2) clay with common, medium, prominent, red (10R 4/6) mottles and common, medium, distinct, yellowish-brown (10YR 5/8) mottles; very hard when dry, very firm when moist; moderate, medium, angular blocky structure; very strongly acid; gradual, wavy boundary.

Cg—24 to 54 inches, light brownish-gray (10YR 6/2) clay with many, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, prominent, red (2.5YR 5/6) mottles; moderate, medium, angular blocky structure; very hard when dry, very firm when moist; very strongly acid.

Bog soils

This great soil group consists of very poorly drained intrazonal soils that formed from organic material. Peat is the only Bog soil in this county.

Peat: This soil was derived from the remains of grasses, lilies, and woody plants. It is deep, very poorly drained, and very strongly acid to extremely acid, and it occurs in depressions that usually have poor outlets for surplus water. It is reddish brown (10YR 3/2) to dark brown (10YR 3/3).

Regosols

Regosols are azonal soils that consist of deep, recent deposits of soil material too young to have developed distinct soil characteristics. These soils formed from thick, unconsolidated beds of sand and loamy sand.

The Regosols in Suwannee County are of the Arredondo, Blanton, Chiefland, Fort Meade, Gainesville, Jonesville, Kanapaha, Klej, and Lakeland series. A description of each series follows.

Arredondo series: The soils in this series are well-drained, strongly acid to medium acid, coarse-textured Regosols that developed from thick deposits of fine sand influenced by phosphatic material. They are mostly gently sloping but are steeper in a few small areas. The surface horizon is dark-gray to very dark grayish-brown fine sand. At a depth of 4 to 8 inches it overlies a horizon of brown, pale-brown, light yellowish-brown, or yellow fine sand that is more than 30 inches thick. Few to many phosphatic and ferruginous pebbles are on the surface and in the profile.

Profile of Arredondo fine sand, 0 to 5 percent slopes, in an undisturbed area where the vegetation consists of longleaf pine, loblolly pine, red oak, water oak, live oak, bluejack oak, hickory, blackgum, waxmyrtle, French mulberry, cherry laurel, chinquapin, dogfennel, blackberry, highland fern, sedges, wiregrass, yellow jasmine, bamboo, and muscadine vines (5½ miles east of Live Oak and almost ¼ mile south of road to White Springs in SW¼SE¼ sec. 13, T. 2 S., R. 14 E.):

A1—0 to 8 inches, very dark grayish-brown (10YR 3/2) fine sand; weak, granular structure; very friable; very strongly acid; gradual, wavy boundary.

C1—8 to 14 inches, brown (10YR 4/3) to dark-brown (10YR 4/3) fine sand; weak, granular structure; loose when dry; strongly acid; gradual, wavy boundary.

C2—14 to 50 inches, brown (10YR 5/3) fine sand; weak, granular structure; loose when moist; few phosphatic pebbles; medium acid; gradual, wavy boundary.

C3—50 to 72 inches, light yellowish-brown (10YR 6/4) fine sand; weak, granular structure; loose when moist; few

phosphatic pebbles; medium acid; gradual, wavy boundary.

C4—72 to 82 inches, light brownish-gray (10YR 6/2) fine sand; weak, granular structure; loose when moist; phosphatic rocks are common; medium acid; gradual, smooth boundary.

IIC5—82 to 90 inches, pinkish-gray (7.5YR 7/2) fine sand; weak, granular structure; medium acid; nonsticky; many phosphatic rocks.

BLANTON SERIES: This series consists of deep, light-colored Regosols that developed from thick beds of acid, marine sand very low in silt and clay. These soils are typically nearly level to strongly sloping. They range from excessively drained to moderately well drained; "high" and "low" phases of this series are recognized to distinguish the drainage class. The surface horizon is light-gray to dark-gray fine sand 4 to 6 inches thick. It grades to the light-gray to pale-yellow or pale-brown fine sand of the C horizon. Normally the C horizon extends to a depth of 60 to 72 inches or more. In some places, however, a fine-textured IIC horizon begins at a depth of 30 to 42 inches.

Profile of Blanton fine sand, high, 0 to 5 percent slopes, in an undisturbed area of wiregrass, scrub oak, partridgepea, and chinquapin (5 miles northeast of O'Brien, 1/10 mile south of northeast corner of sec. 12, T. 5 S., R. 14 E.):

A1—0 to 3 inches, gray (10YR 6/1) fine sand with some spots of dark-gray (10YR 4/1) fine sand; single grained; loose when moist; low organic-matter content; very strongly acid; boundary gradual and smooth.

C1—3 to 9 inches, light-gray (10YR 7/2) to very pale brown (10YR 7/3) fine sand with splotches of white (10YR 8/1 and 8/2); single grained; loose when moist; very strongly acid; boundary gradual and wavy.

C2—9 to 46 inches, light-gray (10YR 7/2) to very pale brown (10YR 7/3) fine sand with common, medium, distinct, white (10YR 8/1) mottles; single grained; loose when moist; very strongly acid; boundary gradual and diffuse.

C3—46 to 84 inches, very pale brown (10YR 8/3) fine sand with common, medium, distinct, gray (10YR 6/1) mottles and few, fine, faint, very pale brown (10YR 7/3) mottles; single grained; loose when moist; very strongly acid; boundary gradual and diffuse.

C4—84 to 116 inches, white (10YR 8/1) fine sand with few, fine, distinct, yellow (10YR 7/6) mottles; single grained; loose when moist; very strongly acid.

CHIEFLAND SERIES: This series consists of Regosols that formed from thick beds of sand influenced by limestone and very low in silt and clay. The soils are deep, well drained to somewhat excessively drained, and coarse textured. They are mostly nearly level to sloping but are strongly sloping in a few small areas. The A horizon is gray to dark-gray fine sand. It overlies the C horizon at a depth of 4 to 7 inches. The C horizon is pale brown or very pale brown in the upper part and light gray to white in the lower part. Normally it extends to a depth of 30 to 48 inches, but in shallow places the fine-textured horizon, or soft limestone, that underlies the sandy material is only 20 to 30 inches from the surface. A common characteristic of these soils is the unevenness of the underlying limestone.

Profile of Chiefland fine sand, 0 to 5 percent slopes, in a recently cleared field now planted to oats and lupine (about 5½ miles east of Branford and almost ¼ mile south of U.S. Highway No. 27 in SW¼NE¼ sec. 20, T. 6 S., R. 15 E.):

Ap—0 to 7 inches, gray (10YR 5/1) fine sand with many, clean grains of sand; single grained; loose when moist; medium acid; boundary clear and wavy.

C1—7 to 16 inches, very pale brown (10YR 7/4) fine sand with common, medium, distinct, yellowish-brown (10YR 5/4) and light-gray (10YR 7/2) mottles; single grained; loose when moist; slightly acid; boundary gradual and wavy.

C2—16 to 36 inches, light-gray (10YR 7/2) fine sand with common, medium, distinct, yellowish-brown (10YR 5/4) and very pale brown (10YR 7/4) mottles; single grained; loose when moist; slightly acid; boundary gradual and wavy.

IIC—36 to 39 inches, yellowish-brown (10YR 5/4) fine sandy loam; moderate, medium, crumb structure; friable; neutral; boundary diffuse and irregular.

IIR—39 inches +, soft limestone.

FORT MEADE SERIES: This series consists of Regosols influenced by phosphatic material. The soils are deep, well drained to moderately well drained, very strongly acid, coarse textured, and gently sloping to sloping. The A11 and A12 horizons are black to very dark gray loamy fine sand. They overlie, at a depth of 10 to 30 inches, the C horizon, which is brown or very pale brown fine sand that is low in silt and clay. The C horizon extends to a depth of more than 42 inches. Weathered phosphatic pebbles commonly occur on the surface and throughout the profile.

Profile of Fort Meade loamy fine sand, 5 to 8 percent slopes, in an undisturbed area of wiregrass, sedges, fern, chinquapin, dogfennel, longleaf pine, persimmon, waxmyrtle, and sumac (south of old Pine Mount road in the SE¼ SE¼ sec. 5, T. 4 S., R. 14 E.):

A11—0 to 10 inches, very dark gray (10YR 3/1) (moist) to black (10YR 2/1) (wet) loamy fine sand; weak, crumb structure; very friable; extremely acid; many grass roots; boundary diffuse and irregular.

A12—10 to 30 inches, very dark grayish-brown (10YR 3/2) loamy fine sand; weak, fine, crumb structure; very friable; very strongly acid; boundary gradual and wavy.

C1—30 to 39 inches, brown (10YR 5/3) loamy fine sand; single grained; loose when moist; very strongly acid; gradual, wavy boundary.

C2—39 to 49 inches, very pale brown (10YR 7/4 and 10YR 8/4) fine sand; single grained; loose when moist; very strongly acid; distinct, irregular boundary.

IIC3—49 to 72 inches, light-gray (10YR 7/1) fine sandy loam with common, fine, distinct, yellow (10YR 7/6) mottles and common, medium, distinct, light yellowish-brown (10 YR 6/4) and strong-brown (7.5YR 5/6) mottles; weak, medium, angular blocky structure; friable; strongly acid.

GAINESVILLE SERIES: The soils in this series are Regosols that have been strongly influenced by phosphatic material. They are well drained, medium acid, coarse textured, and mostly nearly level to strongly sloping. The A horizon is dark grayish-brown to very dark grayish-brown loamy fine sand 4 to 10 inches thick. It overlies the strong-brown to reddish-brown C horizon. This horizon usually extends to a depth of more than 42 inches. The depth to the IIC3 horizon may be several feet but is only 30 to 42 inches in places. Phosphatic pebbles occur on the surface and throughout the profile.

Profile of Gainsville loamy fine sand, 2 to 5 percent slopes, in a cornfield (4 miles east of Live Oak and 1

mile north of White Springs Road in SE¼NW¼ sec. 10, T. 2 S., R. 14 E.):

Ap—0 to 10 inches, very dark grayish-brown (10YR 3/2) loamy fine sand; single grained; loose when moist; very strongly acid; boundary clear and wavy.
C1—10 to 50 inches, strong-brown (7.5YR 5/6) loamy fine sand; weak, medium, crumb structure; very friable; strongly acid; boundary diffuse and irregular.
C2—50 to 69 inches, brown (7.5YR 4/4) to dark-brown (7.5YR 4/4) loamy fine sand; weak, medium, crumb structure; very strongly acid; boundary gradual and wavy.
IIC3—69 to 90 inches +, white (10YR 8/2) and very pale brown (10YR 8/4) sand; single grained; loose when moist; medium acid; many, weathered, soft, yellowish rocks. (Sand gets whiter and rocks smaller with depth.)

JONESVILLE SERIES: This series consists of Regosols influenced by limestone. The soils formed from thick beds of sand very low in silt and clay. They are deep, well-drained to somewhat excessively drained, coarse-textured soils that occur in nearly level to gently sloping areas. Jonesville soils have an A1 horizon of gray fine sand over a C horizon of reddish-yellow, light yellowish-brown, or strong-brown fine sand. The C horizon normally extends to a depth of more than 42 inches. The underlying limestone or the fine-textured horizon may be at a depth of several feet, but in a few small areas one or the other is at the surface.

Profile of Jonesville fine sand, 0 to 5 percent slopes, in an undisturbed area of wiregrass, longleaf pine, sedges, dogfennel, and bluejack oak (about 4 miles northeast of Branford in NW¼NW¼ sec. 12, T. 6 S., R. 14 E.):

A1—0 to 5 inches, gray (10YR 5/1) fine sand with some clean grains of sand; single grained; loose when moist; medium acid; clear, smooth boundary.
C1—5 to 35 inches, brownish-yellow (10YR 6/6) fine sand; single grained; loose when moist; slightly acid; clear, smooth boundary.
C2—35 to 55 inches, light yellowish-brown (10YR 6/4) fine sand with many, medium, faint, very pale brown (10YR 8/3) mottles; single grained; loose when moist; slightly acid; diffuse, irregular boundary; 17 to 21 inches thick.
IIC—55 to 67 inches, strong-brown (7.5YR 5/8), heavy fine sandy loam or light fine sandy clay loam; moderate, medium, crumb structure; friable; neutral; gradual, irregular boundary.
IIR—67 inches +, soft limerock.

KANAPAHA SERIES: This series consists of Regosols that formed from thick beds of sand very low in silt and clay and weakly influenced by phosphatic material. The soils are deep, moderately well drained to somewhat poorly drained, strongly acid, and coarse textured; they are mostly nearly level to sloping and, in a few small areas, strongly sloping. The A horizon is gray to dark-gray fine sand. At a depth of 4 to 9 inches, it overlies the C horizon, which is light-gray fine sand mottled with shades of yellow or reddish yellow. The depth to the underlying finer textured IIC horizon may be several feet but in places is only 30 to 42 inches. Phosphatic pebbles occur on the surface and throughout the profile in some areas. A few places on slopes are gravelly.

Profile of Kanapaha fine sand, 0 to 5 percent slopes, in an idle, formerly cultivated field (1 mile west and ½ mile north of junction of State Highway No. 49 and Lake City-Pine Mount road in SW¼NW¼ sec. 3, T. 4 S., R. 14 E.):

Ap—0 to 7 inches, dark-gray (10YR 4/1) to dark grayish-brown (2.5Y 4/2) fine sand; single grained; loose when moist; few roots; strongly acid; clear, smooth boundary; 4 to 8 inches thick.
C1—7 to 16 inches, grayish-brown (10YR 5/2) fine sand with common, medium, distinct, gray (10YR 6/1) mottles; single grained; loose when moist; few roots; strongly acid; gradual, wavy boundary; 8 to 10 inches thick.
C2—16 to 29 inches, light brownish-gray (10YR 6/2) fine sand with common, medium, distinct, gray (10YR 6/1) mottles; single grained; loose when moist; strongly acid; gradual, wavy boundary; 11 to 15 inches thick.
C3—29 to 44 inches, light-gray (10YR 7/1) fine sand with many, medium, distinct, gray (10YR 6/1) mottles and few, faint distinct, pale-yellow (2.5Y 8/4) mottles; single grained; loose when moist; strongly acid; clear, smooth boundary; 14 to 17 inches thick.
IIC4—44 to 74 inches, light-gray (10YR 7/1) fine sandy loam with common, medium, distinct, reddish-yellow (7.5YR 6/6) mottles; weak, medium, crumb structure; very friable; very strongly acid.

KLEJ SERIES: This series consists of Regosols that formed from thick beds of acid, marine sand very low in silt and clay. The soils are deep, moderately well drained, strongly acid, coarse textured and mostly nearly level to gently sloping. The A horizon is a gray to very dark gray fine sand 5 to 7 inches thick. It grades to an AC horizon of dark grayish-brown, gray, brown, and light yellowish-brown fine sand. This mixed horizon is 4 to 12 inches thick. The C horizon is brown or light yellowish-brown fine sand. It is usually mottle-free within a depth of 30 inches, but it may have a few, fine, distinct mottles of contrasting colors at a depth of about 22 to 28 inches. Below 30 inches, the C horizon is very pale brown with contrasting mottles of yellowish red, reddish yellow, brownish yellow, and gray.

The C horizon normally extends to a fine-textured horizon, which is at a depth of several feet. In places this fine-textured horizon is at a depth of only 30 to 42 inches.

Profile of Klej fine sand, 0 to 5 percent slopes, in a formerly cultivated field now in slash pine (4 miles east of Live Oak in SW¼SE¼ sec. 22, T. 2 S., R. 14 E.):

Ap—0 to 7 inches, very dark gray (10YR 3/1) fine sand; granular structure; loose; many fine roots; strongly acid; boundary gradual and wavy.
AC—7 to 14 inches, dark grayish-brown (10YR 4/2), mixed with light yellowish-brown (10YR 6/4), fine sand; single grained; loose; strongly acid; boundary clear and wavy.
C1—14 to 22 inches, light yellowish-brown (10YR 6/4 fine sand; single grained; loose; strongly acid; boundary gradual and smooth.
C2—22 to 36 inches, light yellowish-brown (10YR 6/4) fine sand with few, fine, distinct, reddish-yellow (7.5YR 6/6) and light-gray to gray (10YR 6/1) mottles; single grained; loose; strongly acid; boundary gradual and wavy.
C3—36 to 48 inches +, very pale brown (10YR 7/4) fine sand with common, medium, distinct, reddish-yellow (7.5YR 6/6), yellowish-red (5YR 5/8), and brownish-yellow (10YR 6/6) mottles and common, coarse, distinct, light-gray to gray (10YR 6/1) mottles; single grained; loose; strongly acid.

LAKELAND SERIES: Soils of this series are Regosols that formed from thick beds of acid marine sand very low in silt and clay. Lakeland soils are deep, well drained to somewhat excessively drained, strongly acid, and coarse textured. They are mostly nearly level to sloping, but in a few small areas they are strongly sloping. The A horizon is gray to dark grayish-brown fine sand. At a depth of 2 to 6 inches it overlies the light

yellowish-brown or brownish-yellow fine sand of the C horizon. The C horizon normally extends to a depth of more than 42 inches, but an underlying fine-textured layer may be at a depth of 30 to 42 inches in some places.

Profile of Lakeland fine sand, 0 to 5 percent slopes, in a gently sloping, undisturbed area of wiregrass, longleaf pine, and turkey oak (1½ miles southwest of Falmouth in SW¼SW¼ sec. 32, T. 1 S., R. 12 E.):

A1—0 to 5 inches, gray (10YR 5/1) fine sand with many clean grains of sand; single grained; loose; low in organic-matter content; few grass roots; very strongly acid; clear, smooth boundary.

C1—5 to 48 inches, light yellowish-brown (10YR 6/4) fine sand; single grained; loose; strongly acid; gradual, wavy boundary.

C2—48 to 62 inches, very pale brown (10YR 7/4) fine sand with common, medium, distinct, light-gray (10YR 7/2) splotches; single grained; loose; strongly acid.

Alluvial soils

This is an azonal group of soils that developed from recently transported and deposited alluvium. The alluvium has been little modified by the soil-forming processes, and thus Alluvial soils lack evident horizons in their profiles.

Alluvial land, Local alluvial land, and Local alluvial land, phosphatic, represent this great soil group in Suwannee County.

ALLUVIAL LAND: This land type consists of sediment from many different kinds of soils. It occurs mostly as continuous belts along stream channels; it is subject to overflow throughout the year and receives variable amounts of alluvial material from the streams during floods. The deposited material is predominantly sand and loamy sand. In some places organic matter has accumulated. Although this land type is poorly drained for the most part, it is well drained to moderately well drained in some spots or strips, particularly in natural levees along stream channels.

LOCAL ALLUVIAL LAND: This land type consists of moderately well drained, acid material that has washed or blown from adjacent areas of coarse-textured, well drained to moderately well drained, acid soils. It occurs in depressions on uplands. Though it has no natural drainage outlets (water drains through underground channels), it is rarely saturated, except in the most low-lying places. During periods of heavy and extended rainfall, some of the areas are flooded. At such times, the water table rises above normal level throughout the area. Although generally this land type consists of a heterogeneous mixture of coarse-textured material, in most places it has a surface horizon of dark-gray to very dark grayish-brown fine sand or loamy fine sand. This horizon is 5 to 10 inches thick and grades to gray or light-gray fine sand or loamy fine sand. In some areas, especially where underground drainage is rapid, the surface horizon is very dark gray or black and the subsoil is pale brown. In places where light-colored sediment has washed from adjacent areas, the subsoil is darker than the surface soil.

LOCAL ALLUVIAL LAND, PHOSPHATIC: This land type consists of moderately well drained to somewhat poorly drained soil material of phosphatic origin that has washed or blown from adjacent areas and accumulated in depressions at the base of slopes. It has no natural drainage outlets (water drains through underground channels). During wet periods some areas are flooded and the water table rises above normal level. Planting or cultivation is delayed at such times. Texture, color, structure, and consistence vary somewhat from place to place; composition of this land type is so heterogeneous that consistent identification of profiles is nearly impossible. Normally, however, the surface horizon is very dark grayish brown to black and grades to dark gray or brown.

General Nature of the County

This section discusses climate, industry, agriculture, and other topics of interest to those who wish to have additional information about Suwannee County.

Climate [10]

In Suwannee County, the climate is characterized by long, warm summers and mild winters. Rainfall is abundant; about half of the average annual total falls during a 4-month rainy season (June through September). Table 9 shows summarized climatic data recorded at weather stations in or immediately adjacent to Suwannee County.

The Gulf of Mexico and the Atlantic Ocean largely account for the mild, moist climate. In any year the temperature varies little from day to day during summer. During June, July, and August, the daily maximum temperature averages almost 91°F. and the daily minimum averages almost 70°. Although the temperature reaches 90° or higher about 95 days a year, it reaches 100° or higher only once or twice a year. Because the Gulf of Mexico or the Atlantic Ocean, or both, moderate most of the air masses affecting this area in summer, the relative humidity is somewhat high; consequently, hot desiccating winds and accompanying high temperatures seldom occur.

In December, January, and February, cold air masses from Canada cause freezing temperatures. Freezing temperatures can be expected every year and occur an average of 15 times a year. At least one temperature of 20° or lower can be expected to occur in about one-third of the years. Temperature of 20° or lower has occurred about the same number of times in December, January, and February, and infrequently late in November. Cold spells usually last only 2 or 3 days at a time, and even on the colder days the temperature almost always rises above freezing. The temperature can vary greatly from day to day during winter; the daily maximum generally ranges from 55° to 75° and the daily minimum, from 35° to 55°.

It is helpful to farmers to know, as nearly as possible, the chances that damaging or plant-destroying temperature will occur after any date in spring or before any date in fall. Table 10 shows the approximate chances of temperatures of 32° or lower and 28° or lower occurring in Suwannee County after stated dates in spring and before stated dates in fall. For example, a temperature

[10] By KEITH D. BUTSON, State climatologist, U.S. Weather Bureau.

TABLE 9.—*Temperature and precipitation*

[Based on data recorded at stations of the U.S. Weather Bureau in Lake City, Fla., and in Madison, Fla.]

Month	Temperature				Precipitation				
	Average daily maximum	Average daily minimum	2 years in 10 will have at least 4 days with—		Average monthly total	1 year in 10 will have—		Days with rainfall of—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—	0.10 in. or more	0.50 in. or more
	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Number*	*Number*
January	67.7	45.0	79	27	2.86	1.0	5.2	5	2
February	69.0	45.3	81	30	3.68	1.2	6.6	5	2
March	74.5	50.2	86	35	4.42	1.3	8.8	6	3
April	80.0	56.3	89	45	3.71	1.0	7.8	5	2
May	87.5	63.4	95	54	3.13	1.0	6.3	5	2
June	91.4	69.7	98	65	5.71	2.4	10.0	8	4
July	91.1	71.2	98	68	7.45	3.6	11.0	11	5
August	90.8	71.3	97	68	6.68	3.2	10.5	10	4
September	87.7	68.7	95	61	5.52	2.2	9.9	8	3
October	81.5	59.6	90	46	3.25	.4	9.0	4	2
November	72.5	49.2	84	33	2.12	.3	6.0	3	1
December	67.6	45.2	80	28	2.77	.7	6.5	5	2

of 32° or lower can be expected to occur after March 18 in 1 year out of 10, after February 25 in 5 years out of 10, and after February 1 in 9 years out of 10; similarly, a temperature of 28° or lower can be expected to occur before November 21 in 1 year out of 10, before December 14 in 5 years out of 10, and before January 21 in 9 years out of 10.

The data in table 10 are based on weather records for a 40-year period from weather stations in Lake City, Fla., and in Madison, Fla. These records indicate that a temperature of 32° or lower has not occurred after March 29 in spring or before October 31 in fall, and that a temperature of 28° or lower has not occured after March 20 in spring or before November 3 in fall.

Because elevation, slope, and other factors cause great local variation in minimum temperature during winter, the freeze hazard at specific points can differ by several days from those shown in table 10.

For any one month, precipitation varies greatly from year to year. In an average year, nearly half the annual total rainfall occurs during June, July, August, and September. Relatively high rainfall also occurs early in spring from about late in February through early in April. Occasionally rainfall during this period is heavy and widespread. Some of the highest water levels on record for the Suwannee River have been reached in spring as a result of rainfall. On the average, November is the driest month, but some years the last 2 weeks in April and all of May are droughty.

Rainfall in summer comes mostly in short local showers and thundershowers that occur in the afternoon or early in the evening. On the average, about 85 thundershowers occur each year; about three-fourths of them occur in summer. In June, July, and August, measurable amounts of rain can be expected on about half the days. Summer showers are sometimes heavy; 2 or 3 inches of rain may fall in an hour or two. Rains lasting all day are rare in summer and, when they occur, are almost always associated with a tropical storm. Rains in winter and early in spring are generally associated with widespread weather developments and, hence, do not display any marked tendency to occur only in the afternoon or evening. Occasionally, in winter and in spring, rains last 12 to 36 hours. Although these rains are not nearly so intense as thundershowers, some release relatively large amount of precipitation over large areas. More than 4.5 inches of rain in 24 hours can be expected in March or April in about 1 year in 10; more than 6.0 inches in 24 hours can be expected sometime during the year in about 1 year in 10.

TABLE 10.—*Chance of last freezing temperature in spring and first in fall*

[Based on weather records for a 40-year period from weather stations in Lake City and Madison, Fla.]

Chance	Spring temperature of—		Fall temperature of—	
	32° F. after—	28° F. after—	32° F. before—	28° F. before—
1 in 10	Mar. 18	Mar. 6	Nov. 8	Nov. 21.
2 in 10	Mar. 15	Feb. 28	Nov. 15	Nov. 27.
3 in 10	Mar. 8	Feb. 18	Nov. 20	Dec. 1.
4 in 10	Mar. 3	Feb. 10	Nov. 25	Dec. 7.
5 in 10	Feb. 25	Feb. 3	Nov. 28	Dec. 14.
6 in 10	Feb. 20	Jan. 28	Dec. 1	Dec. 21.
7 in 10	Feb. 15	Jan. 19	Dec. 4	Dec. 31.
8 in 10	Feb. 8	Jan. 9	Dec. 14	Jan. 10.
9 in 10	Feb. 1	Jan. 1	Dec. 30	Jan. 21.

Nearly all the precipitation in Suwannee County falls as rain. Hail falls occasionally in spring and early in summer, almost always during thunderstorms. Snowfall is rare, but measurable amounts have been reported several times during the last 40 years. Snow seldom remains on the ground for more than 24 hours.

Tropical storms, which occur from June through October or early November, are the main cause of widespread excessive rainfall and temporary flooding. Since these storms rapidly diminish in intensity as they move inland, winds of hurricane force (75 miles per hour or greater) seldom blow in Suwannee County. When these storms do occur in the county, crops and fields may be damaged considerably by erosion or flooding, or both.

Although rainfall is fairly well distributed throughout the year, damaging droughts occasionally occur. These droughts may occur during any season but are most likely to come in October and November, and late in April, in May, and early in June. At rainfall stations in this area, less than 1 inch of rain has been recorded in about 20 percent of the Octobers and in about 35 percent of the Novembers. The total rainfall in October and November has been less than 2.5 inches in about 25 percent of the years for which reliable records are available. Periods of 30 days without measurable rainfall have been noted several times in October and November. On the average, droughts in spring do not last as long as droughts in fall. Because of the high temperature that accompanies them, droughts in spring, especially during May, can be as serious as those in fall. Forest fires are a serious threat during extended periods of little or no rainfall.

Prevailing winds in this area are generally southerly in summer and northerly in winter. The speed of wind by day usually ranges from 8 to 15 miles per hour; it nearly always drops below 8 miles per hour at night.

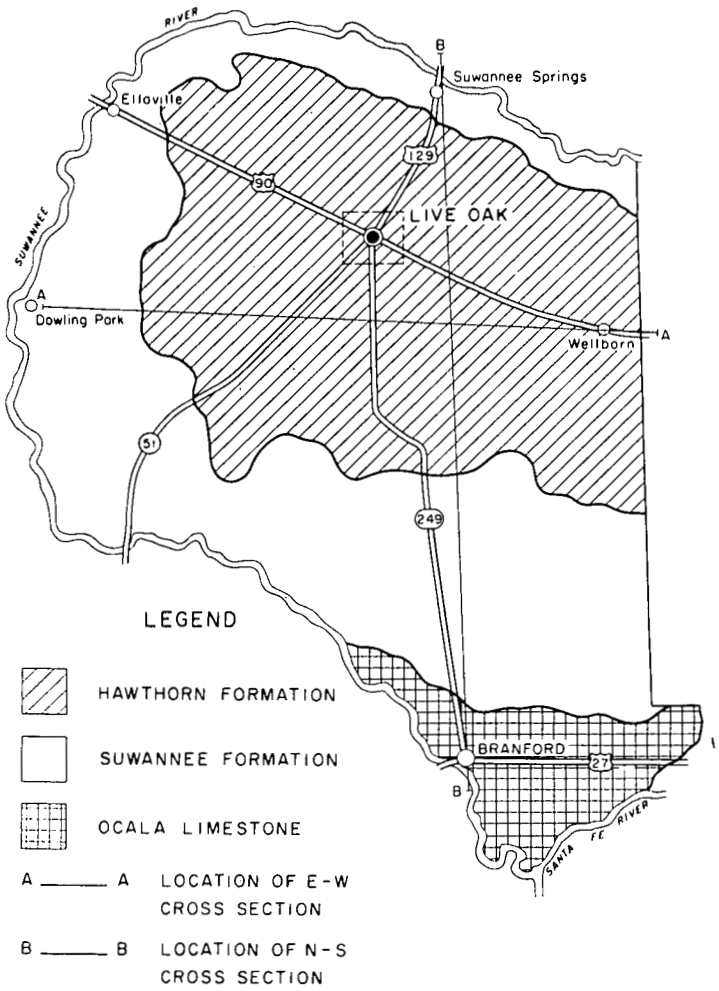

Figure 22.—**Geologic map of Suwannee County, Fla.**

Geology, Physiography, and Drainage [11]

Suwannee County is part of the Central Florida Ridge of the Atlantic Coastal Plain. It has four major geologic formations at or near the surface. These formations have influenced soil development.

Figure 22 is a geologic map of the county that shows the three oldest formations; the geologic formations along the lines AA and BB are shown by the cross sections in figure 23.

The Ocala formation of the Eocene age is the oldest in the county; it is near the surface in a small area in the southern part of the county. This formation consists of soft, cavernous limestone that is about 98 percent calcium carbonate. It is a light creamy color and contains many fossil shells. Because of the very low content of impurities in the limestone, soil has not formed as a direct result of weathering of this limestone. Rather, the limestone has influenced soil formation mainly by providing drainage outlets for the overlying more recent sandy deposits. The Ocala formation underlies the entire county, but in most parts it is capped by more recent formations. It serves as a vast underground reservoir for fresh water that fills the labyrinth of caves and solution pores.

Suwannee limestone overlies the Ocala formation (fig. 24) and is near the surface in a wide crescent paralleling the Suwannee River in the southern and western parts of the county. A narrow exposure parallels the river in the northern part. Suwannee limestone is of the Oligocene age and underlies the entire county except where Ocala limestone is exposed. It is mostly hard and interbedded with strata of soft granular lime. Its color is pale yellow, and it has many distinguishing marine fossils. The entire formation is honeycombed with caves and solution pores, many of which have collapsed and have been filled with material from overlying strata (fig. 25). Like Ocala limestone, Suwannee limestone is an underground reservoir of fresh water and has influenced soil formation primarily by providing drainage outlets. A small part of the sandy and clayey material from which the soils developed is the product of weathering of Suwannee limestone. Most of the soils in the county, however, are from more recent material deposited by seas or from material that dropped into collapsed caves.

The Hawthorn formation overlies the Suwannee formation and underlies the central part of the county

[11] By L. O. Rowland, geologist, Soil Conservation Service, and David P. Powell, soil specialist for interpretation.

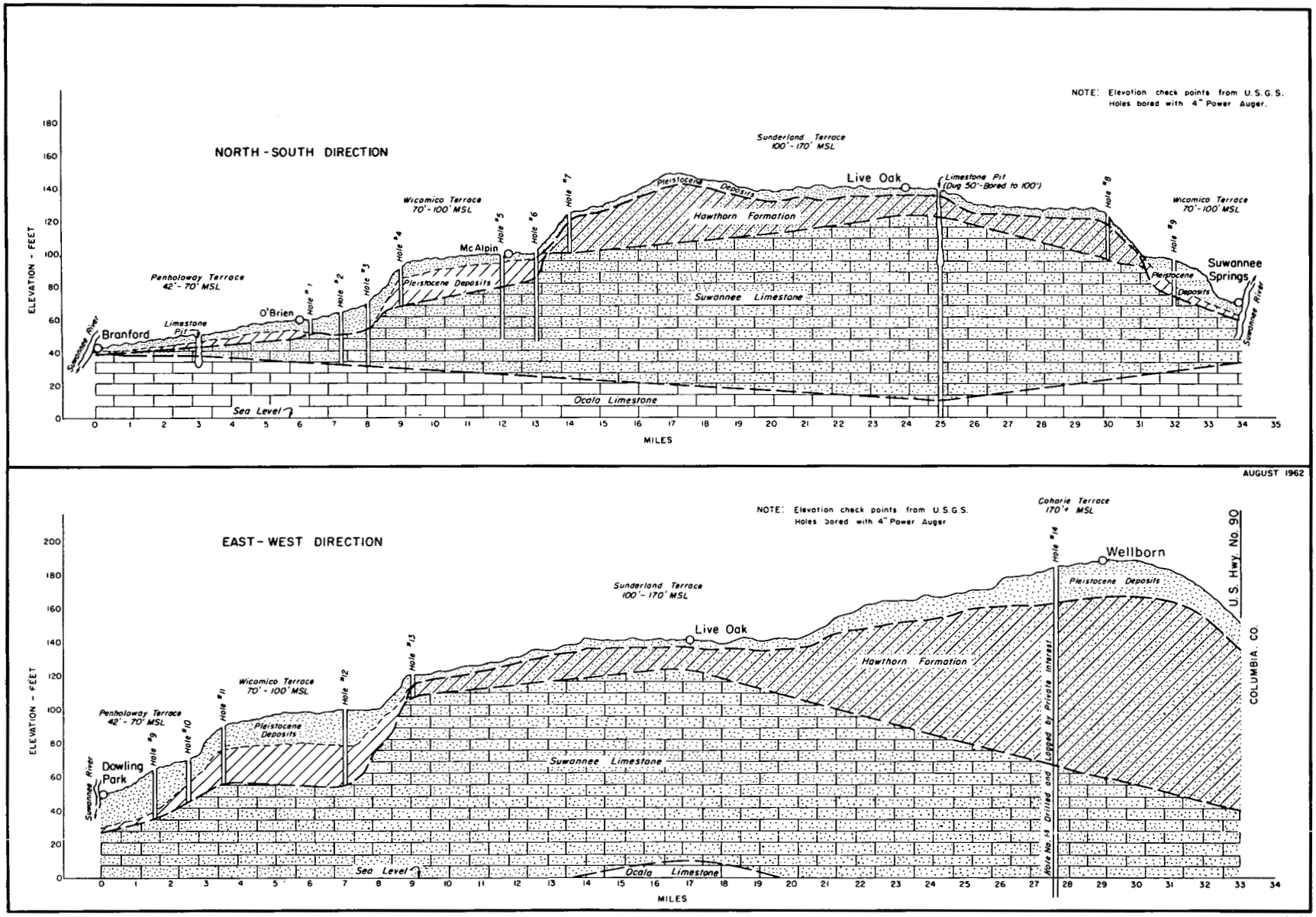

Figure 23.—Geologic formations along lines AA and BB on figure 22.

Figure 24.—**Limestone pit near Branford. The sandy overburden, less than 4 feet thick, is Chiefland fine sand. Suwannee limestone is at the surface of the stripped area and extends down to the ledge on which the man is standing. Below that is Ocala limestone. The surface of the water represents the piezometric surface that underlies the area.**

extending across the eastern boundary into Columbia County. This formation is of the Miocene age and consists of marine deposits of interbedded sand, clay, marl, limestone, fuller's earth, and phosphatic material. There is geologic evidence that this formation was orginally more than 400 feet thick and covered the entire county. Now, only a remnant remains; it is less than 100 feet thick at the thickest place and tapers to less than 1 foot. Geologic erosion and seas have sorted and scattered Hawthorn components over lower positions. Where this formation is exposed, soils with a fine-textured subsoil have formed. The impervious nature of some strata near the surface accounts for a perched water table or otherwise inhibited drainage; thus many of the soils developed under imperfect drainage. Where phosphatic strata have been exposed, soils with high phosphatic content have developed. Remnants of the Hawthorn formation occur throughout the areas where Suwannee limestone is exposed. These remnants were trapped by cave-ins, in past ages before the mantle was eroded away.

The most recent formation is a surface mantle of sandy material laid down during the Pleistocene age. It consists principally of very sandy, reworked material from the Hawthorn formation. Rising and receding seas, during the Pleistocene age, sorted and transported the Hawthorn components. Most of the fine material was carried to some distant place to settle in less turbulent waters while the sands remained. These sands now form a mantle over the entire county. Their thickness ranges from only a few inches where they are underlain by the Hawthorn formation to 20 feet or more at lower elevations. These sands are the materials from which the deep sandy soils formed, and they constitute the material in the surface horizons of many soils that have a clayey subsoil.

The physiography of the county is predominantly gently undulating with enclosed depressions. The county lies in a great bow of the Suwannee River, which bounds it on the north, west, and southwest. Elevation ranges from about 38 feet above sea level at the junction of the Suwannee and Santa Fe Rivers in the extreme southern part to approximately 188 feet above sea level near Wellborn. There are five rather distinct marine terraces (fig. 26) in the county: Talbot below 42 feet;

Figure 25.—**Solution hole in Suwannee limestone filled with clay from overlying Hawthorn formation. Similar holes, some much larger, are filled with clay or sand from overlying strata and are common in areas of Hernando Susquehanna, Bowie, and Chiefland soils.**

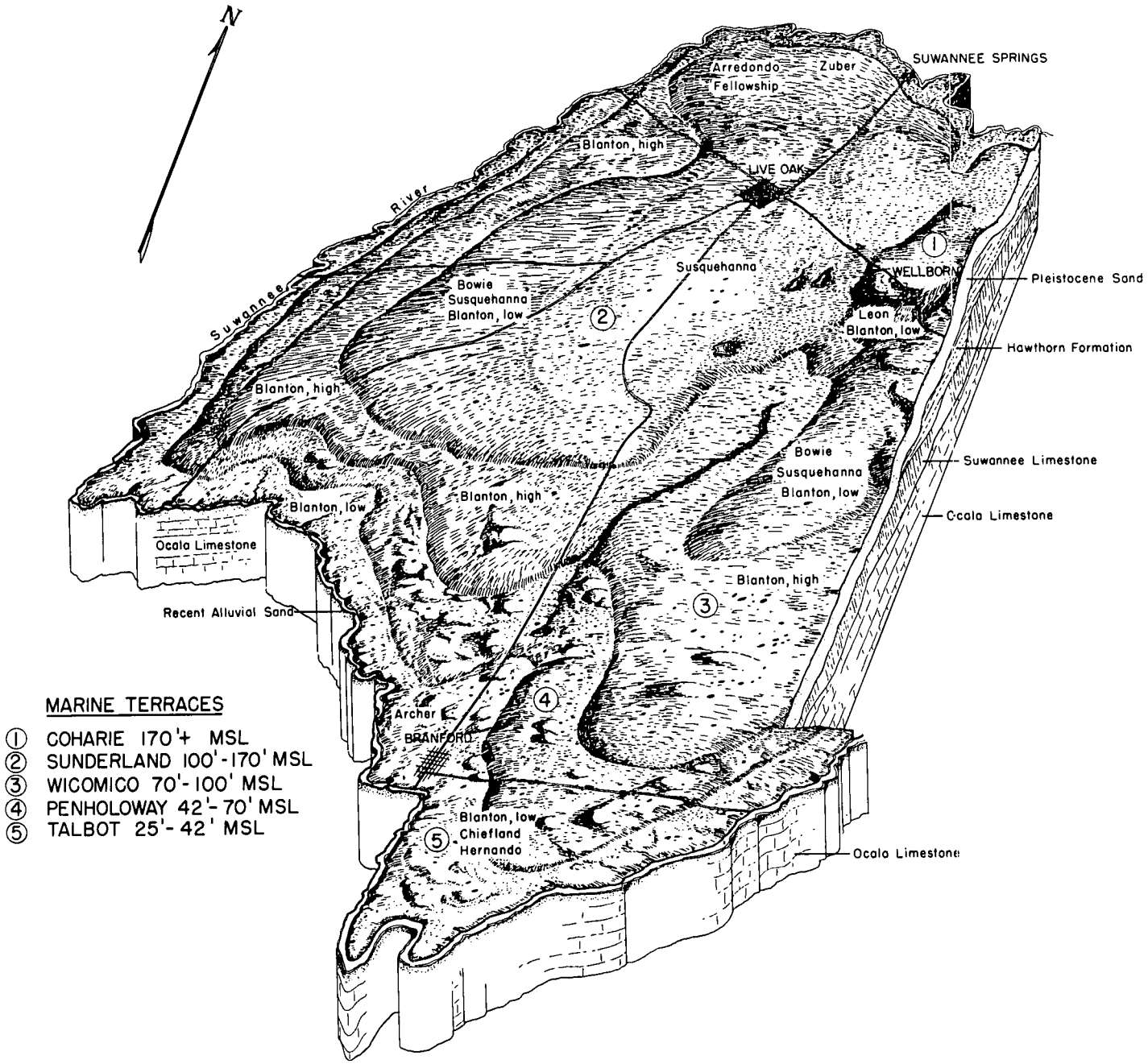

Figure 26.—**Marine terraces in Suwannee County, and the position of some of the soils.**

Penholoway, 42 to 70 feet; Wicomico, 70 to 100 feet; Sunderland, 100 to 170 feet; and Coharie, more than 170 feet. The steepest areas are north of U.S. Highway No. 90, where a few slopes exceed 10 percent. Most other areas have the gently undulating surface that is characteristic of nearly level soils underlain by limestone; the gentle slopes terminate in sinks or shallow depressions. A few small natural lakes occur in the Houston and Wellborn areas.

Suwannee County is almost devoid of streams. Water drains almost entirely through the sandy soils or sinkholes into underlying porous limestone. Though drainage is slow on some soils that have a fine-textured subsoil, excessive wetness is a problem in only a few areas. The poorest drainage in the county is associated with the highest elevations, especially the Houston-Wellborn area. Here, impervious strata of the Hawthorn formation are thickest and the soils have a perched groundwater table. Many soils in this area have ground water that fluctuates between 2 and 4 feet below the surface. It is in this area that the principal lakes and swamps occur, and it is here that the only streams in the county

have their origin. The largest stream flows south and disappears into a sinkhole only a few miles from its origin. A few small, very short branches flow north into the Suwannee River. There are about 10 lakes that vary in size from less than 10 acres to about 300 acres.

Settlement and Population

Suwannee County was established in 1858 and named for the Suwannee River. The county was settled by people from the Carolinas, Georgia, Alabama, and Mississippi. The population in 1960 was 14,961. Live Oak has a population of 6,544 and is the county seat. Branford is the only other incorporated town in the county.

Agriculture

Agriculture is the main source of income in Suwannee County. The principal crops are corn, peanuts, watermelons (fig. 27), and tobacco. Sugar cane, sweetpotatoes, truck crops, and other crops are grown but contribute little to the economy. They are generally grown for home use. Pecans bring some income to many farm families. There are a few commercial pecan orchards, but most of the trees are in small areas close to the homestead.

Flue-cured tobacco is the most important cash crop. According to the U.S. Census of Agriculture, 3,472 acres was planted to tobacco in the county in 1959. Acreage allotments limit the amount of tobacco that can be grown. Corn is the most extensively grown crop in the county. In 1959, 60,604 acres was planted to corn. This was about 9,000 acres more than was reported in 1954.

Livestock production is an important part of agriculture in the county. Much of the land is in pasture. According to the U.S. Census of Agriculture, there were 16,262 cattle and calves (mostly beef cattle) in the county in 1959. In the same year 36,295 hogs were reported.

Figure 27.—**Watermelons, a principal cash crop in Suwannee County, are well adapted to the deep sandy Blanton soils that occur in most parts of the county.**

Timber and wood products also are important to the county. Approximately 197,200 acres is woodland and of this, 94,303 acres is farm woodland.

The number of farms in the county has decreased sharply. In 1950 there were 2,009 farms, but in 1959 there were only 1,247. During this same period the average farm increased from 159 acres to 238 acres.

In 1959, there were 206 farms of less than 50 acres, 198 of 50 to 100 acres, 293 of 100 to 180 acres, 236 of 180 to 260 acres, 206 of 260 to 500 acres, 85 of 500 to 1,000 acres, and 23 of 1,000 acres or more.

In 1959, 392 mules were reported on 204 farms in the county. Farm power and mechanical equipment consisted of 1,277 tractors, 69 grain combines, 143 corn pickers, 42 balers, and 937 motortrucks.

Industry

Industries are far less important to the economy of the county than agriculture. Several small sawmills operate in the county, and also a wood-preserving plant that treats poles, piling, and other wood products. Calcic limestone, used primarily for road-bed material, is mined at four locations. One dolomitic limestone mine produces for agricultural use.

Other industries include a meat packing and frozen food plant, a grain processing corporation, and a furniture manufacturing plant.

A telephone company and several small insurance companies have their area headquarters in the county.

Transportation and Markets

Three railroads—the Seaboard Air Line, the Atlantic Coast Line, and the Live Oak, Perry, and Gulf (Southern)—serve the county.

U.S. No. 90 and U.S. No. 129 and several all-weather State highways serve the county. U.S. No. 90 is the principal link between Jacksonville and Pensacola. Graded roads are numerous and are generally passable.

The flue-cured tobacco market in Live Oak is the largest in Florida. This market has seven sales barns; it handles most of the tobacco grown in the county and much of that grown in surrounding counties. A livestock market in Live Oak serves Suwannee and adjoining counties.

Farm, Home, and Community Facilities

Housing in the rural areas ranges from excellent to poor. Generally, houses constructed in recent years are well built and comfortable. Electricity is available throughout the county.

Several of the communities in the county have community centers. One weekly newspaper is published in the county. Mail service is countywide.

The hospital in Live Oak serves the entire county. Other health services are provided by the County Health Department.

Recreation

The Suwannee River provides good fishing and boating. A number of springs near the river are excellent

for swimming. The Suwannee River State Park, on the banks of the river, provides camping facilities. Lakes and springs throughout the county are good for water sports and small-game hunting. Quail, dove, turkey, squirrel, and other game animals are found in the county.

Live Oak has a swimming pool, a playground, a baseball field, and tennis courts. Another swimming pool and a nine-hole golf course are near Houston, a few miles east of Live Oak.

The Suwannee Regional Library serves Suwannee County and several surrounding counties.

Schools and Institutions

Suwannee County has 12 public schools, including 4 high schools. In the 1961–62 school year, 4,004 students were enrolled. Buses transport the children to and from school.

Boys' Ranch, on the banks of the Suwannee River in the northern part of the county, is a home for boys from broken families. This home was organized and is supported by sheriffs in the State of Florida.

An orphanage is maintained by the Christian Advent Church in the western part of the county near Dowling Park and the Suwannee River.

Glossary

Aeration, soil. The exchange of air in the soil with air from the atmosphere.

Aggregate, soil. Many fine soil particles held together by internal forces in a granule, clod, block, crumb, prism, or other single mass or cluster.

Available moisture capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

Clay. (1) As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. (2) 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.

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; will 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.

Crumb structure. Soft, small, porous aggregates that are irregular but somewhat spherical in shape, as in the A1 horizon of many soils. Crumb structure is closely related to granular structure. (See also Structure, soil.)

Gravel. Rounded to subrounded rock fragments or other coarse mineral particles ranging from 2 millimeters to 3 inches in diameter.

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

Loam. The textural class name for soil containing 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Mottled. Irregulary marked with spots of different colors. Mottling in soils usually indicates poor drainage. Descriptive terms for mottles are as follows: Contrast—*faint, distinct,* and *prominent;* abundance—*few, common,* and *many;* and size—*fine, medium,* and *coarse.* Size measurements for mottles are as follows: *Fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 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.

Permeability, soil. That quality of a soil that enables water and air to move through it. Terms used to describe permeability are—*very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Poorly graded soil (engineering). A soil material consisting mainly of particles nearly the same size. Because there is little difference in size of the particles in poorly graded soil material, density can be increased only slightly by compaction.

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

Sand. (1) As a soil separate, individual rock or mineral fragments that range from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch) in diameter. Sand grains consist chiefly of quartz, but they may be of any mineral composition. (2) As a textural class, soil material that is 85 percent or more sand and not more than 10 percent clay.

Silt. (1) As a soil separate, individual mineral particles that range from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter) in diameter. (2) As a textural class, soil material that is 80 percent or more silt and less than 12 percent clay.

Single-grain soil. A structureless soil in which each particle exists separately.

Soil. The natural medium for growth of land plants; a natural three-dimensional body on the earth's surface that has properties resulting from the integrated effects of climate and living matter acting upon parent material, as conditioned by relief over periods of time.

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 soils includes the A and B horizons. Usually, the characteristics of the material in these horizons are unlike those of the underlying parent 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, prismatic, columnar,*

blocky, and *granular*. Structure is defined in terms of distinctness, size, and shape of the soil aggregates; for example, "moderate, medium, subangular blocky" means moderately distinct, medium-sized aggregates of subangular blocky shape.

Subsoil. Technically, the B horizon of soils with distinct profiles; roughly, that part of the profile below plow depth.

Subsurface soil. As used in this report, that part of the A horizon below the surface layer.

Surface layer. As used in this report, the uppermost layer of the soil.

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

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 as follows: *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 used to topdress roadbanks, gardens, and lawns.

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