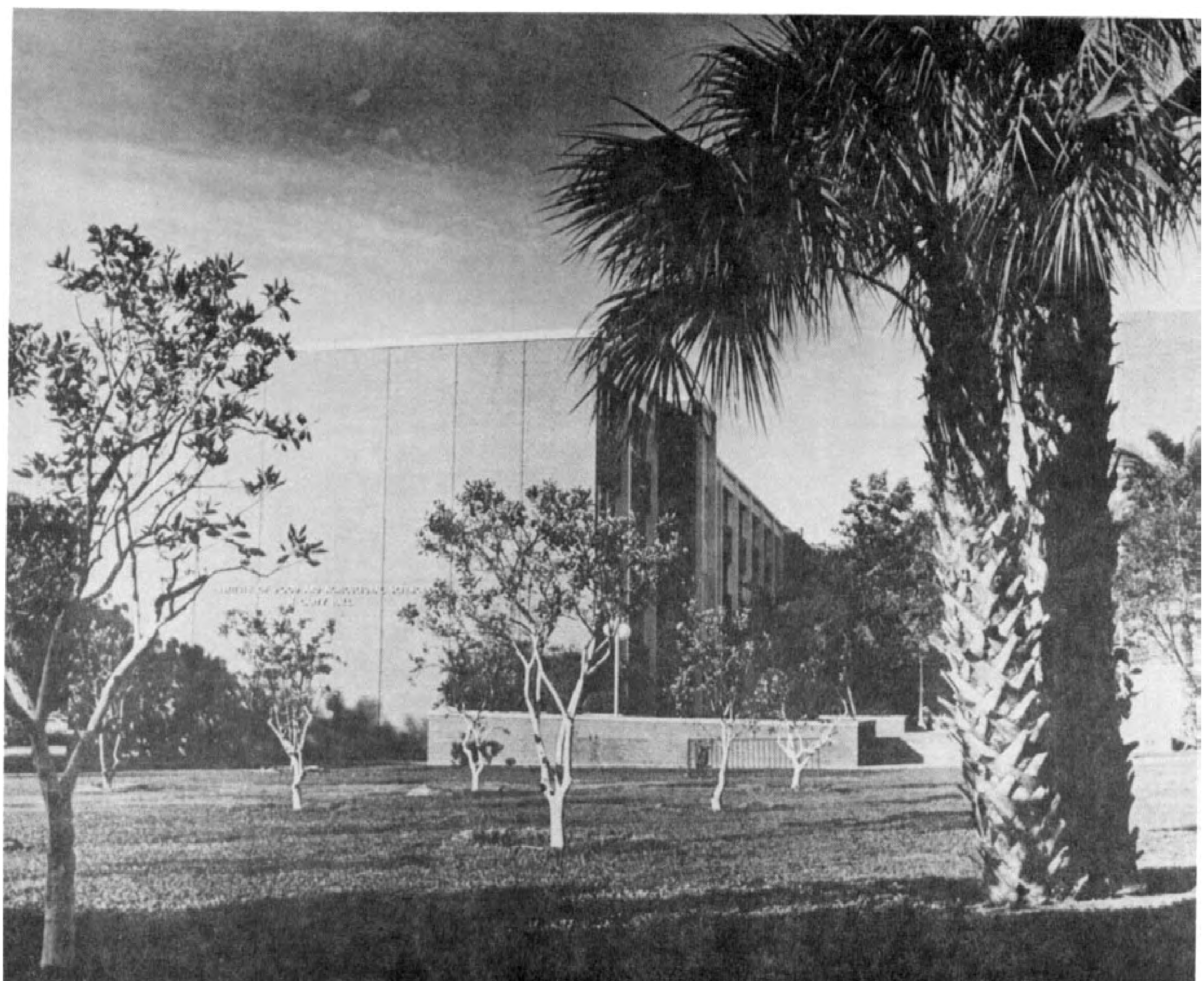
United States Department of Agriculture

Soil Conservation Service

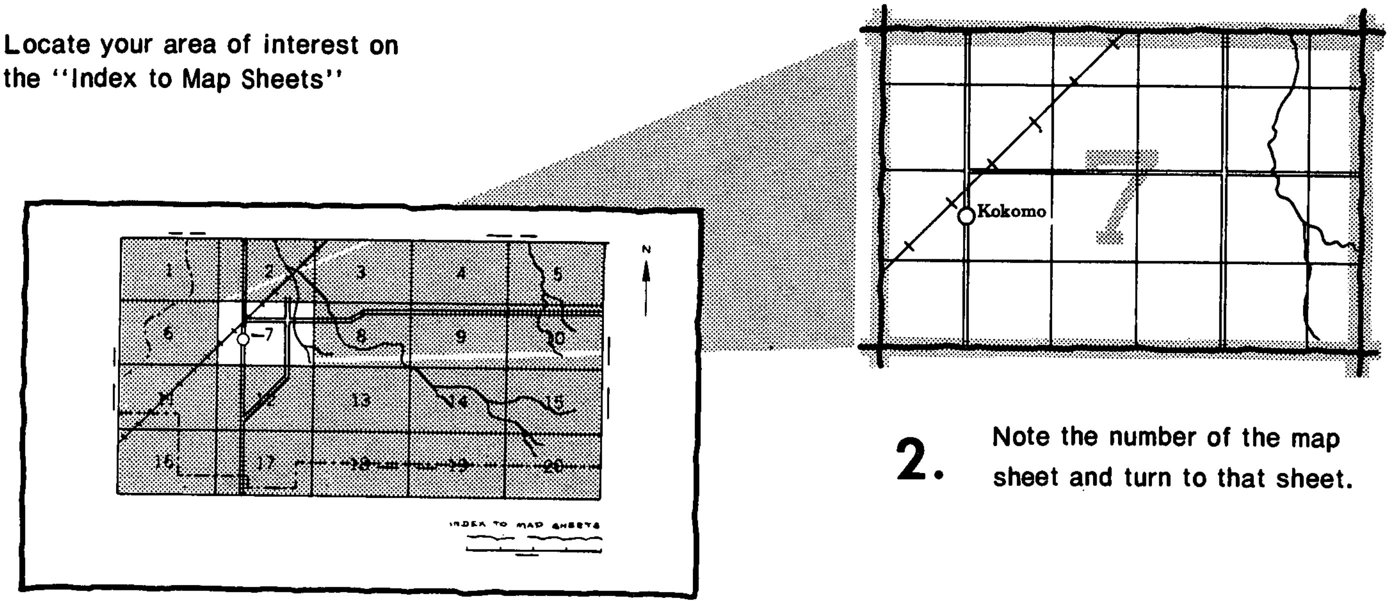
In cooperation with University of Florida Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department, and Florida Department of Agriculture and Consumer Services

Soil Survey of Alachua County Florida



HOW TO USE

1. Locate your area of interest on the ''Index to Map Sheets''



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

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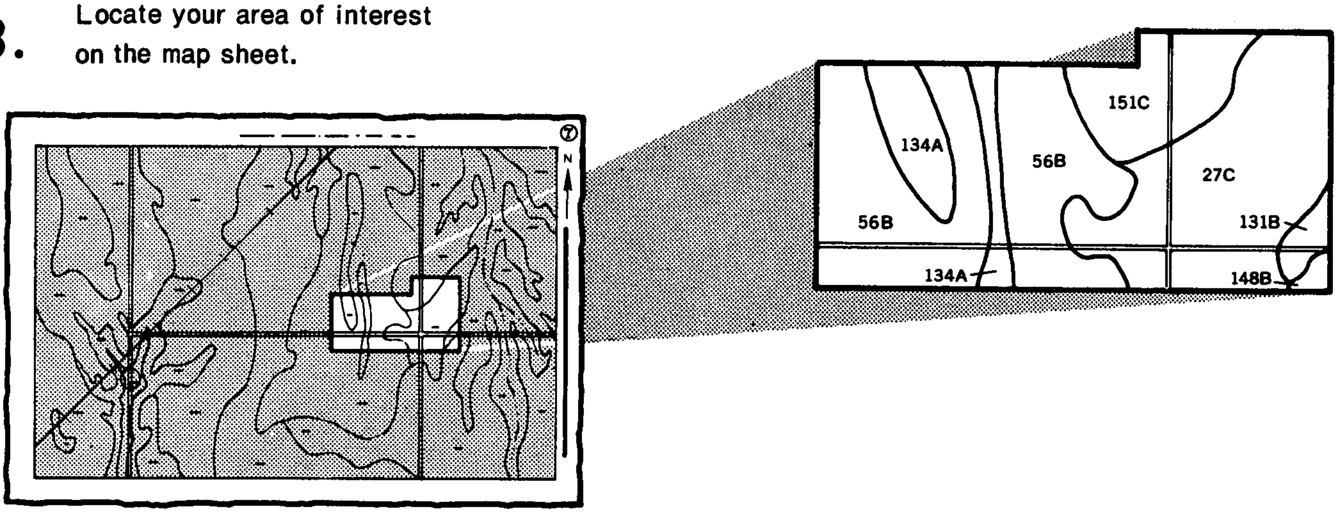

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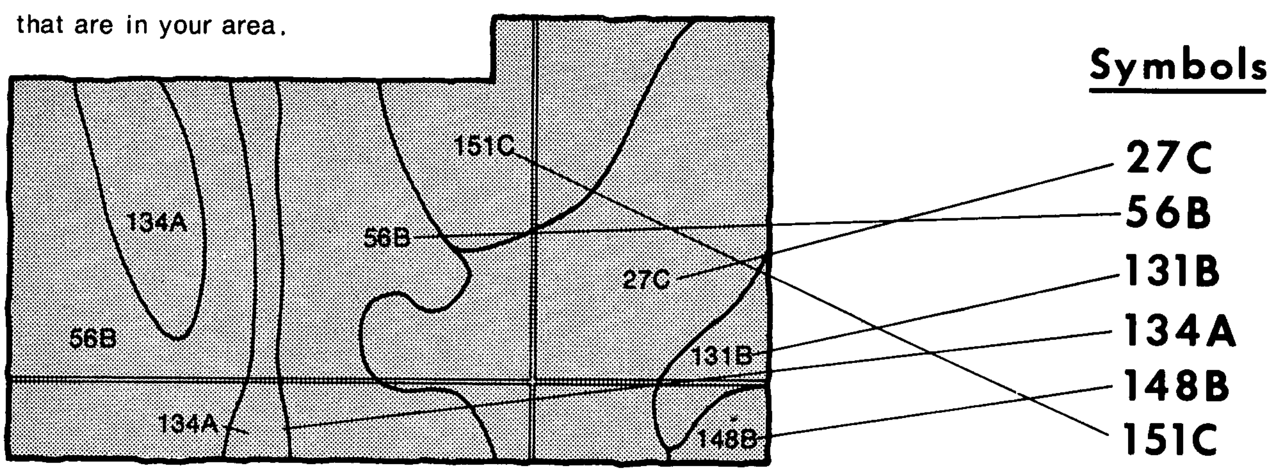
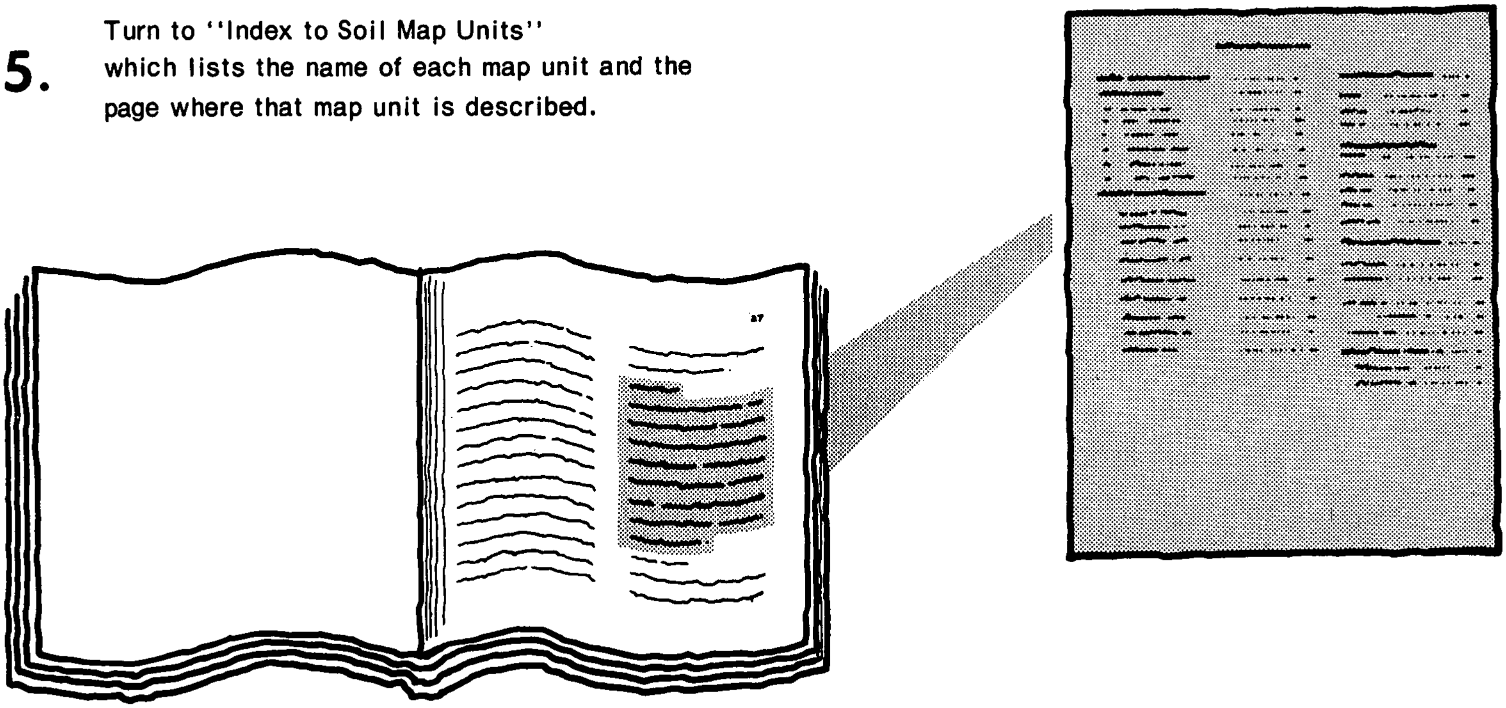
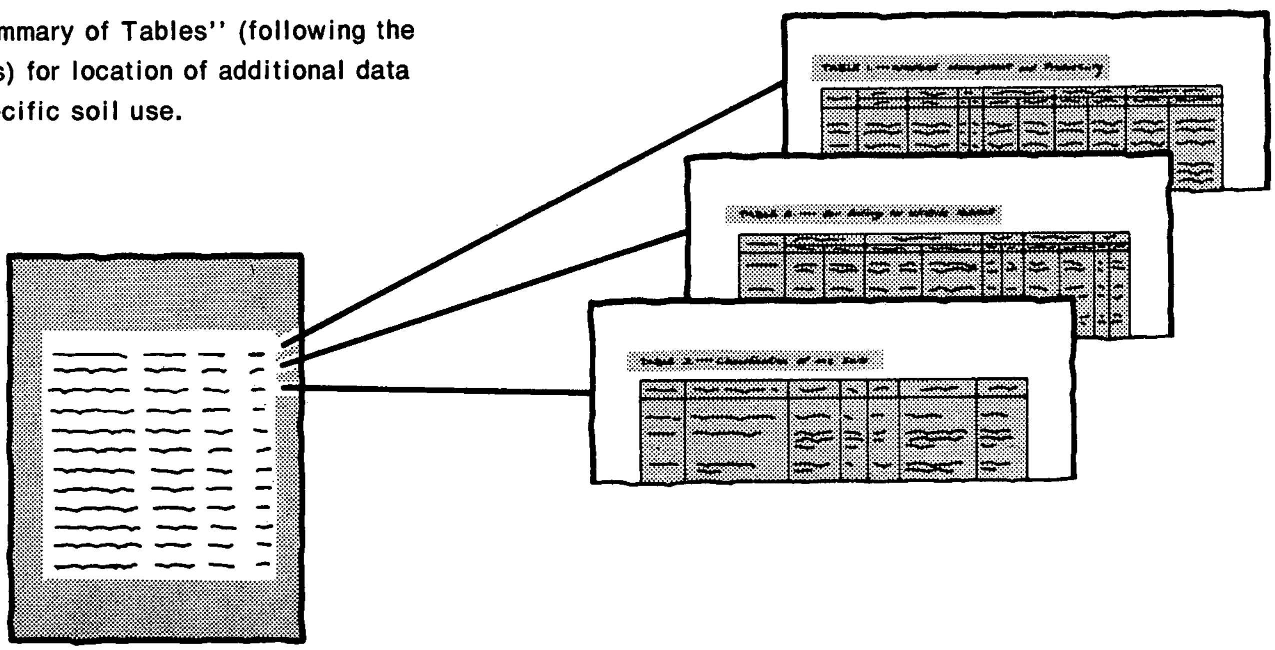


THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1982. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Soil Conservation Service; the University of Florida Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department; the Alachua County Board of Commissioners; and the Florida Department of Agriculture and Consumer Services. It is part of the technical assistance furnished to the Alachua Soil and Water Conservation District. The Alachua County Board of Commissioners contributed financially to the acceleration of the survey.

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

Cover: McCarty Hall, the Institute of Food and Agricultural Sciences, on the campus of the University of Florida. The Soil Science Department and Soil Characterization Laboratory are in McCarty Hall. The soil is Urban land-Millhopper complex, 0 to 2 percent slopes.

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Soil Series

Issued August 1985

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Summary of Tables

Foreword

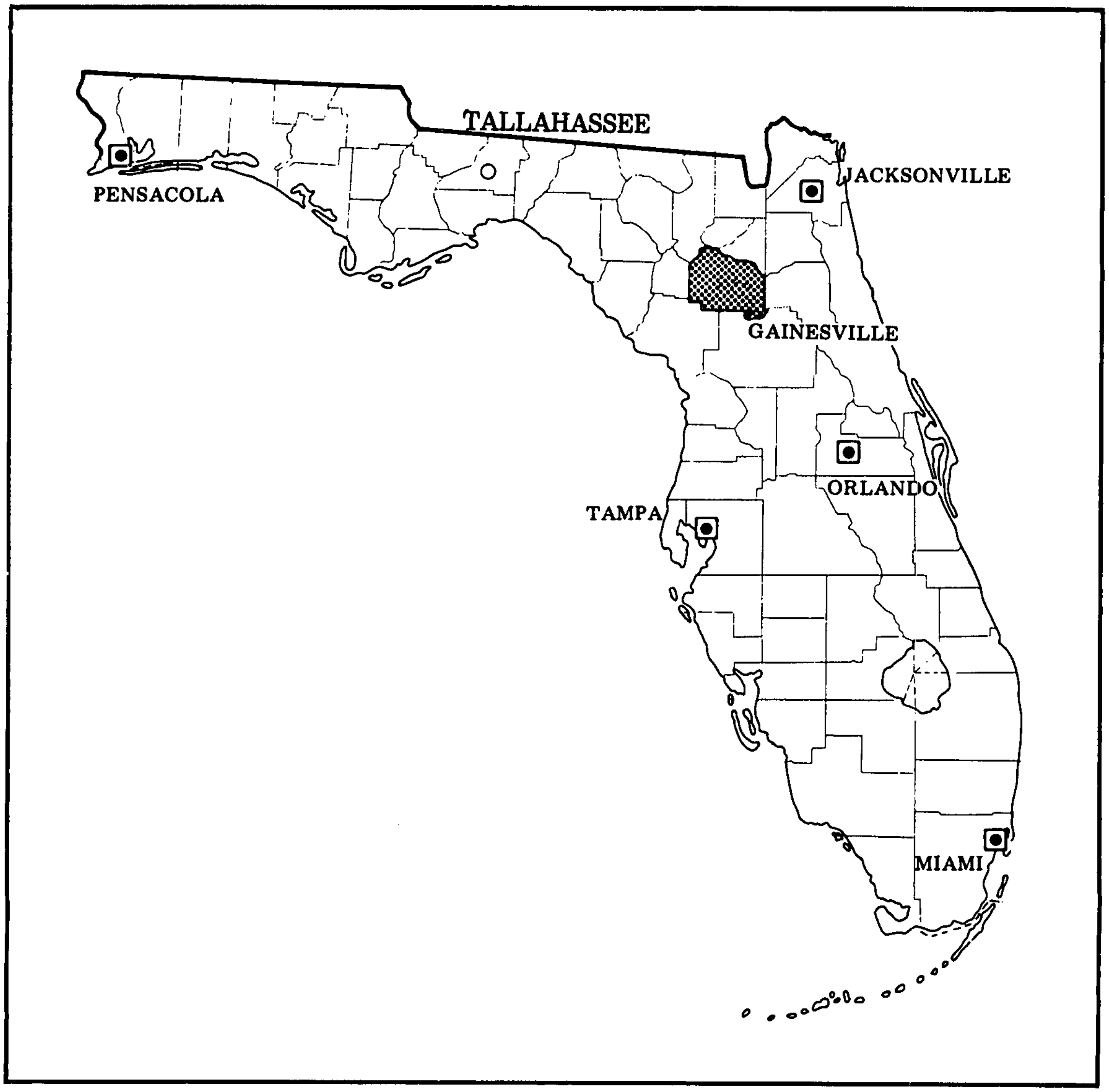
This soil survey contains information that can be used in land-planning programs in Alachua County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact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

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

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

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

James W. Mitchell
State Conservationist
Soil Conservation Service



Location of Alachua County in Florida.

Soil Survey of Alachua County, Florida

By B. P. Thomas, Eddie Cummings, and William H. Wittstruck,
Soil Conservation Service

Others participating in the fieldwork were Joseph P. Ross,
Marvin Weeks, Roger White, Jerry Rosenberg, Robert Weatherspoon, and W. Jeffers Allen,
Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
University of Florida, Institute of Food and Agricultural Sciences,
Agricultural Experiment Stations and Soil Science Department;
the Alachua County Board of Commissioners; and
the Florida Department of Agriculture and Consumer Services

ALACHUA COUNTY is in north-central Florida. It is bordered on the north by Columbia, Union, and Bradford Counties; on the east by Putnam County; on the south by Marion and Levy Counties; and on the west by Levy and Gilchrist Counties. The Santa Fe River forms the boundary line between Alachua and Union Counties. It also forms the boundary between parts of Alachua and Columbia Counties and Alachua and Bradford Counties.

The first soil survey of Alachua County was published in 1954 (*20*). This survey updates the first soil survey and provides additional information.

The county is about 615,000 acres, or 961 square miles. The land area of the county is 570,880 acres, or 892 square miles. Bodies of water less than 40 acres make up 2,913 acres. About 31,000 acres is state owned land. The county is about 36 miles wide and about 33 miles long. Gainesville, the county seat, is in the central part of the county. According to the 1980 census, the county has a population of 151,143. More than 50 percent of the population is within the greater Gainesville area. The remainder is about evenly distributed throughout the rest of the county.

The economy is one of agribusiness, trade and service, and education (*5*). Agriculture is the largest enterprise in the county. About 44 percent of the total work force is engaged in government-oriented jobs. Almost one-half of this group is employed by the University of Florida. A number of industries and businesses are in the county, but most are relatively small in size and employ fewer than 400 persons. The economy is enhanced by the readily accessible technical and scientific consulting services available and the vocational and technical training centers in the county.

General Nature of the County

This section gives general information about the history and development; climate; geology, physiography, and drainage; natural resources; farming; recreation; education and medical facilities; and transportation of the county.

History and Development

The Alachua County Historical Society prepared this section.

Alachua County was created December 19, 1824, the ninth county in what was then the Territory of Florida.

The county extended from the Georgia border to the Suwannee River and over to the Gulf of Mexico in the west. Its southern limit was Charlotte Harbor, and, in the east, it was bordered by Indian Territory.

Spanish explorers traveled through the region as early as 1529. After the establishment of St. Augustine in 1565, missions were built throughout the county. The fertile land was used to produce food and cattle for the Spanish and Indians.

The British acquired Florida in 1763 and governed it until 1783. During that time, William Bartram traveled in the county, visiting an Indian village near present Micanopy. His book, *Travels,* gives a good description of Paynes Prairie and other parts of the county. Paynes Prairie, now one of Florida's largest state preserves, was once Alachua Lake, on which steamboats carried produce from the south side of the lake to Gainesville for shipment by rail.

Spain reoccupied Florida in 1783 and governed it until it became a possession of the United States in 1821. A land grant from the King of Spain to Don Fernando de la Maza Arredondo encompassed much of present day Alachua County and brought early settlers. Florida became a state in 1845.

The building of the Cross-Florida Railroad resulted in the removal of the county seat from Newnansville to the new town of Gainesville, laid out by the county commissioners in 1854. During the Civil War, local militia fought two battles in Gainesville, which deterred Federal occupation of northern Florida. After the war, many new settlers came to the county, and Gainesville was incorporated in 1869. Yellow fever was epidemic in the city in 1888. Freezes in 1886, 1894-95, and 1899 brought the end of citrus fruit as a major crop, but the county has continued to be primarily agricultural. Light industry has been introduced in the last two decades.

Education has been the chief business in Gainesville since the Buckman Act of 1905 created the University of Florida and located it there. Classes began in Gainesville in 1906. The University replaced East Florida Seminary, an earlier state college. The University has grown steadily and rapidly since it became coeducational in 1947. The addition of a medical school in 1956 has resulted in Gainesville's becoming a medical center, which includes the Veterans' Administration Hospital, North Florida Regional Hospital, and Alachua General Hospital.

Santa Fe Community College has also experienced steady growth since its opening in 1965. It operates three campuses in Gainesville and one in Starke, with more than 7,000 students enrolled for credit.

Sunland Training Center, a state institution, is also located in Gainesville. Other health-related and correctional institutions are located in the county.

The town of Micanopy dates from 1821 and is the oldest town in the county. Other incorporated towns are Alachua, Archer, Newberry, High Springs, La Crosse, Waldo, and Hawthorne.

Social, cultural, religious, and professional organizations are numerous in Gainesville. A regional transportation system is in the urban area. The city and county provide utilities, health services, and police and fire protection county-wide.

Lakes and streams provide opportunities for water sports and recreation, while woods and fields abound for enjoying the outdoors. State and county parks are numerous. Several U.S. highways and one interstate highway cross the county, supplemented by many paved state roads. Gainesville's solar-powered regional airport, which opened in 1979, provides jet service to several major cities.

Climate

The climate of Alachua County is characterized by long, warm summers and mild winters. The Atlantic Ocean, the Gulf of Mexico, and the inland lakes have a moderating effect on summer and winter temperatures.

Summer temperatures are fairly uniform from year to year and show little day-to-day variation. Afternoon temperatures reach 90 degrees Fahrenheit or higher with great regularity during the summer months; however, temperatures are seldom 100 degrees or higher. Winter temperatures vary considerably from day to day, largely because periodic cold, dry air masses invade from the north. Frost and freezing temperatures normally occur several times a year. Temperatures are 32 degrees Fahrenheit or less about 24 to 28 times during an average winter. Temperatures are 28 degrees Fahrenheit or less about 8 to 10 times. Temperatures of less than 20 degrees Fahrenheit are rare. The average date of the first killing frost is about November 20th. The average date of the last killing frost is about March 10th (*5*). Freeze data representative of the county are shown in table 2. Temperature and precipitation data (*9*) are shown in table 1.

Mean annual precipitation for Alachua County for the period 1951-1980 was about 53 inches (*9*). About 52 percent of the total rain falls during the months of June, July, August, and September. Rainfall is also most variable during these months. October and November are the driest months.

Most of the summer rain falls as local thundershowers in the afternoon or early evening. Summer showers are sometimes heavy; 2 to 3 inches of rain can fall in 1 to 2 hours. Daylong rains in the summer are rare and are mostly associated with a tropical storm. Winter and spring rains are usually a part of large-scale, continental weather. A 24-hour rainfall of 7 inches or more can be expected in about 1 year in 10.

Tropical storms can affect the area anytime from early June through mid-November. Hurricane force winds rarely develop because of the county's inland location.

Copious rains associated with these storms, however, can cause considerable damage to crops and fields.

Extended dry periods or droughts can occur in any season, but they are most common in spring and fall. A drought occurs when the soil does not have enough available water for plants to maintain normal growth. In a normal year, there are periods when rainfall does not supply as much water as is needed by most crops. Supplementary irrigation is needed in most years for maximum crop production. A drought or dry period in April or May, although generally of shorter duration than those in the fall, tends to be intensified by higher temperatures.

Hail can be a part of some thundershowers. Individual hailstones are generally small and seldom cause extensive damage. Snow is very rare, and, if it falls, melts when it touches the ground.

Heavy fog forms on 30 to 40 days per year, of which about 65 percent occur between November and March. Fog usually clears by 10 a.m. There is an average of about 2,800 hours of sunshine each year, or 62 percent of the possible sunshine (*5*). Relative humidity ranges from early-morning averages near 90 percent in all seasons to afternoon averages of 40 to 50 percent in late spring and near 60 percent in the summer.

Prevailing winds are generally southerly in spring and summer and northerly in fall and winter.

Geology, Physiography, and Drainage

By Daniel P. Spangler, associate professor, Department of Geology, University of Florida.

Alachua County is part of the Central Florida Ridge or Central Highlands of the Atlantic Coastal Plain. It has four major geologic formations at or near the surface. These formations have influenced soil development. They are, in order of decreasing age, the Ocala Group, the Hawthorne Formation, the Alachua Formation, and the Plio-Pleistocene Terrace Deposits.

Figure 1 (*12*) is a geologic map of the county that shows the outcrop pattern of the four formations; the geologic formations along the line A-A' are shown by the cross section in figure 2 (*12*). Also shown here in the subsurface, but not discussed in detail, are two older units underlying the Ocala Group, the Lake City Limestone and the Avon Park Limestone.

Although the limestones of the Ocala Group have been subdivided and renamed by several authors in the recent past (Puri and Vernon, 1964) (*16*), they are undifferentiated in this report. While this Eocene formation underlies the entire county, exposures are possible in the southern and western parts (fig. 1). Here a limestone plain is formed and in most places is covered by a veneer of loose sand. The Ocala Group consists of soft, white to cream colored, chalky, cavernous limestone that is approximately 98 percent calcium carbonate. Boulders and irregular masses of chert are common near the top. The formation as reported by Clark et al. (1964) (*3*) is thinnest beneath the crest and flank of the Ocala uplift, where a thickness of 80 feet is reported in a well near Newberry. It is 220 feet thick in eastern Alachua County and is considerably deeper where it is overlain by the Hawthorne Formation and the Plio-Pleistocene Terrace Deposits.

The Hawthorne Formation of Middle Miocene age crops out in isolated areas around the town of Micanopy and in an irregular pattern from Lochloosa Lake northwestward through Gainesville and into the north-central and northwestern part of the county (fig. 1). Much of the outcrop area is relatively rugged hill and valley terrain and is covered by a thin veneer of loose sands of the older Plio-Pleistocene Terrace Deposits. The Hawthorne Formation, as noted by Pirkle (*14*), consists of quartz sand, clay, carbonate, and pebbles and grains of phosphate laid down on an irregular, solution-pitted Ocala surface. The formation as a whole is highly variable in its composition, both vertically and laterally, and ranges in color from green to yellow and gray to blue. Thickness ranges from a few feet where the Hawthorne Formation is at the surface and merges with the Ocala outcrop, west of Gainesville, to as much as 160 feet in the vicinity of Gainesville and to about 200 feet (*3*) in the northeastern part of the county, near Waldo. Because of soil erosion, the outcrop in the Micanopy area appears to be approximately 40 to 70 feet thick (*12*).

The Alachua Formation, as noted in figure 1, is exposed in the southwestern part of the county, where it forms low and rolling sandhills. The materials, according to Pirkle (*14*), represent the residuum of post-Eocene formations (mostly Hawthorne and Ocala) and in places contain fossils of land vertebrates. Hard rock phosphate within the formation has been quarried extensively. Cooke (1945) noted the accumulations of many bones of Pliocene animals (*4*). According to Clark et al. (1964) (*3*), the Alachua Formation ranges in thickness from 25 to 35 feet. This range was determined by well logs and quarry exposures.

The most recent formation is a surface mantle of fine to medium sand, silt, and clay that formed at Pliocene and Pleistocene sea level. Major outcrop patterns are noted in figures 1 and 2 as the Plio-Pleistocene Terrace Deposits. Primarily the formation overlies the Hawthorne Formation and is exposed in the central and eastern parts of the county (*10*). It has been divided (by Clark et al., 1964) into two lithologic parts—one predominantly sand and one predominantly clay (*3*). The sand is usually dark gray, brown, or black because of the organic matter, but may be tan or yellow where exposed. This sand occasionally grades downward to darker colored, clayey sand. North of Gainesville, the sand and clayey sand have a composite range in thickness of 20 to 45 feet. The clay part consists of mottled, red, yellow, and gray clay and sandy clay, which range in thickness from

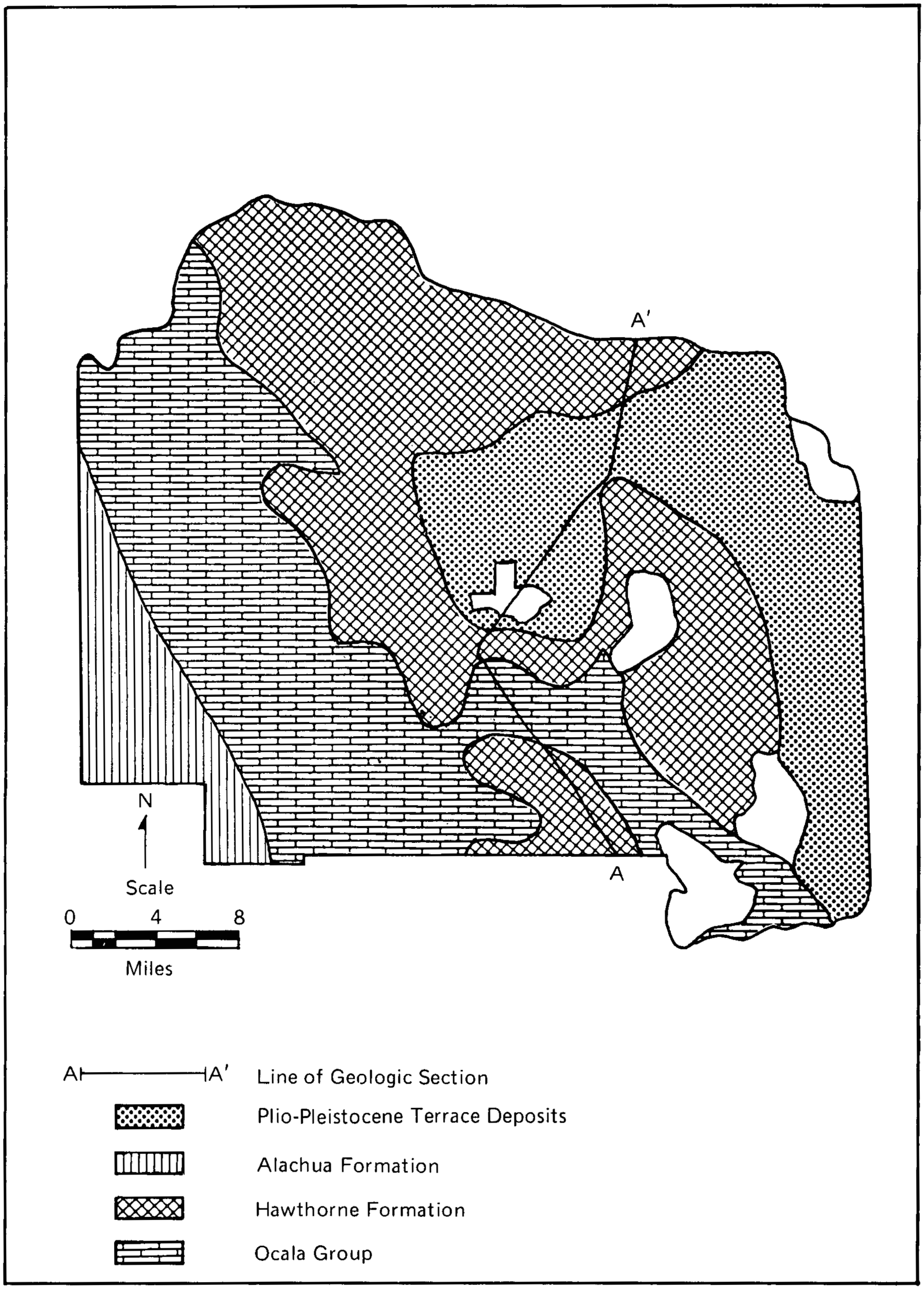


Figure 1.—Geologic map of Alachua County, Florida.

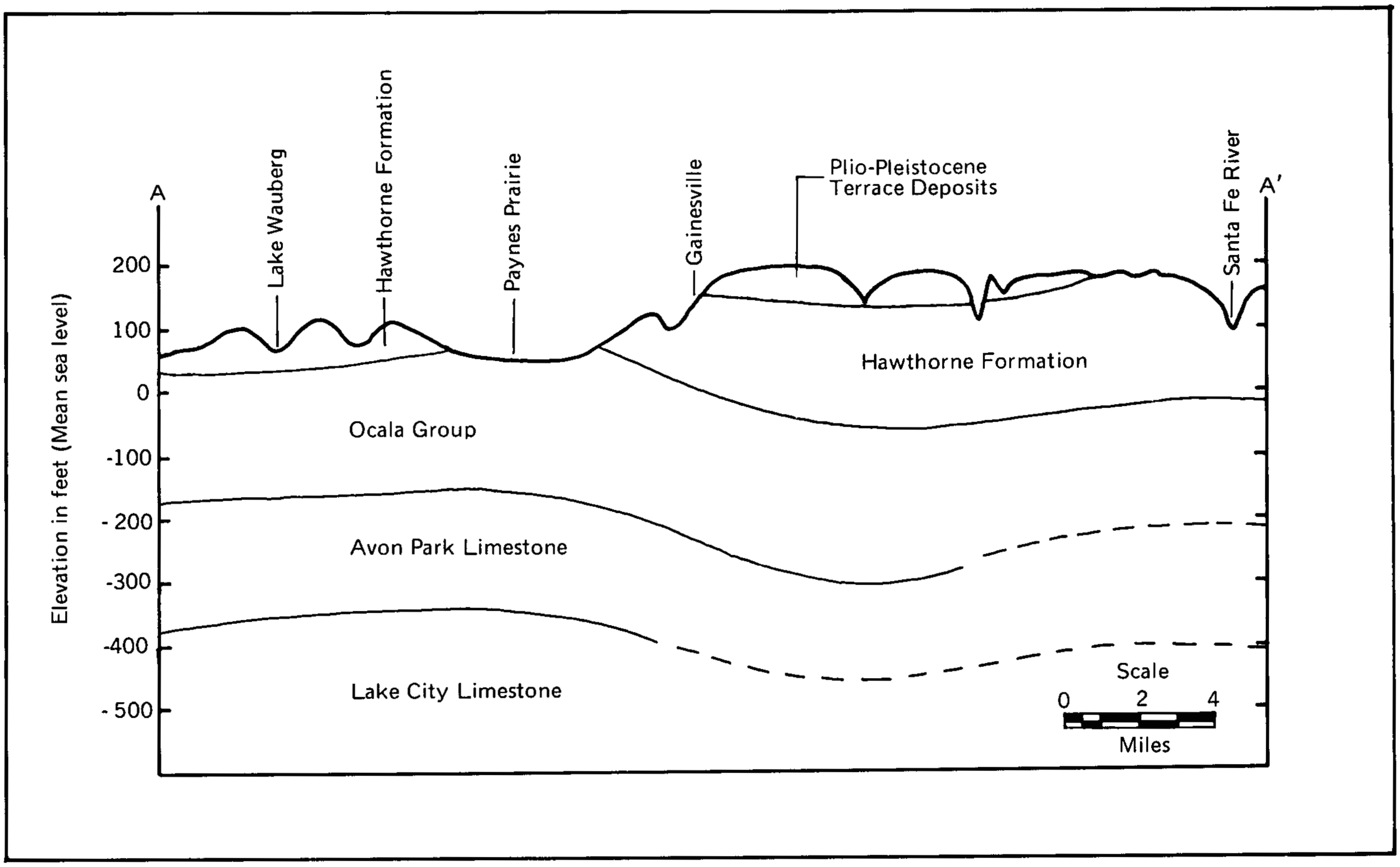


Figure 2.—Geologic cross section of Alachua County, Florida, from Lake Wauberg to the Santa Fe River.

5 to 12 feet and which overlie tan to pink sand and clayey sand.

The physiography of Alachua County may be divided into three provinces as was first indicated by Sellards (1912) (*17*). More recently, authors such as Girard (1968) (*8*), White (1970) (*23*), and Williams (1977) (*24*) have subdivided these areas. The three provinces are: a plateau-like region, which is north of Gainesville and includes most of northeastern Alachua County; a western plains region; and a south-central and southeastern transitional area.

The upland plateau is nearly level, sloping gently to the west, north, and east. Elevation ranges from about 150 to 200 feet above sea level. The plateau, originally extending completely across the county, has many swamps, a few of which were noted by Spangler (1982) (*18*) in a study of cypress domes in north-central Florida. Sinkholes are not common within the plateau, but as noted by Pirkle (*13*), a few are found near its margin. The most notable is Devil's Millhopper, now a State Geological Site.

The western plains region has low relief. Elevation ranges from about 50 to 80 feet above sea level. The plain is devoid of stream channels, but it is dotted with sinks and limerock pits. While the Ocala Limestone is essentially near the surface in this region, many of the old sinks have become filled (some to a depth of 250 feet) with sand, clayey sand, and sandy clay. These soil materials come from marine submergence, slumpage, and rainwash. These fillings tend to mask the irregularities of the Ocala surface.

In the south-central and southeastern parts of the county are flat-bottom lakes, prairies, disappearing streams, and erosional remnants of the plateau. These land forms appear to be a transitional stage from the high plateau to the low western plains (*17*). Much of the level prairie and many lakes, most of which are near or below 60 feet, are associated with ground water levels (*15*). Paynes Prairie, the largest, takes up 18,000 acres. It has a flat floor generally corresponding to the upper surface of the Ocala Limestone and the ground water level.

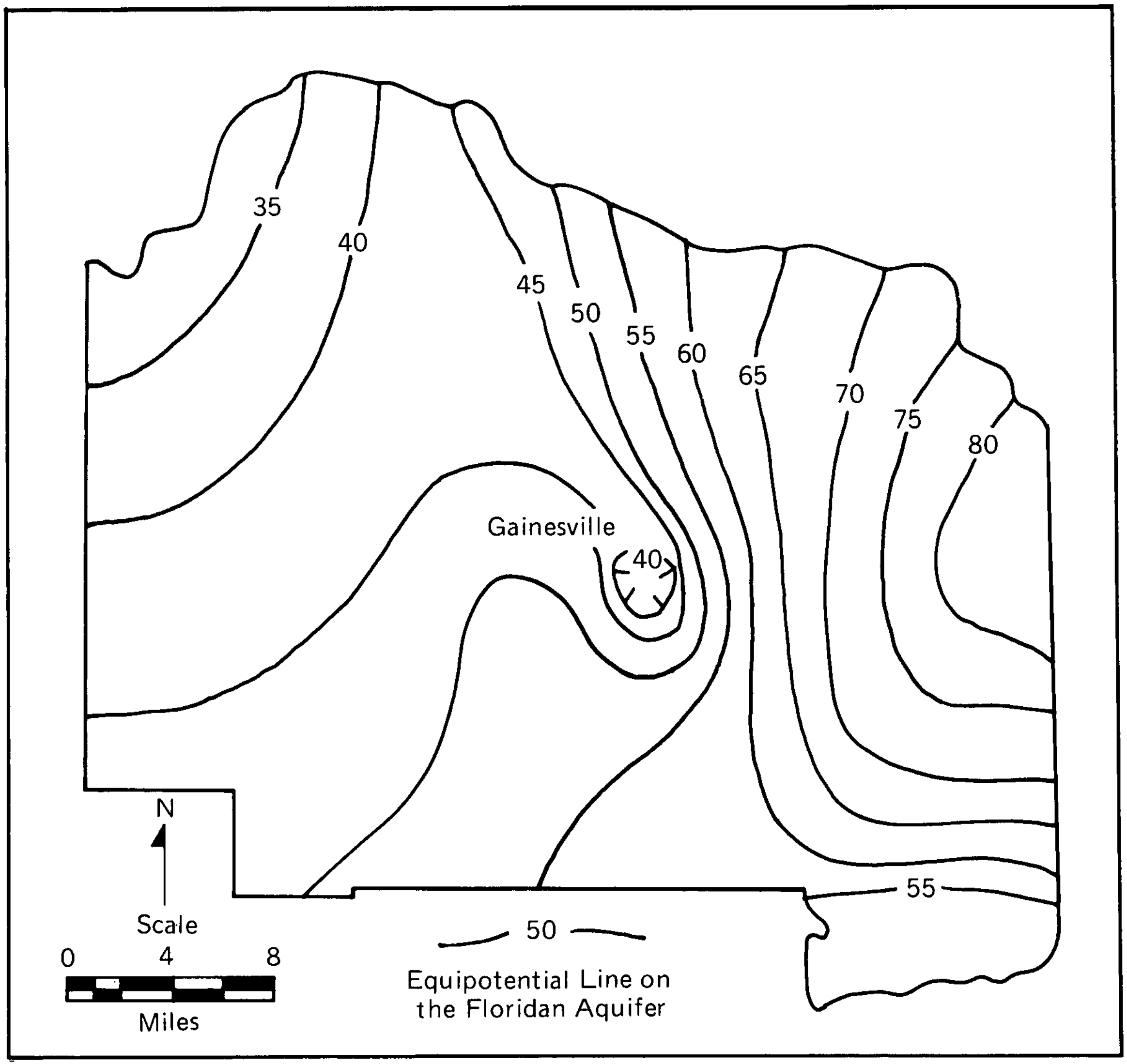


Figure 3.—Potentiometric map of the Floridan Aquifer in Alachua County, Florida.

Essentially there are three aquifer systems in Alachua County. They are the water table aquifer, the secondary artesian aquifer, and the Floridan Aquifer.

The water table aquifer is primarily near the surface and consists of a few feet of sand of the older Pleistocene Terrace Deposits that overlie the Hawthorne Formation. This aquifer is absent in western Alachua County. It ranges from a depth of 100 feet above mean sea level near the escarpment to more than 150 feet above sea level, northwest of Highway 24, between Gainesville and Waldo. In many places the water table is less than 10 feet below the surface and is recharged directly by rainfall.

The secondary artesian aquifer is limited vertically and laterally in extent and is primarily in a few limestone layers and sandy layers within the Hawthorne Formation. It is possibly in shell beds of the Choctawatchee Formation in northeastern and north-central Alachua County. Many wells are drawing water from this aquifer system. The yield is generally low because the aquifer is recharged from the overlying water table or from the underlying Floridan Aquifer, where it is under higher pressure.

The Floridan Aquifer is within the upper several hundred feet of limestone and underlies the entire county. This aquifer is the most productive because it transmits and stores water more easily. Figure 3 (*12*) shows that the potentiometric surface of the aquifer is more than 80 feet above sea level in the eastern part of the county and decreases to less than 35 feet above sea level northwest of High Springs where some discharge flows into the Santa Fe River. The circular low of 40 feet in Gainesville is caused by the pumping of the city's water supply. The aquifer is confined where it is overlain by the Hawthorne Formation; therefore, it is under artesian conditions in the eastern part of the county (the plateau region). The Floridan Aquifer is unconfined where the Ocala Limestone is near the surface. This is primarily in the western plains region.

Natural Resources

The soil is the most important resource of Alachua County. It and the underlying parent material are the source and basis of all the important natural resources and agricultural commodities produced in the county.

Alachua County is one of the richest, most diversified agricultural counties in the state. A variety of crops and livestock are produced. The climate is favorable, and the growing season is long.

Water for home and urban uses and for most agricultural uses is supplied by wells. The source of water for the wells is the Floridan Aquifer, a very large ground water storage area. The aquifer is a layered sequence of porous limestone and dolomite which ranges in age from the middle Eocene to the middle Miocene and underlies much of central Florida. A good supply of water is obtained by digging wells into the underlying limestone to the aquifer. The wells are then cased to the limestone. They vary in depth but average about 80 to 100 feet.

The Santa Fe River is the largest permanent stream in the county. One interesting fact about this river is that at one point it goes underground, travels through a maze of underground channels, and resurfaces at a distance of about 4 miles. Only a very few other streams are in the county. These streams are in the central and eastern parts of the county, and all are very small. These streams, including the Santa Fe River, only flow permanently along their lower reaches. During dry periods, the headwaters of these streams receive little or no runoff. The upper part of the stream channels then becomes dry.

Most of the lakes are also in the eastern half of the county. The four largest and most prominent of these are Orange, Newnan, Santa Fe, and Lochloosa Lakes. Their combined area is 31,694 acres.

Woodland is also a major resource. Forestry and forest products are important to the county's economy. Although most native trees have been harvested, landowners are following a program of reforestation in most areas. About 2,500,000 pine seedlings are planted annually. The forests are valuable not only for lumber and pulpwood production, but also as a habitat for many game animals and other wildlife.

In some areas in the western part of the county, good quality limestone is near enough to the surface to be mined successfully. Most is used as a base material in road construction, but some is also used for agricultural purposes. Limited amounts of kaolin and fuller's earth are also mined.

Farming

Farming has always been important in Alachua County. The Indians were raising horses and cattle, which the Spanish colonial missions had introduced, before the latter part of the 17th century. Before the opening of the Bellamy Road in 1826, indigo, potatoes, sugar-cane, cotton, and tobacco were grown, but mostly for home use. The opening of Bellamy Road greatly improved transportation in the area, and more crops were grown for market. By the time of the Seminole War, the main exports were cattle, timber (chiefly live oak for boat building), and some indigo. During the late 1800's, the major crops grown were cotton, tobacco, sugar-cane, and truck crops.

Agriculture is still a major enterprise in the county. The major crops are corn, tobacco, soybeans, peanuts, hay, small grains, and vegetables. Vegetable crops are mostly watermelons, cantaloupes, cucumbers, squash, snapbeans, eggplants, sweet corn, and green peppers. Beef cattle and forest products are also major enterprises. Blueberries, grapes, peaches, pecans, hogs, and dairy and poultry products are produced to a lesser extent.

According to the 1978 Census of Agriculture, about 200,000 acres, or 35 percent of the county, is in crops and improved pasture. About 100,000 acres, or 17 percent, is in general field crops; about 85,000 acres, or 15 percent, is improved pasture; and 15,000 acres, or 3 percent, is in special crops.

Recreation

Many types of recreation are available in Alachua County. Various kinds of fishing are very popular on Orange, Lochloosa, Santa Fe, and Newnan Lakes. The Santa Fe River and Lake Wauberg are used for fishing, canoeing, and boating (fig. 4), and adjacent areas are good for hiking and camping. A number of springs and underground caves within the immediate area of Alachua County furnish excellent sites for swimming, scuba diving, and exploring for fossils and Indian artifacts. San Felasco Hammock and Oleno State Park are excellent for hikers and nature study enthusiasts. Devils Millhopper, a huge sinkhole 500 feet wide by 120 feet deep, is a natural marvel that has attracted visitors, geologists, botanists, and other researchers for a century.

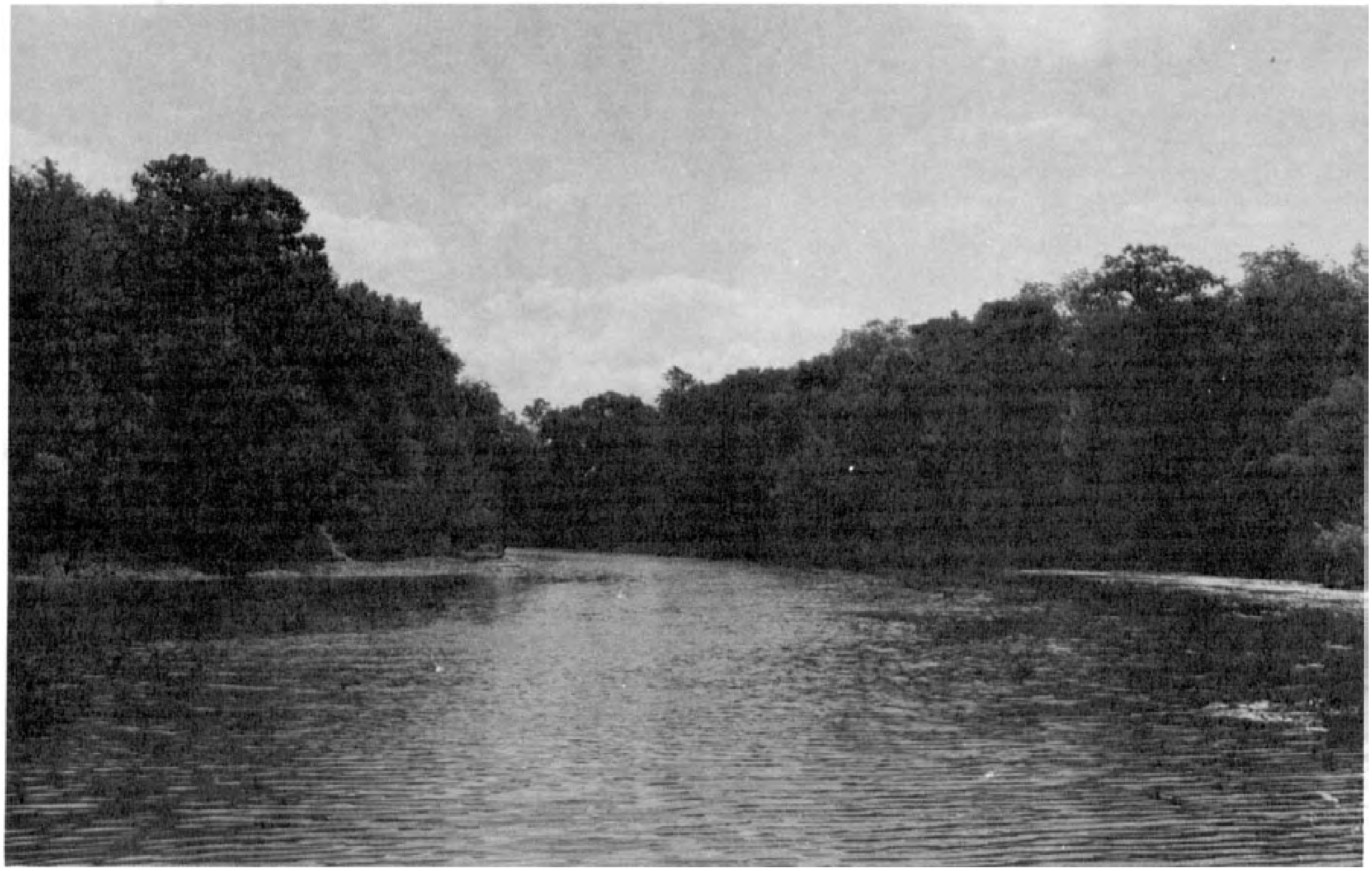


Figure 4.—The Santa Fe River is used for boating, canoeing, and fishing. The flood plain adjacent to the river, which is dominantly Oleno clay, is used as habitat for wildlife.

Educational and Medical Facilities

The educational facilities of the county are very good. There are six public high schools and numerous elementary schools. There are also a number of private and parochial schools.

The University of Florida, a coeducational state university and land-grant college, is located in Gainesville.

Santa Fe Community College, a fully accredited junior college, offers an undergraduate curriculum and adult education programs. It is located in Gainesville and in Starke.

A number of top quality medical facilities and services are in the county. Gainesville is the center of medical activities for a large multi-county area. Four well-staffed hospitals include the Shands Teaching Hospital of the University of Florida, the J. Hillis Miller Health Center, and a Veterans' Administration Hospital. More than 400 physicians and surgeons and more than 100 dentists are in private practice in the county or are on the staff of Shands Teaching Hospital (*5*).

Transportation

Alachua County has a good transportation system. The area is served by four U.S. highways which extend across the county, generally in a north-south direction. U.S. Highways 27 and 41 are in the western part of the county. U.S. Highway 441 is in the central part, and U.S. Highway 301 is in the eastern part. Interstate Highway 75 enters the county from the north near High Springs. It extends through the county in a southeasterly direction to Micanopy and continues into the southwestern part of the state. Numerous good state and county roads criss-cross the area in all directions.

Several trucking firms that have facilities to handle interstate freight serve the area. Good rail and bus systems also serve the county. Scheduled airline service is available at the Gainesville Regional Airport.

How This Survey Was Made

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

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

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

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

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

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

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

Map Unit Composition

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

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

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

General Soil Map Units

The general soil map, following page 23 at the end of this section, shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

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

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

The soils in the survey area vary widely in their potential for major land uses. Table 3 shows the extent of the map units shown on the general soil map. It lists the potential of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil potential ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

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

Soil Descriptions

Soils on sand ridges

The map unit in this group consists of excessively drained and well drained, nearly level to sloping soils on uplands. Most are sandy throughout. Some are sandy to a depth of 40 to 80 inches and loamy below. The map unit is mainly in the southwestern part of the county. Small areas are in the central and eastern parts.

1. Candler-Apopka

Nearly level to sloping, excessively drained and well drained soils; some are sandy throughout and have thin lamellae of loamy sand and sandy loam below a depth of 50 inches, and some are sandy to 40 inches or more and are loamy below

This map unit is on broad, rolling sandy uplands that are interspersed with some small, grassy marshes and ponds. Several small, isolated areas are in the central and eastern parts of the county. Two relatively large areas are near the town of Archer in the southwestern part of the county. The individual areas are mostly irregular or somewhat circular in shape.

This map unit makes up about 35,540 acres, or about 6.2 percent of the county. It is about 70 percent Candler soils, about 14 percent Apopka soils, and about 16 percent soils of minor extent.

The landscape is mainly one of nearly level to gentle slopes. Intermixed are some sharp breaking, relatively long but narrow, steeper slopes. Some landlocked, grassy marshes and ponds are mostly in small, saucer-shaped depressions. They are interspersed throughout most areas. Drainage is subterranean. The water level of the ponds fluctuates considerably with the season. The level depends on the rainfall and seepage from the surrounding deep sandy soils.

The natural vegetation is longleaf pine and turkey, bluejack, post, and sand live oak. The understory is pineland threeawn, low panicum, lopsided indiangrass, and lichens. The marshes and ponds mostly have vegetation of water-tolerant grasses and sedges, and a few cypress, bay, and gum trees.

Candler soils are excessively drained. Typically, the surface layer is grayish brown fine sand about 6 inches thick. Below this is fine sand to a depth of more than 82 inches. The upper 10 inches is pale brown, the next 12 inches is light yellowish brown, the next 29 inches is yellow, the next 13 inches is very pale brown, and the lower 12 inches is very pale brown and has thin bands of brownish yellow lamellae.

Apopka soils are well drained. Typically, the surface layer is dark grayish brown sand about 5 inches thick. The subsurface layer is sand and extends to a depth of 61 inches. The upper 16 inches is brown, the next 31 inches is light yellowish brown, and the lower 9 inches is very pale brown. Between depths of 61 and 82 inches, the subsoil is yellowish brown sandy clay loam.

Of minor extent are Arredondo, Chipley, Lake, Pompano, and Tavares soils. The Arredondo and Lake soils are gently rolling and on uplands. Tavares soils are along the lower slopes and in slightly higher positions of the depressions. The Chipley and Pompano soils are within the depressional areas.

Most of this unit is in woodland. Most of the remaining acreage is in pasture; however, some is cropland. Watermelons are the main crop. A small acreage is in urban uses.

Cropland is severely limited by the low soil fertility and droughtiness. The map unit is only moderately suited to pasture.

The potential for seepage, the loose sandy texture, and wind erosion are the major hazards for most urban uses. The soils have slight limitations for use as homesites or for small commercial buildings. Lawns, however, require a liberal amount of water and frequent applications of fertilizer. Unpaved streets and roads may become difficult to travel because of the loose, dry sandy texture. Wind erosion is a severe hazard on sites where the surface is unprotected.

Soils on uplands

The five map units in this group consist of excessively drained to poorly drained, nearly level to strongly sloping soils. Some soils are sandy to a depth of less than 20 inches and are clayey below. Some are sandy to a depth of 20 to 40 inches and are loamy below. Some are sandy to a depth of 40 to 80 inches and are loamy below. Some are sandy throughout. These soils are predominantly in the western half of the county. Some areas are scattered throughout the county.

2. Arredondo-Gainesville-Millhopper

Nearly level to sloping, well drained and moderately well drained soils; some are sandy to a depth of 50 inches or more and are loamy below, and some are sandy to a depth of more than 80 inches

This map unit is on the rolling uplands. It is concentrated mostly near the towns of Alachua and High Springs in the northwestern part of the county. Some small isolated areas are within the urbanized greater Gainesville. One small area is in the extreme eastern part of the county, near the town of Hawthorne. Much of the acreage of the unit consists of one very large irregularly shaped area that begins a few miles south of Alachua and extends north to the Santa Fe River.

This map unit makes up about 38,920 acres, or about 6.8 percent of the county. It is about 41 percent Arredondo soils, about 19 percent Gainesville soils, about 15 percent Millhopper soils, and about 25 percent soils of minor extent.

The landscape is one of nearly level to gentle slopes. Occasionally, it breaks rather sharply, for short distances, into steeper slopes and hillsides. Small areas of somewhat poorly drained soils are in some areas of this unit. Occasional small sinkholes and depressions are in most areas. Some depressional areas are well drained or moderately well drained, and the surface layer is sandy colluvium. A few small, isolated ponds are in some areas. Drainage is subterranean. The few small, intermittent drainageways that intersect some parts of this unit are short and drain into sinkholes or small ponds.

The natural vegetation is a woods of slash, loblolly, and longleaf pine; live, laurel, post, and water oak; and hickory, dogwood, and holly. The understory is a growth of panicum, bluestem, lopsided indiangrass, briars, wild grape, and sedges. Sweetgum and waxmyrtle grow in the more poorly drained areas.

Arredondo soils are well drained. Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches. The upper 5 inches is yellowish brown loamy sand, the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay loam.

Gainesville soils are well drained. Typically, the surface layer is dark grayish brown sand about 7 inches thick. The underlying layers extend to a depth of more than 82 inches. The upper 22 inches is yellowish brown sand, and the lower 53 inches is strong brown loamy sand.

Millhopper soils are moderately well drained. Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand to a depth of 58 inches. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand that has grayish and yellow mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is gray, mottled sandy loam.

Of minor extent are Apopka, Bonneau, Fort Meade, Kanapaha, Kendrick, Lake, and Lochloosa soils. The Apopka and Lake soils usually are in small, isolated droughty areas within the map unit. The Bonneau, Fort Meade, and Kendrick soils are on the upland slopes and are intermixed with major soils of the unit. The Kanapaha and Lochloosa soils are both along seepy hillsides in the higher positions of uplands and in and along the drainageways.

Most of this unit is in crops and pasture. The remaining acreage is woodland or in urban use.

This map unit is moderately well suited to crops and is well suited to improved pasture if it is well managed. Most locally grown crops and deep rooting pasture plants are adapted.

The potential seepage caused by the deep sandy texture is the major restrictive feature for most urban uses. Limitations for homesites, small commercial buildings, and roads and streets are slight. Wind erosion can become a problem on sites that have been cleared of all protective vegetation. The soils mostly have slight limitations for septic tank absorption fields; however, limitations vary from moderate to severe in areas where the water table is close enough to the surface during wet seasons to prevent good drainage.

3. Kendrick-Arredondo-Bonneau

Nearly level to sloping, well drained and moderately well drained soils; some are sandy to a depth of 20 to 40 inches and are loamy below, and some are sandy to a depth of 40 to 80 inches and are loamy below

This map unit is on the uplands. Total acreage is small. It consists of several small, relatively elongated or irregularly shaped areas in the northwestern part of the county. The areas are within a long, narrow, 8- to 12-mile section. The southern boundary is along State Road 26, and the section extends northwest along the interstate highway about to the Santa Fe River.

This map unit makes up about 26,660 acres, or about 4.7 percent of the county. It is about 35 percent Kendrick soils, about 30 percent Arredondo soils, about 15 percent Bonneau soils, and about 20 percent soils of minor extent.

The landscape is one of gentle slopes on rolling uplands intermixed with short, sharp breaking, steeper slopes and relatively long, narrow hillsides. Small areas of somewhat poorly drained soils are in this map unit. These somewhat poorly drained soils are generally along the sides, at the crest, and at the base of the slopes and are mixed with the better drained soils. The areas are interspersed with small sinkholes. Drainage is subterranean.

The natural vegetation of this unit is chiefly slash, loblobby, and longleaf pine; red, laurel, water, and live oak; and hickory, magnolia, and dogwood. The understory consists of several species of bluestem, indiangrass, hairy panicum, fringeleaf paspalum, briars, eastern bracken, dwarf huckleberry, and sedges. The more poorly drained areas have a similar mixture of pine and hardwood trees, but sweetgum is also present. The understory in the poorly drained areas is chiefly waxmyrtle and other native shrubs and herbs.

Kendrick soils are well drained. Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 26 inches. The subsoil is yellowish brown or dark yellowish brown and extends to a depth of 90 inches or more. The upper 5 inches is fine sandy loam, the next 42 inches is sandy clay loam, the next 10 inches is fine sandy loam, and the lower 7 inches is sandy clay loam.

Arredondo soils are well drained. Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches. The upper 5 inches is yellowish brown loamy sand, the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay loam.

The Bonneau soils are moderately well drained. Typically, the surface layer is dark gray fine sand about 9 inches thick. The subsurface layer is brownish yellow fine sand to a depth of 29 inches. The subsoil extends to a depth of 84 inches or more. The upper 9 inches is yellowish brown fine sandy loam; the next 22 inches is mottled gray and brownish yellow sandy clay loam: the next 15 inches is gray and yellowish brown sandy clay loam; and the lower 9 inches is gray, mottled sandy clay loam.

Of minor extent in this map unit are Bivans, Blichton, Fort Meade, Gainesville, Lochloosa, Micanopy, Millhopper, and Norfolk soils. These soils normally are along the same slopes as the major soils of this unit.

Most of this unit is in crops and improved pasture (fig. 5). A small acreage is woodland or in urban uses.

Most soils of this unit are well suited to locally grown crops. The remaining acreage is moderately well suited to crops. The soils are well suited to improved varieties of bermudagrass for pasture and hay.

Much of this unit has only slight limitations for homesites, small commercial buildings, and roads and streets. Limitations vary from moderate to slight for septic tank absorption fields. Because of the wide range in limitations of the minor soils and the variability of the soils of this unit for other urban uses, detailed soil maps should be consulted and onsite investigations made for specific uses.

4. Arredondo-Jonesville-Lake

Nearly level to gently sloping, well drained and excessively drained soils; some are sandy to a depth of 20 to 40 inches, have a thin, loamy subsoil, and are underlain by limestone; some are sandy to a depth of 40 to 80 inches and are loamy below; some are sandy throughout

This map unit is on uplands. It is within the highly complex limestone plain area in the western part of the county. It consists of two areas. One is a very large, 3- to 7-mile wide area along the county line. It extends from the Santa Fe River, north of the town of High Springs, to the Levy County line south of the town of Archer. The other is a small area about 3 miles southeast of Archer.

This map unit makes up about 47,140 acres, or about 8.3 percent of the county. It is about 35 percent Arredondo soils, about 25 percent Jonesville soils, about

Figure 5.—Good quality bahiagrass pasture in the Kendrick-Arredondo-Bonneau general soil map unit.

20 percent Lake soils, and about 20 percent soils of minor extent.

The landscape is nearly level to gently rolling uplands, which are interspersed with few to numerous sinkholes and limestone boulders (fig. 6). Depth to underlying limestone is variable. In some places, there are outcrops of limestone, and in other places the limestone is several feet below the surface. Drainage is subterranean.

The natural vegetation of this unit consists of a woods of longleaf pine and post, bluejack, laurel, and live oak. Scattered slash pine, red oak, and hickory also are in many areas. The understory is chiefly a mixture of bluestem, panicum, dwarf huckleberry, dayflower, eastern bracken, pineland threeawn, wild grape, sedges, and scattered palmetto. Only a small acreage of this map unit remains in its natural wooded state. Most wooded areas are former fields that have been planted to slash pine.

Arredondo soils are well drained. Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches. The upper 5 inches is yellowish brown loamy sand, the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay loam.

Jonesville soils are well drained. Typically, the surface layer is dark gray sand about 7 inches thick. The subsurface layer is pale brown fine sand to a depth of 29 inches. The subsoil extends to a depth of 33 inches. It is brownish yellow sandy clay loam. Below this to a depth of 80 inches or more is white limestone, which is soft enough to be dug with light power equipment.

Lake soils are excessively drained. Typically, the surface layer is dark gray fine sand about 7 inches thick. The underlying layer is fine sand to a depth of 82 inches or more. The upper 4 inches is pale brown, the next 49 inches is very pale brown, and the lower 22 inches is very pale brown and contains bands of brownish yellow lamellae of loamy sand.

Figure 6.—Sinkholes similar to this are common throughout the central and western parts of the county, but they are generally most abundant in areas of the Arredondo-Jonesville-Lake general soil map unit.

Of minor extent in this unit are Cadillac, Bonneau, and Pedro soils and Udorthents. These minor soils normally are in small areas intermixed with the major soils.

Most of this unit is in crops and improved pasture. Most of the remaining acreage is woodland.

This map unit has severe limitations for crops because of the droughty conditions. If good management practices are used, however, fair to good yields of locally grown farm crops can be produced. The unit is well suited to growing deep rooting Coastal bermudagrass and bahiagrass for pasture.

The shallow depth to the limestone in some soils of this unit and the thick sandy texture of others are the major restrictive features for most urban uses. Limitations for building onsites and for roads and streets are mostly slight. For other uses they are variable. Detailed soil maps should be consulted and onsite investigations made for specific uses.

5. Millhopper-Bonneau-Arredondo

Nearly level to sloping, moderately well drained and well drained soils; some are sandy to a depth of 40 to 80 inches and are loamy below, and some are sandy to a depth of 20 to 40 inches and are loamy below

This map unit is on the broad, rolling uplands of the western part of the county and on the smaller, nearly level to gently sloping uplands in the flatwoods of the east-central part. Areas of this unit are throughout the county. They are mostly elongated or irregular in shape and small.

This map unit makes up about 50,100 acres, or about 8.8 percent of the county. It is about 40 percent Millhopper soils, about 20 percent Bonneau soils, about 15 percent Arredondo soils, and about 25 percent soils of minor extent.

In the western part of the county, the landscape is one of broad, nearly level to gently sloping uplands, which are interspersed with sinkholes. In the northern, central, and southern parts, the topography is one of nearly level to gentle slopes and occasionally sharp-breaking, steeper slopes that grade into sinks and depressional areas. Wetness on the slopes is caused by seepage. In the eastern part of the county, the topography is one of nearly level to gently rolling uplands. The uplands are throughout the broad reaches of the flatwoods. Drainage is dominantly subterranean, but the eastern part of the county has a few poorly defined, narrow drainageways.

The natural vegetation is chiefly slash and longleaf pine; live, water, laurel, red, and post oak; and hickory, dogwood, and sweetgum. The understory consists of waxmyrtle, dwarf huckleberry, eastern bracken, briars, pineland threeawn, and several varieties of bluestem and panicum.

Millhopper soils are moderately well drained. Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand to a depth of 58 inches. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand that has gray and brown mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is gray, mottled sandy loam.

Bonneau soils are moderately well drained. Typically, the surface layer is dark gray fine sand about 9 inches thick. The subsurface layer is brownish yellow fine sand to a depth of 29 inches. The subsoil extends to a depth of 84 inches or more. The upper 9 inches is yellowish brown fine sandy loam, the next 22 inches is mottled gray and brownish yellow sandy clay loam, the next 15 inches is gray and yellowish brown sandy clay loam, and the lower 9 inches is gray, mottled sandy clay loam.

Arredondo soils are well drained. Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches or more. The upper 5 inches is yellowish brown loamy sand, the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay loam.

Of minor extent in this unit are Kanapaha, Kendrick, Lochloosa, Sparr, and Tavares soils. The Kanapaha soils are on wet slopes and in lower depressions. Kendrick soils are in the gently rolling areas and are along the same slope gradient as the major soils. In the southern part of the county, the Lochloosa and Sparr soils are mostly along the seepy slopes, but, in the eastern part, they are in slightly lower parts of the gently rolling landscape. Tavares soils are in this unit in the eastern part of the county.

Most of this unit is in crops and pasture. Most of the remaining acreage is in woodland or is used for urban development.

This unit is moderately well suited or well suited to crops. It is well suited to improved pasture of bermudagrass and bahiagrasses.

For much of this unit, limitations are slight for dwellings, small commercial buildings, and roads and streets. Limitations are severe to slight for most other urban uses because of the variability of the depth to the water table, the surface texture, and the thickness of the sandy material. Detailed soil maps should be consulted and onsite investigations should be made where needed.

6. Blichton-Lochloosa-Bivans

Nearly level to strongly sloping, poorly drained and somewhat poorly drained soils; some are sandy to a depth of 20 to 40 inches and are loamy below, and some are sandy to a depth of less than 20 inches and are clayey below

This map unit is on the rolling uplands. Several areas are in the central part of the county and run in a northwest-southeast direction. They are along Interstate Highway 75 and U.S. Highway 441 from the town of Alachua to the Marion County line. Although the areas are relatively small in size, some are narrow and elongated and meander over long distances.

This map unit makes up about 1,325 acres, or about 5.4 percent of the county. It is about 37 percent Blichton soils, about 25 percent Lochloosa soils, about 14 percent Bivans soils, and about 24 percent soils of minor extent.

The landscape is one of rolling to strongly sloping uplands interspersed with sinkholes, depressions, a few lakes, and wet prairies. The slopes vary from small, sharp breaks to long, seepy hillsides. Some well drained and moderately well drained soils are closely intermixed with the major soils of this unit. These better drained soils are across the landscape with no predictable position along the slopes. Drainage is subterranean. Wetness on the slopes is from seepage. During long periods of high rainfall, some areas at the base of the slopes may have water standing on the surface for brief periods because of the high rate of runoff on the slopes, the slow internal drainage, and the lack of drainage outlets.

The natural vegetation is slash, loblolly, and longleaf pine; laurel, live, and water oaks; and maple, sweetgum, hickory, and magnolia. The understory is chiefly waxmyrtle, greenbrier, wild grape, bluestem, dwarf huckleberry, pineland threeawn, and low panicum.

Blichton soils are poorly drained. Typically, the surface layer is dark grayish brown sand about 6 inches thick. It is about 3 percent nodules of ironstone and fragments and nodules of phosphatic limestone. The subsurface layer extends to a depth of 28 inches. The upper 7 inches is grayish brown sand and has about 2 percent nodules of ironstone and fragments of phosphatic limestone. The next 15 inches is light brownish gray loamy sand. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is dark gray sandy clay loam. It is about 4 percent nodules of ironstone and fragments of phosphatic limestone. The next 28 inches is dark gray sandy clay loam that is about 10 percent plinthite and about 3 percent nodules of ironstone and weathered phosphatic limestone. The lower 18 inches is gray sandy clay loam that has dark reddish brown mottles.

Lochloosa soils are somewhat poorly drained. Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 34 inches. The upper 7 inches is pale brown. The lower 20 inches is very pale brown and has grayish and yellowish mottles. The subsoil extends to a depth of 80 inches or more. The upper 10 inches is pale brown, mottled very fine sandy loam; the next 13 inches is light brownish gray, mottled very fine sandy loam; and the lower 23 inches is gray, mottled sandy clay loam.

Bivans soils are poorly drained. Typically, the surface layer is dark gray sand about 6 inches thick. The subsurface layer is gray sand 9 inches thick. It has a few nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 61 inches. It has a few fine and medium sized nodules and fragments of ironstone and phosphatic limestone. The upper 12 inches is dark gray, mottled sandy clay; the next 18 inches is gray, mottled sandy clay; and the lower 16 inches is gray, mottled sandy clay loam. Between depths of 61 to 81 inches, the underlying material is gray, mottled sandy clay loam.

Of minor extent in this map unit are Arredondo, Boardman, Kanapaha, Kendrick, Micanopy, Millhopper, Norfolk, and Wacahoota soils. Although drainage is variable in all soils of this unit, the minor soils are generally intermixed with the major soils and are in similar positions on the landscape.

This map unit is about equally distributed between improved pasture, woodland, and urban uses. A small percentage is cropland.

Much of this unit is only moderately suited to moderately well suited to crops. Some areas on the steeper slopes are not recommended for cropland. The high water table during wet seasons and the potential hazard of erosion are the major limiting factors. The unit is well suited to improved pasture.

Limitations for urban uses are severe for much of the unit. Wetness and the high shrink-swell potential of some soils are major problems. Corrective measures should be taken before urban development is undertaken.

Soils on the flatwoods, on slight knolls, and in transitional areas between the upland and the flatwoods

The four map units in this group consist of moderately well drained to poorly drained, nearly level to gently sloping soils. Some soils are sandy to a depth of 20 to 40 inches and are loamy below. Some are sandy to a depth of 40 to 80 inches and are loamy below. Some are sandy throughout. These are throughout the central and eastern parts of the county.

7. Millhopper-Lochloosa-Sparr

Nearly level to gently sloping, moderately well drained and somewhat poorly drained soils; some are sandy to a depth of 40 to 80 inches and are loamy below, and some are sandy to a depth of 20 to 40 inches and are loamy below

This map unit is in small areas of nearly level uplands in the flatwoods and in the transitional area which grades from the rolling uplands of the western part of the county to the flatwoods of the eastern part. The unit consists of several small, irregularly shaped areas interspersed with some poorly drained and very poorly drained soils.

This map unit makes up about 70,870 acres, or about 12.4 percent of the county. It is about 35 percent Millhopper soils, about 28 percent Lochloosa soils, about 15 percent Sparr soils, and about 22 percent soils of minor extent.

The topography is one of nearly level areas that have a few gentle slopes. There is only a slight difference in elevation from other adjacent areas across the landscape. Some small depressions and ponded areas are typically included. Drainage is both subterranean and surface. Drainageways are intermittent and poorly defined.

The natural vegetation consists of slash and longleaf pine; water, laurel, live, and post oak; and sweetgum. The understory is dominantly waxmyrtle, sumac, carpetgrass, pineland threeawn, dwarf huckleberry, panicums, scattered sawpalmetto, and bluestem. In the depressions and narrow drainageways, the vegetation is mostly cypress, gum, pond pine, and maple.

Millhopper soils are moderately well drained. Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand to a depth of 58 inches. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand with gray and yellow mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is gray, mottled sandy loam.

Lochloosa soils are somewhat poorly drained. Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 34 inches. The upper 7 inches is pale brown, and the lower 20 inches is very pale brown with grayish and yellowish mottles. The subsoil extends to a depth of 80 inches or more. The upper 10 inches is pale brown, mottled very fine sandy loam; the next 13 inches is light brownish gray, mottled very fine sandy loam; and the lower 23 inches is gray, mottled sandy clay loam.

Sparr soils are somewhat poorly drained. Typically, the surface layer is fine sand about 8 inches thick. The upper 4 inches is dark gray, and the lower 4 inches is dark grayish brown. The subsurface layer is about 40 inches thick. The upper 17 inches is pale brown sand; the next 7 inches is very pale brown fine sand that has light yellowish brown and light gray mottles; and the lower 16 inches is light gray fine sand that has yellowish brown mottles. The subsoil extends to a depth of 84 inches or more and is light gray. The upper 8 inches is loamy sand, and the lower 28 inches is fine sandy loam.

Of minor extent in this unit are Blichton, Bonneau, Chipley, Monteocha, Newnan, Plummer, Pomona, Tavares, and Zolfo soils. The Blichton, Bonneau, Chipley, Newnan, Tavares, and Zolfo soils are intermixed with the major soils of the unit. The Plummer and Pomona soils are in the slightly lower, wetter flats and poorly defined drainageways. The Monteocha soils are in the wet depressional areas.

Most of this unit is still in natural vegetation. Most cleared areas are in improved pasture. Some are used as cropland.

The periodic wetness and poor soil qualities are the major limitations of the soils in this unit for use as cropland. If good management practices are used, however, much of the acreage is moderately well suited to most locally grown crops. It is well suited to improved pasture.

The seasonal high water table and the sandy texture are the major restrictive features for urban uses. Limitations are variable and range from moderate to severe. For some uses, such as dwellings and roads and streets, limitations vary from slight to moderate. Detailed soil maps should be consulted before general planning is undertaken.

8. Chipley-Tavares-Sparr

Nearly level, somewhat poorly drained and moderately well drained soils; some are sandy throughout, and some are sandy to a depth of 40 to 80 inches and are loamy below

This map unit is on slight knolls in the flatwoods and in the transitional area that transects the county in a general north-south direction. This transitional area separates the broad rolling uplands of the western part of the county from the flatwoods of the eastern part. Two small areas are in the extreme southwestern part of the county. The individual areas of this unit are small to relatively large and irregular in shape or elongated. They are throughout the northern, central, and eastern parts of the county.

This map unit makes up about 60,540 acres, or about 10.6 percent of the county. It is about 27 percent Chipley soils, about 25 percent Tavares soils, about 16 percent Sparr soils, and about 32 percent soils of minor extent.

The landscape is of two kinds. One consists of the nearly level pine-palmetto type flatwoods that are intermixed with slight knolls and gently rolling uplands. The other is relatively broad transitional areas that grade from the rolling uplands to the nearly smooth flatwoods. Small wet depressions and short, weakly defined drainageways are scattered throughout most areas. Drainage is mostly subterranean.

The natural vegetation of the major soils of this unit is a woods of slash and longleaf pine and water, laurel, post, turkey, and live oak. The understory consists of waxmyrtle, sumac, blackberry, gallberry, scattered sawpalmetto, carpetgrass, pineland threeawn, and other native weeds and grasses. The vegetation of the wet depressional areas and drainageways is mostly cypress, gum, and bay.

Chipley soils are somewhat poorly drained. Typically, the surface layer is sand about 12 inches thick. The upper 6 inches is very dark gray, and the lower 6 inches is dark grayish brown. The underlying layers are sand to a depth of more than 81 inches. In sequence from the top, the upper 13 inches is grayish brown; the next 24 inches is light gray and has yellowish red mottles; and the lower 32 inches is light gray without mottles.

Tavares soils are moderately well drained. Typically, the surface layer is dark gray sand about 8 inches thick. The underlying layers are sand to a depth of 80 inches or more. The upper 11 inches is pale brown, the next 17 inches is very pale brown, and the lower 44 inches is very pale brown or white and has mottles.

Sparr soils are somewhat poorly drained. Typically, the surface layer is fine sand about 8 inches thick. The upper 4 inches is dark gray, and the lower 4 inches is dark grayish brown. The subsurface layer is about 40 inches thick. The upper 17 inches is pale brown sand; the next 7 inches is very pale brown fine sand that has light yellowish brown and light gray mottles; and the lower 16 inches is light gray fine sand that has yellowish brown mottles. The subsoil to a depth of 84 inches or more is light gray. The upper 8 inches is loamy sand, and the lower 28 inches is fine sandy loam.

Of minor extent in this unit are Candler, Lochloosa, Millhopper, Monteocha, Myakka, Newnan, Placid, Pompano, Pottsburg and Zolfo soils. The Lochloosa, Newnan, and Zolfo soils are in the same positions on the landscape as those of the major soils. Millhopper soils are in slightly higher positions. The Myakka, Pompano, and Pottsburg soils are in slightly lower positions in the flatwoods and along the weakly defined drainageways. The Monteocha and Placid soils are in small, wet depressional areas.

Most of the unit is still in natural vegetation. The cleared areas are about equally distributed between pasture and cropland. A small percentage is used for urban development.

The soils of this unit have severe limitations for cultivated crops because of the periodic wetness and poor soil qualities. If crops are grown, some form of water control is needed. The soils are well suited to moderately well suited to pasture.

This unit is severely limited for most urban uses. The high water table and potential hazard of seepage are the major limiting factors. The major soils have moderate to slight limitations for dwellings without basements and local roads and streets.

9. Pelham-Mulat

Nearly level, poorly drained soils that are sandy to a depth of 20 to 40 inches and are loamy below

This map unit is in the broad, nearly smooth, wet flatwoods. This unit is in the north-central and northeastern parts of the county. One area, however, is along Hogtown Creek in the western part of Gainesville. This area is subject to occasional flooding. The individual areas are relatively small in size and are variable in shape. Total acreage is not extensive.

This map unit is made up of about 15,675 acres, or is about 2.7 percent of the county. It is about 53 percent Pelham soils, about 22 percent Mulat soils, and about 25 percent soils of minor extent.

The landscape is one of broad, nearly smooth flatwoods intermixed with small cypress ponds and scattered grassy depressions. Drainage is both subterranean and surface. Small, weakly defined drainageways connect some of the ponded areas and furnish partial drainage during periods of high rainfall. Other areas are isolated and have no outlet.

The natural vegetation is a woods of slash and longleaf pine or a mixed pine-hardwood growth. The hardwoods are mostly sweetgum and red maple. The understory consists chiefly of waxmyrtle, gallberries, briars, dwarf huckleberry, various bluestems, panicum, fetterbush, and pineland threeawn. The vegetation in the ponds and intermittent drainageways is cypress, bay, and gum.

Pelham soils are poorly drained. Typically, the surface layer is sand about 7 inches thick. The upper 4 inches is very dark gray, and the lower 3 inches is dark gray. The subsurface layer is sand about 22 inches thick. The upper 7 inches is light brownish gray with gray mottles, and the lower 15 inches is gray. The subsoil extends to a depth of 69 inches. The upper 3 inches is gray sandy loam, and lower 37 inches is gray, mottled sandy clay loam. Between depths of 69 and 80 inches, the underlying material is gray, mottled sandy loam.

Mulat soils are poorly drained. Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is very dark gray, and the lower 3 inches is dark gray. The subsurface layer is grayish brown to light gray sand to a depth of 26 inches. The subsoil extends to a depth of 54 inches. It is gray. The upper 4 inches is loamy sand, the next 17 inches is fine sandy loam, and the lower 7 inches is loamy sand. Between depths of 54 and 80 inches, the underlying material is light gray loamy sand.

Of minor extent in this unit are Monteocha, Plummer, Pomona, Riviera, Surrency, and Wauchula soils. The Plummer, Pomona, Riviera, and Wauchula soils are on the broad flats and along the narrow drainageways. The Monteocha and Surrency soils are in the wet depressional areas.

Most areas of this unit are still in woodland. Cleared areas are used mostly for pasture. A small acreage has been developed as cropland.

Without some form of water control, the soils of this unit are poorly suited to crops. If water is properly controlled, these soils are moderately well suited to such crops as corn, soybeans, and vegetables. If a water control system and good management practices are used, this unit is well suited to improved pasture.

This unit has severe limitations for urban uses. Wetness is the major limiting factor. If used for urban development, a good drainage system is needed to remove excess water during wet periods and adequately control the water table.

10. Pomona-Wauchula-Newnan

Nearly level, poorly drained and somewhat poorly drained soils that have a sandy, organic coated subsoil at a depth of less than 30 inches and a loamy subsoil between a depth of about 28 to 80 inches

This map unit is in the flatwoods. Several areas are throughout the eastern, south-central, and north-central parts of the county. This map unit comprises the largest acreage of any units associated with the flatwoods section. The individual areas vary in shape and size.

This map unit makes up about 135,755 acres, or about 23.8 percent of the county. It is about 45 percent Pomona soils, about 14 percent Wauchula soils, about 12 percent Newnan soils, and about 29 percent soils of minor extent.

The landscape is one of nearly level pine and palmetto flatwoods interspersed with cypress ponds, swamps, and small, grassy, wet depressions. Some of the depressional areas are connected by narrow, poorly defined drainageways.

The natural vegetation on the flatwoods is a woods of longleaf and slash pine. The understory consists chiefly of sawpalmetto, waxmyrtle, gallberry, running oak, pineland threeawn, dwarf huckleberry, bluestem, and lichens. The vegetation of the ponds, swamps, and drainageways is chiefly cypress, bay, and gum. The wet depressions are in water-tolerant grasses.

Pomona soils are normally poorly drained. Some are in very poorly drained depressional areas. Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand to a depth of 16 inches. The upper 4 inches is gray, and the lower 7 inches is light gray. The upper part of the subsoil is 4 inches of very dark gray sand and 4 inches of dark reddish brown sand. Many of the sand grains are coated with organic material. A leached layer is next. It is 8 inches of pale brown sand with mottles and 11 inches of very pale brown sand. Below this, the lower part of the subsoil is loamy to a depth of 69 inches. The upper 4 inches is light gray fine sandy loam, and the lower 22 inches is gray, mottled sandy clay loam. Between depths of 49 and 84 inches, the underlying material is light gray, mottled fine sandy loam.

Wauchula soils are poorly drained. Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is black, and the lower 3 inches is dark gray. The subsurface layer is light brownish gray sand about 6 inches thick. The upper part of the subsoil is 4 inches of dark reddish brown loamy sand, in which many sand grains are coated with organic material, and 5 inches of dark brown sand. Below this is a leached layer of pale brown, mottled sand about 5 inches thick. The lower part of the subsoil is loamy and extends to a depth of 62 inches. The upper 9 inches is gray, mottled fine sandy loam; the next 19 inches is light brownish gray, mottled loamy sand; and the lower 6 inches is light gray, mottled fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray, mottled sandy clay loam.

Newnan soils are somewhat poorly drained. Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is light brownish gray sand to a depth of 12 inches. The upper part of the subsoil is 4 inches of dark brown sand, in which the sand grains are well coated with organic material; the next 4 inches is dark brown and mottled. Below this is a leached layer of light gray to white sand to a depth of 56 inches. The lower part of the subsoil is loamy, light gray, and mottled. The upper 3 inches is loamy sand, the next 16 inches is fine sandy loam, and the lower 7 inches is sandy clay loam.

Of minor extent in this unit are the Lynne, Monteocha, Mulat, Myakka, Pelham, Samsula, Sparr, and Surrency soils. The Lynne soils are dominant in only one small area. This area is three-fourths of a mile east of the junction of the Alachua, Levy, and Marion County lines. Mulat, Myakka, and Pelham soils are on the broad flats and are intermixed with the major soils. Newnan and Sparr soils are on the slight knolls of the flatwoods. The Monteocha, Samsula, and Surrency soils are in the wet depressions, cypress ponds, and swamps.

Most of this unit is still in natural vegetation. Most cleared areas are in pasture. Some are used as cropland or for urban development.

This unit has severe limitations for cropland. Wetness and poor soil quality are the major limiting factors. If the soil and water are well managed, many of the locally grown crops are suited. Most soils in the unit are suited to pasture.

Limitations for most urban uses are severe. The major limiting factor is wetness or the seasonal high water table. This problem should be overcome before urban development is undertaken. In places, corrective measures may be impractical because of lack of drainage outlets and the cost of proper development.

Soils on wet prairies and in marshes, swamps, and flood plains

The four map units in this group consist of poorly drained and very poorly drained, nearly level, mineral and organic soils that are subject to flooding or ponding. These units are in the south-central and eastern parts of the county and are along the Santa Fe River, in the extreme northern part.

11. Monteocha-Surrency

Nearly level, very poorly drained soils; some are sandy to a depth of 40 to 80 inches, have an organic coated layer at a depth of 30 inches or less and are loamy below; and some are sandy to a depth of less than 40 inches and are loamy below

This map unit is in large swamps and cypress ponds in the flatwoods. The individual areas are small in size and are usually somewhat circular or elongated in shape. They are scattered throughout the eastern half of the county.

This map unit makes up about 27,130 acres, or about 4.8 percent of the county. It is about 40 percent Monteocha soils, about 25 percent Surrency soils, and about 35 percent soils of minor extent.

The landscape is one of large, slightly concave, wet cypress ponds and swamps. The ponds and swamps are throughout the broad expanse of the flatwoods. They generally are isolated and do not have good natural drainage. Only a few weakly defined, intermittent drainageways are in these areas. These depressional areas are usually covered by water for about 6 months or longer in most years.

The natural vegetation is chiefly cypress. Some swamp tupelo, pond pine, bay, and other water-tolerant hardwoods are in some areas. A few areas have vegetation of water-tolerant grasses. The nearly smooth, adjacent flatwoods are usually mixed pine-hardwoods and a dense understory of gallberry, fetterbush, waxmyrtle, palmetto, and wetland herbs and grasses.

Monteocha soils are very poorly drained. Typically, the surface layer is black loamy sand about 12 inches thick. The subsurface layer is light brownish gray sand to a depth of 18 inches. The upper part of the subsoil is dark brown and brown sand to a depth of 34 inches. Below this is a leached layer of brown sand to a depth of 48 inches. The lower part of the subsoil is fine sandy loam to a depth of 85 inches. The upper 11 inches is grayish brown, and the lower 26 inches is light brownish gray. Between 85 and 94 inches the underlying material is light gray sand.

Surrency soils are very poorly drained. Typically, the surface layer is black sand about 15 inches thick. The subsurface layer is light gray sand to a depth of 28 inches. Between 28 and 80 inches, the subsoil is sandy clay loam. The upper 27 inches is gray, and the lower 25 inches is light gray.

Of minor extent in this unit are Floridana, Mulat, Pelham, Placid, Plummer, Pomona, Samsula, Wauberg, and Wauchula soils. The Mulat, Pelham, Plummer, Pomona, Wauberg, and Wauchula soils are on the flats that surround the wet depressional areas. Small areas of Floridana and Placid soils are within the swamps and are intermixed with the Monteocha soils. Samsula soils are in the center part of some larger swamps. The Monteocha and Surrency soils are along the outer edges of the larger swamps.

All of this unit is woodland. The major soils are not suited to crops, pasture, or urban uses, unless they are properly drained and have a continuing water control system. In many areas drainage is impractical because of lack of adequate outlets and the cost of development. The best use is as habitat for wetland wildlife.

12. Ledwith-Wauberg

Nearly level, very poorly drained and poorly drained soils; some have thin organic and loamy layers less than 20 inches thick and are clayey below, and some are sandy to a depth of 20 to 40 inches and are loamy below

This map unit is on wet prairies of uplands in the south-central part of the county. One area of this unit is Paynes Prairie, south of Gainesville.

This map unit makes up about 12,685 acres, or about 2.2 percent of the county. It is about 40 percent Ledwith soils, about 35 percent Wauberg soils, and about 25 percent soils of minor extent.

The landscape is one of old lake basins in the rolling uplands. These basins formed as a result of the solution, or dissolving, of the Ocala limestone into the ground water. In recent history, they have been alternately lakes or prairies, depending upon the amount of rainfall, the degree that underground drainage for sinkholes is stopped, and the elevation of the ground water that receives drainage through the sinkholes.

Natural vegetation is a mixture of wetland grasses, herbs, and shrubs, which include bulrush, goldenrod, maidencane, cordgrass, cattails, waxmyrtle, carpetgrass, panicum, and buttonbush. The amount of wetness governs the plant species. Several different groupings of plants can be found as one moves from the drier prairie edge to the wetter central areas.

Ledwith soils are very poorly drained. Typically, the surface layer is about 15 inches thick. The upper 9 inches is dark brown muck, and the lower 6 inches is black sandy loam. The subsurface layer is gray loamy sand about 2 inches thick. The subsoil is sandy clay to a depth of 62 inches. The upper part of the subsoil is very dark gray, the middle part is dark gray, and the lower part is gray. Between depths of 62 and 93 inches, the underlying material is gray sandy clay.

Wauberg soils are poorly drained. Typically, the surface layer is sand about 9 inches thick. The upper 5 inches is black, and the lower 4 inches is very dark gray. The subsurface layer is about 15 inches thick. The upper 10 inches of this layer is grayish brown sand, and the lower 5 inches is light brownish gray sand. The subsoil is sandy clay loam to a depth of 63 inches. The upper 26 inches is dark gray, and the lower 13 inches is gray. Between depths of 63 and 81 inches, the underlying material is gray, mottled clay.

Of minor extent in this unit are the Emeralda, Floridana, Shenks, Surrency, and Terra Ceia soils. The Emeralda soils are poorly drained. They are more closely associated with the Wauberg soils in the drier parts of the prairie. The Floridana, Shenks, Surrency, and Terra Ceia soils are very poorly drained. They are in the wetter parts where water normally is on the surface for much of the year. Emeralda is the most extensive of the minor soils.

The areas of this unit are still in native vegetation. Most of the unit is used as a wildlife refuge. Some parts are used as rangeland.

The areas are not suited to crops because of the excessive wetness. The cost of adequately draining the areas would be extensive because of the lack of good drainage outlets, the network of lateral ditches required to drain the slowly permeable soils, and the extent of major canals needed to reach adequate outlets. Where underdrained, most soils of the unit are not suited to pasture. The very poorly drained soils require an extensive water control system. The poorly drained soils are capable of producing good pasture if a simple drainage system removes excess water during periods of high rainfall.

This unit has severe limitations for urban uses. The wetness, slow internal drainage, ponding, and high shrink-swell potential of the clayey subsoil are some of the major limiting factors.

13. Shenks-Terra Ceia-Okeechobee

Nearly level, very poorly drained soils of organic origin; some have organic material 16 to 50 inches deep to clayey material, and some have organic material more than 51 inches thick

This map unit is in marshes, low wet flats, and prairies. Areas of the map unit are in the south-central and southeastern parts of the county. Most areas are relatively small and somewhat circular or elongated. The two largest areas are Levy Lake and an area south of the town of Island Grove, along the Marion County line.

This map unit makes up about 15,820 acres, or about 2.8 percent of the county. It is about 35 percent Shenks soils, 24 percent Terra Ceia soils, 10 percent Okeechobee soils, and 31 percent soils of minor extent.

The landscape is one of large, wet prairies, or old lake basins, in rolling uplands and of low-lying marshes in the nearly level pine-palmetto flatwoods. Drainage in the wet prairies of the south-central part of the county is subterranean. Drainage of the marshes and low flats in the southeastern part of the county is both subterranean and by weakly defined drainageways.

The natural vegetation is a mixture of wetland grasses, herbs, and shrubs, which include maidencane, cattail, cordgrass, bulrush, buttonbush, elderberry, water hyacinth, arrowhead, pennywort, and dollarwort.

Shenks soils are very poorly drained. Typically, the surface tier is muck about 21 inches thick. The upper 18 inches is dark brown, and the lower 3 inches is black. The underlying material extends to a depth of 82 inches or more. The upper 7 inches is black clay loam, the next 23 inches is gray clay, the next 10 inches is dark gray clay, and the lower 21 inches is gray mottled clay.

Terra Ceia soils are very poorly drained. Typically, the surface tier is muck about 68 inches thick. The upper 12 inches is black, and the lower 56 inches is dark reddish brown. The underlying material is very dark gray clay to a depth of 75 inches or more.

Okeechobee soils are very poorly drained. Typically, the organic material extends to a depth of 80 inches. The upper 7 inches is black muck; the next 14 inches is dark brown muck; the next 14 inches is dark reddish brown peaty muck; the next 13 inches is black muck; and the lower 32 inches is very dark brown muck.

Of minor extent in this unit are Ledwith, Martel, Samsula, and Surrency soils. All of these soils are very poorly drained and are intermixed with the major soils. Ledwith, Martel, and Surrency soils are mineral soils, and Samsula soils are organic.

Most of this unit is still in native vegetation. About 700 acres of the area southeast of Island Grove has been drained and is used for crops. Part of Levy Lake has been drained and is used for grazing.

The soils are not suited to crops unless they are adequately drained and a good water control system is developed and maintained. This requires an extensive system of dikes and canals. Some areas do not have adequate drainage outlets. Without drainage and water control, the soils are not suited to improved pasture.

The soils in this unit have severe limitations for urban uses. Water stands on the surface during much of the time unless the soils are drained. A good drainage system is very expensive to establish and maintain. Some areas cannot be adequately drained because of lack of good outlets. Even if drained, the organic material is subject to oxidation and the soils gradually subside, or settle.

14. Oleno-Pompano

Nearly level, poorly drained soils subject to occasional flooding; some have clayey fluvial material about 26 to 47 inches deep to sandy, loamy, and clayey material, and some are sandy throughout

This map unit consists of long, narrow flood plains along the Santa Fe River, in the northern part of the county. The areas extend from the river just north of the town of High Springs to about the Bradford County line. Total acreage is not extensive.

The landscape is one of nearly smooth to slightly undulating flood plains. The areas are interspersed with small depressions, sinks, water-holes, slight knolls, and weakly defined drainageways. Extreme variations in the water level of the river affect the water table of the soils.

The natural vegetation is chiefly black tupelo, cypress, elm, red maple, holly, sweetgum, sweetbay magnolia, water oak, and scattered pine. The understory includes poison ivy, longleaf uniola, greenbrier, dollarweed, smilax, panicum, and a few palmetto.

This map unit makes up about 2,730 acres, or about 0.5 percent of the county. It is about 60 percent Oleno soils, 10 percent Pompano soils, and 30 percent soils of minor extent.

Oleno soils are poorly drained. Typically, the surface layer is dark gray clay about 6 inches thick. The subsoil is about 26 inches thick. It is dark gray or gray clay. The underlying material extends to 82 inches or more. The upper 10 inches is grayish brown fine sandy loam, the next 13 inches is gray fine sandy loam, the next 16 inches is dark gray fine sandy loam, the next 6 inches is gray sandy clay loam, and the lower 5 inches is greenish gray clay.

Pompano soils are poorly drained. Typically, the surface layer is very dark gray sand about 5 inches thick. The underlying layer is sand to a depth of more than 82 inches. The upper 20 inches is light brownish gray and has pale brown mottles, the next 45 inches is gray and mottled, and the lower 12 inches is gray and has no mottles.

Of minor extent in this unit are Chipley, Floridana, Jonesville, Millhopper, Newnan, Plummer, Pomona, and Tavares soils. These soils are not normally on the flood plains. A few small areas, however, are within the narrow flood plain of the Santa Fe River and are subject to occasional flooding.

All of this unit is still in natural vegetation.

This unit is not suitable for cultivation because of the hazard of flooding; the high water table, and the clayey surface layer. Where flooding is controlled and drainage is installed, the unit is suitable for improved pasture.

Limitations for urban uses are severe. The hazard of flooding, the high water table, the slow internal drainage, the sticky clayey surface layer, and the high shrink-swell potential are some of the restrictive features of the major soils.

Detailed Soil Map Units

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Blichton sand, 0 to 2 percent slopes, is one of several phases in the Blichton series.

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Jonesville-Cadillac-Bonneau complex, 0 to 5 percent slopes, is an example.

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

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits and Dumps is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Soil Descriptions

2B—Candler fine sand, 0 to 5 percent slopes. This nearly level to gently sloping, excessively drained soil is in the deep, sandy uplands. Slopes are nearly smooth to convex. The areas are mostly irregular in shape and range from about 15 to 300 acres.

Typically, the surface layer is very dark grayish brown fine sand about 6 inches thick. The underlying layers are fine sand to a depth of 82 inches or more. The upper 10 inches is pale brown, the next 12 inches is light yellowish brown, the next 29 inches is yellow, the next 13 inches is very pale brown, and the lower 12 inches is very pale brown and has thin bands of brownish yellow loamy sand lamellae.

Included with this soil in mapping are small areas of Apopka, Arredondo, Chipley, and Tavares soils. Also included are small areas of excessively drained soils that have a sandy texture to 80 inches or more. These excessively drained soils do not have thin bands of lamellae. A few areas of Candler soils that have slopes of 5 to 8 percent are included. Total included areas are about 15 percent or less.

This Candler soil has low available water capacity. Permeability is rapid. Natural fertility of the soil is low. Organic matter content of the surface layer is low to very low. Surface runoff is very slow. The water table is at a depth of more than 72 inches.

Natural vegetation is mostly turkey, bluejack, post, and scrub live oak and longleaf pine. The understory is chiefly a sparse growth of pineland threeawn, indiangrass, chalky bluestem, and panicum. Most areas are still in native vegetation. Most cleared areas are in pasture.

This soil has very severe limitations for cultivated crops. It cannot retain sufficient moisture during drier periods because of its coarse texture. Plant nutrients applied to the soil leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are grown on this soil but require intensive management practices. These practices include a close-growing, soil-improving cover crop, crop rotation, the return of all crop residue to the soil, and proper fertilization. Irrigation is needed during droughty periods. In years that have extended dry periods during the growing season, yields are very low unless the crops are irrigated. Wind erosion is a serious problem where the surface is not protected by a good vegetative cover or windbreaks.

The soil is moderately suited to improved pasture. It is well suited to deep rooting grasses, such as bahiagrass and bermudagrass, but yields are usually reduced by periodic droughts. To maintain good pasture for grazing, careful management is required. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Irrigation helps improve the quality of the pasture and hay. It may be economically justifiable during long dry periods. This soil is not suited to shallow rooting pasture plants because it cannot retain sufficient moisture in the root zone.

This soil has moderate potential productivity for pine trees. Scattered stands of longleaf pine are in most undisturbed areas; however, slash or sand pine are the best species to plant. The loose, sandy surface layer causes moderate restrictions for normal equipment use during harvesting. The mortality of young pine seedlings is moderate. It is caused principally by the droughty conditions of the surface and underlying layers. Plant competition is also moderate.

This soil has slight limitations for dwellings, small commercial buildings, local roads and streets, and septic tank absorption fields. Because the soil has poor filtration, ground water contamination is a hazard in areas where homes with septic tanks are concentrated. The soil is severely limited for sewage lagoons and trench landfills because of seepage of the liquid waste material through the sidewalls and floor of the pits. The sidewalls cave when the pits are dug. If the soil has to be used for these purposes, the floor and the sidewalls should be lined and sealed. Trafficability is a problem around landfills. Wind erosion of the loose sandy surface is a potential hazard where sites are cleared of vegetation for building construction.

Potential of these areas for openland and woodland wildlife is poor. Potential of the soil as wetland wildlife sites is very poor. These areas do not have the water or suitable sources of food for this type of wildlife.

This Candler soil has severe limitations for recreational uses. Wind erosion of the loose sandy surface and maintaining good trafficability are severe limitations. The establishment and maintenance of a good vegetative cover or windbreaks and the addition of suitable topsoil or some form of hard surface can alleviate or overcome these problems.

This Candler soil is in capability subclass IVs and has a woodland ordination symbol of 4s.

2C—Candler fine sand, 5 to 8 percent slopes. This sloping, excessively drained soil is in small areas on sharp breaking slopes and in relatively large areas on long, narrow slopes. The deep, sandy soil is on uplands. The areas vary from about 10 to 125 acres.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The underlying layers are fine sand to a depth of 85 inches or more. The upper 57 inches is yellow, and the lower 23 inches is pale brown. The lower part has thin lamellae of yellowish brown loamy sand and some thin streaks of clean sand grains that are light gray in color.

Included with this soil in mapping are small areas of Apopka and Tavares soils. Also included are small areas of an excessively drained soil which has sandy texture to a depth of more than 80 inches and does not have thin lamellae streaks or bands. A few small spots of Candler soils which have slopes of 0 to 5 or 8 to 12 percent are included. Total included areas are about 12 percent or less.

In this Candler soil, the available water capacity is low. Permeability is rapid. Natural fertility is low, and organic matter content is usually very low. Surface runoff is slow. The water table is more than 72 inches below the surface.

Native vegetation is mostly turkey, bluejack, and post oak and scattered longleaf pine. The understory is a sparse growth of pineland threeawn, indiangrass, bluestems, and some panicums. Most areas are still in native vegetation. The cleared areas are mostly used for improved pasture.

This soil is not suitable for cultivated crops because of the poor soil quality, the steepness of slope, the possible hazard of erosion, and droughtiness. The coarse texture cannot retain sufficient moisture or applied plant nutrients for normal plant growth. Some special crops, such as watermelons, are sometimes grown, but a very high level of management is needed. Irrigation is required during dry periods. The slopes cause a problem in the application of irrigation water.

This soil is moderately suited to improved pasture. Deep rooting pasture plants, such as bahiagrass and bermudagrass, grow fairly well with high level management. Practices include good fertilization, liming, and controlled grazing that allows plants to grow to their fullest. Supplemental irrigation is beneficial during dry periods.

Potential productivity of pine trees is moderate. The low to very low organic matter content, the low natural fertility, and the droughty conditions of the soil cause a moderate mortality of young pine seedlings. Plant competition is moderate. The loose sandy texture and slopes are moderate limitations for normal woodland equipment use.

This soil has slight limitations as sites for dwellings, for local roads and streets, and for septic tank absorption fields. Ground water contamination is a hazard in areas where homes or other facilities that use septic tanks are concentrated. Limitations are severe for sewage lagoons and trench landfills. Contamination of ground water by seepage is possible. To prevent this, the sidewalls and floor of the pits should be lined and sealed. The sandy sidewalls of the pits cave, and trafficability is a problem around the landfill. The surface of unprotected construction sites is subject to wind erosion.

This soil has poor potential for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because of the absence of any water areas.

This soil has severe limitations for recreational uses. Wind erosion and maintaining good trafficability are severe limitations. The establishment and maintenance of a good vegetative cover and windbreaks and the addition of suitable topsoil or some form of hard surface can improve or overcome these problems.

This Candler soil is in capability subclass VIs and has a woodland ordination symbol of 4s.

3B—Arredondo fine sand, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil is in both small and large areas of uplands. Slopes are smooth to convex. The areas are irregular in shape and range from about 10 to 160 acres in size.

Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches or more. The upper 5 inches is yellowish brown loamy sand; the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay and sandy clay loam.

Included with this soil in mapping are small depressional areas of soils that have a very dark gray or black surface layer 8 to 24 inches thick. This layer overlies gray sandy material. These areas are shown by wet spot symbols. Also included are small areas of Fort Meade, Gainesville, Kendrick, and Millhopper soils. A few areas of this soil include Arredondo soils that have 5 to 8 percent slopes. Some areas of this soil in the western part of the county have small spots of strongly acid to medium acid soil material 40 to 70 inches deep to calcareous limestone. Limestone boulders, fragments of limestone, and sinkholes are in some areas of this soil, mainly in the limestone plain sections of the western part of the county. Most of these boulders are siliceous. The sinkholes and the boulders are shown by appropriate map symbols. Total included areas are about 15 percent.

In this Arredondo soil, the available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow to moderate in the loamy subsoil. Natural fertility is low in the sandy surface and subsurface layers and medium in the finer textured subsoil. Organic matter content is low. The water table in this soil is at a depth of more than 72 inches. Surface runoff is slow.

Natural vegetation of this soil is slash, loblolly, and longleaf pine; live, laurel, and water oaks; hickory; and dogwood. The understory is made up chiefly of several varieties of panicum, bluestem, lopsided indiangrass, and fringeleaf paspalum.

This soil has severe limitations for most cultivated crops. Droughtiness and rapid leaching of plant nutrients are the main limitations. It is moderately well suited to the production of such crops as corn, tobacco, peanuts, soybeans, watermelons, squash, cucumbers, and tomatoes (fig. 7). Good yields can be attained with high level management practices, which include regular applications of fertilizer and lime. Irrigation is needed during droughty periods because of the low available water capacity of the thick, sandy surface and subsurface layers (fig. 8). Wind erosion is active, especially during dry periods, and the surface needs protection at all times. Good management includes using close growing, soil improving crops in rotation with row crops and leaving all crop residue on the surface.

This soil is well suited to improved pasture of deep rooting grasses and legumes if good management practices are used. To maintain a good vegetative cover and reach maximum productivity, careful management is required. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Yields are occasionally restricted by extended droughts. This soil is not suited to improved pasture of shallow rooted legumes and grasses because of lack of sufficient water in the root zone.

This soil has moderately high potential productivity for pine trees. Slash, longleaf, and loblolly pines are the best adapted species. Plant competition is moderate. The sandy surface and subsurface layers cause moderate restrictions for use of equipment during drier periods.

This soil has only slight limitations as sites for homes, small commercial buildings, absorption fields for septic tanks, and local roads and streets and as a source of material for roadfill. Limitations are severe for sewage lagoons because of possible contamination of ground water by seepage. The sidewalls should be lined and sealed. The sandy surface and subsurface layers may cave when the sidewalls are dug.

This soil has fair potential for openland and woodland wildlife; however, potential for wetland wildlife is very poor.

This Arredondo soil has severe limitations for recreational areas because of the sandy surface layer. Trafficability is a problem, and wind erosion is a hazard during drier periods. The maintenance of a good vegetative cover, windbreaks, or some other form of surface protection is needed.

This Arredondo soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

3C—Arredondo fine sand, 5 to 8 percent slopes. This sloping, well drained soil is in small areas on sharp breaking slopes and in relatively large areas on long slopes of the uplands. The areas vary from about 5 to 40 acres.

Typically, the surface layer is dark grayish brown fine sand about 5 inches thick. The subsurface layer is yellowish brown fine sand to a depth of 65 inches. The yellowish brown subsoil extends to a depth of 88 inches or more. The upper 6 inches is sandy loam, and the lower 17 inches is sandy clay loam.

Included with this soil in mapping are small areas of Gainesville, Kendrick, and Millhopper soils. In a few mapped areas are small depressions where the soils have a black surface layer 8 to 24 inches thick over a yellowish brown to grayish brown sandy or loamy subsurface layer and subsoil. A few areas include Arredondo soils that have slopes of 0 to 5 percent or 8 to 12 percent. Siliceous limestone boulders and sinkholes are in some places and are shown by the appropriate map symbol. Total included areas are about 20 percent.

In this Arredondo soil, the available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the sandy surface and subsurface layers and moderately slow in the loamy subsoil. Natural fertility is low in the sandy upper 65 inches and medium in the finer textured layers below. Organic matter content is low. The water table is more than 72 inches below the surface. Surface runoff is slow.

Natural vegetation of this soil includes slash and longleaf pine; live and water oaks; and hickory and

Figure 7.—Tobacco grown under high level management, including irrigation, on Arredondo fine sand, 0 to 5 percent slopes.

Figure 8.—Tobacco grown under high level management, but without irrigation, on Arredondo fine sand, 0 to 5 percent slopes. Irrigation is necessary for this high value crop.

dogwood. The understory is shrubs and native grasses. Lopsided indiangrass, creeping bluestem, and several varieties of panicum are some of the most common of the native grasses.

This soil has very severe limitations for cultivated crops because of the poor soil qualities and slope. It is susceptible to wind erosion and to some water erosion. The surface should be protected by a good vegetative cover. Good management measures, needed to improve the soil quality and reach maximum production potential, include crop rotations that keep the soil under close growing, soil improving crops at least three-fourths of the time. Crop residue should be left on the surface, crops should be fertilized and limed, and irrigation is needed for high value crops during droughty periods.

The soil is moderately well suited to growing improved pasture of deep rooting grasses adapted to the area. Good management is necessary, however, for good quality pasture. This includes proper establishment of plants, fertilization, and controlled grazing. Yields are occasionally restricted by extended dry periods. The soil is not suited to shallow rooting pasture grasses and legumes.

This soil has moderately high potential productivity for slash and longleaf pines. Plant competition is moderate because of the low natural fertility and available water capacity of the sandy surface and subsurface layers. The sandy surface layers and the slope cause moderate restrictions for use of equipment, especially during dry seasons.

This Arredondo soil has slight limitations for homes, septic tank absorption fields, and for local roads and streets. Limitations as sites for small commercial buildings are moderate. The soil has severe limitations for use as sewage lagoons and trench landfills because of the possible contamination by seepage through the sandy subsurface layer. Trench sanitary landfills are also severely limited by slope.

This soil has fair potential for openland and woodland wildlife; however, it has poor potential for wetland wildlife.

The soil has severe limitations for recreational uses. The sandy surface is a problem for trafficability. During dry periods, wind erosion is a hazard. The maintenance of a good vegetative cover, windbreaks, or some other form of surface protection is needed. If the soil is to be used for playground areas, it needs land shaping.

This Arredondo soil is in capability subclass IVw and has a woodland ordination symbol of 3s.

4B—Arredondo-Urban land complex, 0 to 5 percent slopes. This complex consists of well drained, nearly level to gently sloping Arredondo soils and Urban land. The areas are irregular in shape and range from about 25 to 150 acres. This complex is within urbanized areas of the county.

About 50 to 85 percent of each delineation is open areas of Arredondo soils. These open areas are gardens, vacant lots, lawns, or playgrounds. The areas are so small or so intermingled with areas of Urban land that it is impractical to map them separately. About 15 to 25 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil material during urban-related construction and development.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with buildings, streets, parking lots, sidewalks, and other structures. The Urban land of this map unit is generally developed on Arredondo sand or fine sand.

Typically, the surface layer of Arredondo soils is dark grayish brown fine sand about 6 inches thick. The subsurface layer is brownish yellow to yellowish brown fine sand to a depth of 47 inches. Between depths of 47 and 86 inches, the subsoil is yellowish brown. The upper 5 inches is loamy sand, and the lower 32 inches is sandy clay loam.

Included in mapping with this complex are minor areas of other soils closely associated with the Arredondo soils, such as Candler, Gainesville, and Kendrick soils. Small areas of Arredondo soils that have 5 to 8 percent slopes are in some areas.

The available water capacity of Arredondo soils is low in the surface and subsurface layers and low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers and is moderately slow to moderate in the loamy subsoil. Organic matter content and natural fertility are low. The water table is more than 72 inches below the surface.

Natural vegetation is slash, loblolly, and longleaf pine; live, laurel, and water oak, and hickory and dogwood. The understory consists of a cover of adapted, low growing herbs and shrubs.

The soils in this complex are generally well suited to lawn grasses and ornamental plants. They are also suited to most recreational uses.

For the foreseeable future, the use of this complex is urban-related.

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

5B—Fort Meade fine sand, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil is in both small and large areas on the gently rolling uplands. The areas are mostly irregular in shape and range from about 10 to 400 acres.

Typically, the surface layer is fine sand about 14 inches thick. The upper 10 inches is very dark brown, and the lower 4 inches is very dark grayish brown. The underlying layer is fine sand to a depth of 80 inches or more. In sequence from the top, the upper 20 inches is dark brown; the next 9 inches is dark yellowish brown; the next 28 inches is yellowish brown; and the lower 14 inches is dark brown.

Included with this soil in mapping are small areas of Arredondo, Gainesville, Kendrick, and Millhopper soils. Also included are small areas of soils which are similar to the Fort Meade soil but which have only 6 to 10 inches of a very dark gray or very dark grayish brown surface layer over a fine sand or loamy sand underlying layer. Total included areas are less than 15 percent.

In this Fort Meade soil, the available water capacity is low to medium. The permeability is rapid. The natural fertility is low. Organic matter content of the surface layer is moderately low to high. Surface runoff is slow. The water table is more than 72 inches below the surface.

Natural vegetation of this soil consists of live, water, and laurel oaks; slash, loblolly, and longleaf pine; and hickory, dogwood, holly, and magnolia. The understory is made up chiefly of several varieties of panicum, bluestem, lopsided indiangrass, paspalum, and sedges. Most areas of this soil have been cleared and are in crops or improved pasture.

Droughtiness and rapid leaching of plant nutrients place severe limitations on the use of this soil for cultivated crops. If high level management practices are used, the soil is well suited to growing such crops as corn, tobacco, peanuts, watermelons, squash, cucumbers, and tomatoes. It is moderately well suited to soybeans. High level management includes the use of close growing, soil improving cover crops, the return of crop residue to the soil, and proper fertilization and liming. Irrigation is needed during droughty periods. Wind erosion is active on this soil, especially during dry periods. The surface needs protection at all times.

This soil is well suited to improved pasture of deep rooting grasses and legumes if good management is used. To maintain a good vegetative cover and reach maximum potential of productivity, careful management is required. This includes proper establishment of plants, fertilization, liming, and controlled grazing. The soil is not suited to improved pasture of shallow rooting legumes and grasses because of the lack of sufficient water.

This soil has moderately high potential productivity for woodland. Slash, longleaf, and loblolly pines are adapted. Plant competition is moderate. Problems in equipment use and seedling mortality are slight.

This soil has slight limitations for use as sites for dwellings, for local roads and streets, and for septic tank absorption fields. In areas where homes or other facilities that use septic tanks are concentrated, ground water contamination is a hazard. This soil is severely limited as a site for sewage lagoons because contamination of ground water by seepage is possible. To prevent this, the sidewalls and floor of the pits should be lined and sealed. The sandy surface is a problem for trafficability when the soil is used for trench landfills.

This soil has fair potential for openland and woodland wildlife; however, potential for wetland wildlife is very poor.

This Fort Meade soil has moderate limitations for use as recreational areas. The sandy surface causes a problem in trafficability. Wind blowing is a hazard in areas where the surface is unprotected. The maintenance of a good vegetative cover, windbreaks, or some other form of surface stabilization and protection is needed.

This Fort Meade soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

6B—Apopka sand, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil is in relatively small areas of the deep, sandy uplands. Slopes are nearly smooth or slightly convex. The areas are irregular in shape and range from about 15 to 60 acres.

Typically, the surface layer is dark grayish brown sand about 5 inches thick. The subsurface layer is sand to a depth of 61 inches. The upper 16 inches is brown, the next 31 inches is light yellowish brown, and the lower 9 inches is very pale brown. Between depths of 61 and 82 inches, the subsoil is yellowish brown sandy clay loam.

Included with this soil in mapping are small areas of Arredondo, Candler, Jonesville, and Tavares soils. A few areas of Apopka soils that have slopes of 5 to 8 percent are also included. Total included areas are about 15 percent.

In this Apopka soil, the available water capacity is very low to a depth of about 61 inches and is medium below. Permeability is rapid in the sandy surface and subsurface layers and moderate in the loamy subsoil. Natural fertility of the soil is low. The organic matter content of the surface layer is usually low. The water table is more than 72 inches below the surface. Surface runoff is slow.

Natural vegetation is turkey, bluejack, post, and sand live oak and longleaf pine. The understory is mostly pineland threeawn, indiangrass, some bluestem, panicum, and brackenfern. Some areas are cleared and are in pasture. Most of the acreage is still in natural vegetation.

This soil is severely limited for most cultivated crops because of the droughtiness and low fertility. If high level management is used, corn and peanuts have moderate yields. The soil produces good yields of watermelons. Irrigation is needed during droughty periods. Good management includes soil improving cover crops planted in rotation, leaving all crop residue on the surface, and regular applications of fertilizers and lime.

This soil is moderately well suited to improved pasture of deep rooting grasses and legumes, if good management is used. Production is restricted by periodic droughts. If grazing is controlled, plants remain vigorous. The soil is not suited to shallow rooting legumes and grasses because of the lack of sufficient water.

Potential productivity for pine trees is moderately high. Although under natural conditions longleaf pine is normally the dominant species growing on this soil, slash pine is the recommended species for planting. The loose, sandy surface layer causes moderate restrictions in normal equipment use during harvesting. Seedling mortality is moderate because of the droughty conditions of the soil.

This soil has only slight limitations as sites for dwellings, small commercial buildings, absorption fields for septic tanks, and for local roads and streets. Limitations as sites for trench sanitary landfills and sewage lagoons are severe because of possible contamination of ground water by seepage through the thick, sandy subsurface layer.

This soil has fair potential as habitat for openland wildlife and poor potential for woodland wildlife. Potential as habitat for wetland wildlife is very poor because the areas do not have the needed water. The soil does not produce a good supply of food for most types of wildlife.

This Apopka soil has severe limitations for recreational uses. Wind blowing and maintaining good trafficability are severe problems. The establishment and maintenance of a good vegetative cover, windbreaks, and the addition of suitable topsoil or some form of hard surface can help overcome these problems.

This Apopka soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

6C—Apopka sand, 5 to 8 percent slopes. This sloping, well drained soil is mostly in small areas on relatively sharp breaking slopes in the sandy uplands. The areas vary from about 10 to 45 acres.

Typically, the surface layer is grayish brown sand about 5 inches thick. The subsurface layer is brown to light yellowish brown sand about 56 inches thick. Between depths of 61 and 82 inches, the subsoil is yellowish brown sandy clay loam.

Included with this soil in mapping are small areas of Candler soils. A few small spots of Apopka soils that have 0 to 5 percent slopes are also included. Total included areas are about 15 percent or less.

The Apopka soil has very low available water capacity in the sandy surface and subsurface layers, and medium available water capacity in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and moderate in the loamy subsoil. Natural fertility and organic matter content are low. The water table is more than 72 inches below the surface. Surface runoff is slow.

Natural vegetation is chiefly a mixture of post, turkey, and bluejack oak and scattered longleaf pine. The understory consists mostly of a sparse growth of bluestem, panicum, brackenfern, and pineland threeawn. Most areas of this soil are still in natural vegetation.

This soil has very severe limitations for general farm crops because of the low fertility, droughtiness, and steepness of slope. Applied plant nutrients leach rapidly through the sandy layers of the soil. Some crops, such as corn, peanuts, and watermelons, can be grown, but a high level of management, including irrigation, is needed. The loose sandy surface is susceptible to wind erosion. It can be protected by a good vegetative cover and windbreaks; by crop rotations that keep the soil under close growing, soil improving cover crops at least three-fourths of the time; and by leaving crop residue on the surface.

The soil is moderately well suited to improved pasture. Fair yields can be produced from deep rooting plants, such as bahiagrass and bermudagrass, with good management practices. Good management includes fertilization, liming, and a rotation grazing program. Supplemental irrigation is beneficial during dry periods. The soil is not suited to shallow rooting pasture plants.

Potential productivity of this soil for pine trees is moderately high. Slash pine is the recommended species to use in reforestation. The low natural fertility and organic matter content and droughtiness cause a moderate mortality of young pine seedlings. The loose sandy texture and slope are moderate limitations in use of equipment.

This Apopka soil has slight limitations as sites for dwellings, septic tank absorption fields, and local roads and streets. Limitation for small commercial buildings is moderate because of the slope. Limitation as sites for sewage lagoons is severe because of potential contamination of ground water by seepage through the thick sandy layers. If the soil is to be used for sewage lagoons, the walls of the pits need to be lined and sealed. If it is used for landfill areas, the loose sandy surface layer is a limitation for vehicular use. The sidewalls cave when trenches and pits are dug in the coarse textured material.

This soil has fair potential as habitat for openland wildlife. Potential is poor as habitat for woodland wildlife and very poor for wetland wildlife. The areas do not have the water needed for wetland wildlife.

The loose, sandy surface layer of this soil presents severe limitations for most recreational uses. Wind erosion, poor trafficability because of the loose sandy surface, and slope are limitations. Windbreaks, establishing and maintaining a good vegetative cover, and the addition of suitable topsoil or some other form of surface protection are needed.

This Apopka soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

7B—Kanapaha sand, 0 to 5 percent slopes. This nearly level to gently sloping, poorly drained soil is in small to relatively large areas on uplands. Slopes are nearly smooth to slightly convex. The areas are irregular in shape and range from about 10 to 200 acres.

Typically, the surface layer is dark gray sand about 8 inches thick. The subsurface layer is sand about 36 inches thick. The upper 5 inches is light brownish gray, and the lower 31 inches is light gray. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 6 inches is light brownish gray, and the lower 30 inches is gray.

Included with this soil in mapping are small areas of Blichton, Bivans, Lochloosa, and Wacahoota soils. Also included are small areas of soils which are similar to the Kanapaha soils except that the weighted average is more than 35 percent clay in the upper 20 inches of the subsoil. Small areas of Kanapaha soils which have 5 to 8 percent slopes are included. Also included are about 20 acres along the Santa Fe River that are occasionally flooded. Total included areas are about 20 percent or less.

This Kanapaha soil has a water table that is less than 10 inches below the surface for 1 to 3 months during most years. Surface runoff is slow. The available water capacity is very low to low in the sandy surface and subsurface layers, and it is low to medium in the subsoil. Permeability is moderately rapid in the surface and subsurface layers and is slow to moderately slow in the subsoil. Natural fertility is low to medium. Organic matter content of the surface layer ranges from moderately low to moderate.

The natural vegetation is chiefly slash and loblolly pine; water, live, and laurel oak, sweetgum, and holly. The understory is mostly waxmyrtle, low paspalum, pineland threeawn, longleaf uniola, hairy panicum, fringeleaf paspalum, huckleberry, and some bluestem.

The soil has severe limitations for cultivated crops because of the wetness and poor soil qualities. The number of adapted crops are somewhat limited. If good management practices are used, including water control and soil improving measures, the soil is moderately well suited to a number of special crops, such as snap beans, squash, cucumbers, cabbage, eggplant, and peppers and for such general farm crops as corn and soybeans. Good management includes rotating row crops with the close growing, soil improving crops;

maintaining cover crops on the soil at least half of the time; and leaving all crop residue on the soil. The soil requires good seedbed preparation and proper application of fertilizer and lime.

This soil is well suited to pasture. Improved bermudagrass and bahiagrass grow well if good management practices are used. Shallow rooted pasture plants, such as white clover, can be grown but need irrigating during dry periods. Water control measures are needed to remove excess surface water after long rainy periods. Proper fertilization and liming and controlled grazing are necessary to maintain vigorous plant growth.

This soil has moderately high potential for commercial woodland production. The soil has moderate limitations for normal woodland equipment operations during harvesting. Plant competition is moderate. The mortality of young pine seedlings is slight.

This Kanapaha soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and local roads and streets. Wetness and the sandy texture are the major problems. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If used as sites for sewage lagoons, a potential hazard is contamination of ground water by seepage of liquid waste through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed to prevent this.

The soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is poor because the areas do not have the desirable water areas.

This soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the sandy texture of the surface layer are the major limitations. Some form of water control is needed to quickly remove the excess water during rainy periods. During drier periods, when the surface layer is somewhat loose, trafficability and wind erosion are limitations. A good vegetative cover and windbreaks, or some other form of surface stabilization, helps overcome these problems.

This Kanapaha soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

8B—Millhopper sand, 0 to 5 percent slopes. This nearly level to gently sloping, moderately well drained soil is in small and large irregularly shaped areas on uplands and on slightly rolling knolls in the broad flatwoods. Slopes are mostly nearly smooth or convex. The areas are variable in size. They range from about 10 to 250 acres.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand or fine sand about 49 inches thick. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand that has grayish and brownish mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is light gray, mottled sandy loam.

Included with this soil in mapping are small areas of Arredondo, Bonneau, Fort Meade, Gainesville, Kanapaha, Lochloosa, and Sparr soils. Siliceous limestone boulders and small sinks are within some delineations. Small areas of Millhopper soils that have 5 to 8 percent slopes are also included. About 25 acres mapped as this Millhopper soil along the Santa Fe River is occasionally flooded. Total included areas are about 20 percent or less.

This Millhopper soil has a water table that is at a depth of 40 to 60 inches for 1 to 4 months and at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper 6 inches of the subsoil, and slow to moderately slow below this depth. Natural fertility is low. Organic matter content is low to moderately low.

Natural vegetation of this soil consists chiefly of live, laurel, post, and water oaks and sweetgum, cherry laurel, a few hickory, and slash and longleaf pines. The understory is chiefly lopsided indiangrass, hairy panicum, low panicum, greenbrier, hawthorn, persimmon, fringeleaf paspalum, hoary tickclover, dwarf huckleberry, chalky and creeping bluestems, and pineland threeawn.

This soil has severe limitations for most cultivated crops. Droughtiness and rapid leaching of plant nutrients are the principal limitations. The soil is moderately well suited to the production of such crops as corn, tobacco, peanuts, soybeans, watermelons, squash, cucumbers, and tomatoes. These crops produce good yields if high level management practices are used. These practices include using close growing, soil improving crops in a crop rotation system; returning all crop residue to the soil; and fertilization and liming as needed. Irrigation is needed and feasible, where irrigation water is available, for high value crops. Wind erosion is active, especially during dry periods, where the surface is not protected.

This soil is well suited to improved pasture of deep rooting grasses and legumes if good management practices are used. Careful management is needed to maintain a good vegetative cover and to reach maximum potential in productivity. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Yields are occasionally restricted by extended droughts. This soil is not suited to improved pasture of shallow rooting legumes and grasses because of insufficient moisture during much of the growing seasons.

Potential productivity of this soil for slash and loblolly pines is moderately high. It is moderate for longleaf pine.

Slash pine is the recommended species for planting. The sandy surface and subsurface layers are somewhat loose during drier periods and moderately restrict use of equipment. The low content of organic matter and the droughty conditions of the surface layer and upper part of the subsurface layer cause moderate loss of young pine seedlings.

This soil has only slight limitations as sites for homes without basements, small commercial buildings, and for local roads and streets. It has moderate limitations for septic tank absorption fields because of the depth of the water table during wet seasons. The limitation as sites for sewage lagoons is severe because of possible contamination of ground water by seepage. If the soil is used for sewage lagoons, the sidewalls need to be lined and sealed. Sidewalls of the sandy surface and subsurface layers can cave when the pits are dug. Limitations for use as sites for trench landfill are also severe.

This soil has fair potential as habitat for openland and woodland wildlife; however, potential for wetland wildlife is very poor.

This Millhopper soil has severe limitations for recreational areas. Trafficability and wind erosion are limitations during drier periods because of the loose sandy surface. The maintenance of a good vegetative cover, windbreaks, or some other form of surface protection is needed.

This Millhopper soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

8C—Millhopper sand, 5 to 8 percent slopes. This sloping, moderately well drained soil is in small areas on narrow breaks and on long slopes of rolling uplands. These areas are mostly irregular or elongated and range from about 10 to 40 acres.

Typically, the surface layer is dark grayish brown sand about 7 inches thick. The subsurface layer is sand about 47 inches thick. The upper 37 inches is yellowish brown, and the lower 10 inches is pale brown. Mottles of brown and yellow range from none to common. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is yellowish brown sandy loam that has light gray and strong brown mottles, and the lower 22 inches is light gray sandy clay loam that has gray, strong brown, and very pale brown mottles.

Included with this soil in mapping are small areas of a soil which is similar to this Millhopper soil but which has loamy sand surface and subsurface layers. Small areas of Apopka, Arredondo, Gainesville, Kanapaha, and Lochloosa soils are included. Small areas of Millhopper soils that have 0 to 5 percent slopes are also included. Total included areas are about 20 percent or less.

This Millhopper soil has a water table that is at a depth of 40 to 60 inches for 1 to 2 months and at a depth of 60 to 72 inches for 2 to 3 months during most years. The available water capacity is low in the surface and subsurface layers, and it is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers. It is moderate in the upper part of the subsoil and slow to moderately slow in the lower part. The natural soil fertility and the organic matter content are low.

The natural vegetation of this soil is chiefly live, water, and post oaks and sweetgum, slash and longleaf pines, cherry laurel, and a few hickory. The understory consists of lopsided indiangrass, hairy and low panicum, greenbrier, hawthorn, persimmon, fringeleaf paspalum, chalky and creeping bluestems, and pineland threeawn. Most of the cleared areas are in improved pasture. Some are in cultivated crops.

This soil has very severe limitations for cultivated crops because of the poor soil quality and slope. It is susceptible to both wind erosion and to some water erosion. The surface needs protection by a good vegetative cover. Management needed to improve the soil quality and reach maximum production potential includes using a crop rotation system that keeps the soil under close growing, soil improving crops at least three-fourths of the time; returning all crop residue to the soil; and properly fertilizing and liming all crops. Irrigation is usually feasible for high value crops during droughty periods.

This soil is moderately well suited to improved pasture of deep rooting grasses adapted to the area. A good sod established as soon as possible after land preparation helps control erosion. Good pasture management is necessary for good plant growth. This includes proper establishment, fertilization, and controlled grazing. Yields are occasionally restricted by extended dry periods. The soil is not suited to shallow rooting grasses and legumes.

Potential productivity of this soil for slash pine is moderately high; for longleaf pine it is moderate. Equipment limitations, seedling mortality, and plant competition are moderate. The sandy surface layer, which is somewhat loose during dry periods; the slope; the droughty conditions of the surface layer and upper part of the subsurface layer; and low fertility are the major problems.

The Millhopper soil has slight limitations for dwellings without basements and for local roads and streets. It is moderately limited as sites for small commercial buildings because of the slope. The soil has moderate limitations as sites for septic tank absorption fields because of the depth to the water table during wet periods. Limitations are severe for sewage lagoons because of the possible contamination by seepage through the sandy subsurface layers. The soil is severely limited for trench sanitary landfills because it is too sandy.

Potential is fair for habitat of openland and woodland wildlife. Potential as habitat for wetland wildlife is very low.

This Millhopper soil has severe limitations for recreational uses. The sandy surface layer is a problem for trafficability. During dry periods wind erosion is a hazard. Maintaining a good vegetative cover, use of windbreaks, or some other form of surface protection is needed. Because of the slope, the soil needs land shaping if it is used as playgrounds.

This Millhopper soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

9B—Millhopper-Urban land complex, 0 to 5 percent slopes. This complex consists of moderately well drained, nearly level to gently sloping Millhopper soils and Urban land. The areas are irregular in shape and range from about 15 to 250 acres. This complex is within most urbanized areas of the county.

About 50 to 85 percent of each delineation is open areas of Millhopper soils. These open areas are vacant lots or are used for gardens, lawns, parks, or playgrounds. They are either too small or so intermingled with areas of Urban land that it is impractical to map them separately. About 20 to 30 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil material during urban related construction and development.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with buildings, streets, parking lots, sidewalks, and other structures. The Urban land of this map unit is generally developed on Millhopper sand or fine sand.

Typically, the surface layer of Millhopper soils is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown to pale brown sand about 49 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is yellowish brown, mottled loamy sand, and the lower 16 inches is gray, mottled sandy clay loam.

The Millhopper soils have a water table that is 40 to 60 inches below the surface for 1 to 4 months and is at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, and it is slow to moderate in the subsoil. Natural fertility is low. Organic matter content is low to moderately low.

Natural vegetation of this unit consists chiefly of live, laurel, post, and water oaks and sweetgum, cherry laurel, a few hickory, and slash and longleaf pines. The understory is chiefly lopsided indiangrass, hairy panicum, low panicum, greenbrier, hawthorn, persimmon, fringeleaf paspalum, hoary tickclover, dwarf huckleberry, chalky and creeping bluestems, and pineland threeawn.

The soils of this complex are generally well suited to most lawn grasses and ornamental plants adapted to the area. If some form of surface stabilization is used to improve the trafficability, the areas are also well suited to recreational uses.

This complex is not in a capability subclass, and a woodland ordination symbol is not assigned.

11—Riviera sand. This is a nearly level, poorly drained soil that formed in stratified, unconsolidated sandy and loamy materials. This soil is in the broad flatwoods. Slopes are nearly smooth and are less than 2 percent. Areas are small and irregularly shaped. They range from about 15 to 35 acres.

Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand about 27 inches thick. The upper 8 inches is grayish brown, and the lower 19 inches is gray. The subsoil extends to a depth of 53 inches. It is gray sandy clay loam. The upper 10 inches has large streaks of gray sand. Between depths of 53 and 80 inches, the underlying material is gray, mixed sandy loam, loamy sand, and sand.

Included with this soil in mapping are small areas of soils which are similar to Riviera soils but which have a loamy sand surface layer. Small areas of Floridana, Pelham, Pomona, and Wauchula soils are also included. Total included areas are less than 20 percent.

In this Riviera soil, the water table is less than 10 inches below the surface for 2 to 4 months during most years. It is at a depth of 10 to 40 inches for much of the remainder of the year. During dry seasons it may recede to a depth of more than 40 inches. Surface runoff is slow. Available water capacity is low to a depth of about 32 inches, medium from 32 to 55 inches, and low below this depth. Permeability is rapid to a depth of about 32 inches, slow from 32 to 55 inches, and moderate to moderately rapid from 55 to 62 inches. Natural fertility is low in the sandy upper 32 inches and medium below this depth. Organic matter content is low.

Natural vegetation of this soil is chiefly slash pine, sweetgum, maple, oak, waxmyrtle, and native grasses. Almost all of this soil is still woodland.

This soil has severe limitations for cultivated crops because of wetness. The number of adapted crops are very limited unless good water control measures are used. If a good water control system and good management practices are used, the soil is well suited to a number of special crops, including squash, beans, eggplant, pepper, cabbage, and sweet corn. Good management practices include a water control system that quickly removes the excess water during wet seasons; row crops rotated with close growing, soil improving crops; leaving all crop residue on the soil; and seedbed preparation that includes bedding the rows. Applications of fertilizers need to be added according to the type of crop grown.

This soil is well suited to pasture. Improved bahiagrass and white clover produce top quality pasture if well managed. Water control measures are needed to remove excess surface water after long rainy periods.

Regular applications of fertilizer and controlled grazing are necessary to maintain vigorous plant growth.

Potential productivity of this soil for woodland is moderately high. Slash pine is the best adapted species for planting. The conditions of the soil during periods of high rainfall cause moderate limitations for normal woodland harvesting and management equipment. The mortality and plant competition are moderate for the young pine seedlings. Wetness and low natural fertility are the major problems in reproduction.

This soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. This soil has a severe limitation for sewage lagoons and sanitary landfills. Ground water can be contaminated by seepage of liquid waste material through the sandy sidewalls and floor of the pits. The sidewalls and floor of these pits need to be lined and sealed to prevent this problem.

This soil has fair potential for habitat of openland, woodland, and wetland wildlife.

This Riviera soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the loose sandy surface texture are the main limitations. Some form of water control system that quickly removes the water during rainy periods needs to be installed and maintained. The sandy surface layer is a problem for trafficability. A good vegetative cover, the addition of good topsoil material, or some other form of surface stabilization can overcome this problem.

This Riviera soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

13—Pelham sand. This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. The areas are irregular in shape and range from 10 to 50 acres.

Typically, the surface layer is sand about 7 inches thick. The upper 4 inches is very dark gray, and the lower 3 inches is dark gray. The subsurface layer is sand about 22 inches thick. The upper 7 inches is light brownish gray and has gray mottles, and the lower 15 inches is gray. The subsoil extends to a depth of 69 inches. The upper 3 inches is gray sandy loam, and the lower 37 inches is gray, mottled sandy clay loam. Between depths of 69 and 80 inches, the underlying material is gray, mottled sandy loam.

Included with this soil in mapping are small areas of Mulat, Pomona, Riviera, Surrency, and Wauchula soils. Some mapped areas of this soil along Hogtown Creek and its tributaries in the western part of Gainesville are occasionally flooded. Total included areas are less than 15 percent.

This Pelham soil, has a water table that is less than 10 inches below the surface for 1 to 4 months during most years. The water table recedes below a depth of 40 inches during dry seasons. Surface runoff is slow. The available water capacity is low in the surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the loamy subsoil. Natural fertility is low in the upper 29 inches and medium below 29 inches. The organic matter content is moderately low.

Natural vegetation includes maple, slash pine, and sweetgum. The understory is chiefly gallberry, waxmyrtle, briers, holly, and native grasses.

This soil has very severe limitations for cultivated crops because of wetness and low fertility in the sandy surface and subsurface layers. If a good water control system and good management practices are used, the soil is moderately well suited to corn, soybeans, and most special crops adapted to the area. Management practices consist of a water control system that removes excess water rapidly during wet seasons, a crop rotation system that includes close growing crops, and the return of all crop residue to the soil. Other important management practices include good seedbed preparation, bedding the rows, and proper fertilization and liming.

If a water control system and good management are used, the soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water quickly after heavy rains. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil is high for commercial woodland. Slash pine is the recommended species when planting. This soil has severe restrictions for use of equipment during wet seasons. The droughty conditions of the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility are severe limitations that cause seedling mortality.

This Pelham soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If this soil is used for sewage lagoons, contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits is a potential hazard. The sidewalls can be lined and sealed to prevent this problem.

The soil has fair potential as habitat for wetland and woodland wildlife and has poor potential as habitat for openland wildlife.

The soil has severe limitations for use as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is the main problem. Some form of water control is needed. The sandy surface layer also is a problem for trafficability. The establishment of a good vegetative cover, the addition of suitable topsoil, or some form of surface stabilization can help overcome this problem.

This Pelham soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

14—Pomona sand. This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. The areas are irregular in shape and range from about 10 to 350 acres.

Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand to a depth of 16 inches. The upper 4 inches is gray, and the lower 7 inches is light gray. The upper 4 inches of the subsoil is very dark gray sand in which many sand grains are coated with organic material, and the next 4 inches is dark reddish brown sand. The next 8 inches is pale brown sand that has mottles, and the lower 11 inches is very pale brown sand. Below this a loamy subsoil extends to a depth of 69 inches. The upper 4 inches is light gray fine sandy loam, and the lower 22 inches is gray, mottled sandy clay loam. Between depths of 69 and 84 inches, the underlying material is light gray, mottled fine sandy loam.

Included with this soil in mapping are small areas of soils which are similar to Pomona soils but which have a brown, organically stained layer. Many of the sand grains are uncoated. Also included are small areas of soils which are similar to this Pomona soil but which have weakly cemented layers at a depth of 30 to 50 inches. Small areas of Myakka, Newnan, Pelham, Sparr, and Wauchula soils are in some areas. About 60 acres mapped as Pomona soil along the Santa Fe River is occasionally flooded. Total included areas are about 20 percent.

In this Pomona soil, the water table is within 10 inches of the surface for 1 to 3 months during most years. During dry seasons, the water table recedes to a depth of more than 40 inches. Surface runoff is slow. The available water capacity is low to medium in the surface and subsurface layers, and it ranges from low to high in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers, moderate to rapid in the upper part of the subsoil, and moderately slow to moderate in the lower part.

Natural vegetation of this soil is a forest of longleaf and slash pine. The understory is sawpalmetto, waxmyrtle, gallberry, brackenfern, pineland threeawn, blueberry, huckleberry, bluestem, and running oak. Most areas are still in natural vegetation. A few areas are cleared and are used for improved pasture or some special crops.

This soil has very severe limitations for cultivated crops because of wetness and poor soil qualities. The number of adapted crops is very limited unless good water control measures are used. If a good water control system and good management are used, the soil produces fair to good yields of such crops as corn, soybeans, squash, beans, eggplant, watermelons, pepper, cabbage, and sweet corn. A good water control system is one that removes excess water during wet seasons and provides subsurface irrigation during dry seasons. In many areas wetness is difficult to overcome sufficiently because of the lack of suitable drainage outlets. Management practices include row crops rotated with close growing, soil improving crops. Good management practices also include the leaving of all crop residue on the soil and the application of fertilizer and lime to the soil according to the need of the crop being grown.

If a water control system and good management are used, the soil is well suited to improved grass and grass-clover pasture (fig. 9). Water control measures are needed to remove excess surface water during long rainy periods. Irrigation is needed for best yields of white clover or other adapted, shallow rooting pasture plants during droughty periods. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil is moderately high for slash and longleaf pines. Slash pine is the recommended species for planting. This soil has moderate limitations for use of equipment during wet seasons. The slightly droughty conditions of the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility are moderate problems that cause seedling mortality. The soil is moderately limited by competition of other plants with young pine seedlings.

This Pomona soil has several limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major problem. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If used for sewage lagoons, this soil has a potential hazard of contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The pits need to be well lined and sealed.

The soil has poor potential as habitat for openland, woodland, and wetland wildlife.

The soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is a major problem. Some form of good water control is needed to improve this condition. Trafficability and wind erosion, especially during drier periods, are limitations because of the loose sandy surface layer. A good vegetative cover, the addition of good topsoil material, or some form of

Figure 9.—Improved pasture in an area of Pomona sand. Water is controlled by field ditches.

surface stabilization could be used to help overcome these problems.

This Pomona soil is in capability subclass IVs and has a woodland ordination symbol of 3w.

15—Pompano sand. This nearly level, poorly drained soil is on poorly defined flats in the broad flatwoods and in shallow depressions in the sandy, rolling uplands. Slopes are nearly smooth on the broad flats and are slightly concave in the shallow depressions. They range from 0 to 2 percent. The shape of the areas is variable. They are usually relatively small in size and range from about 10 to 45 acres.

Typically, the surface layer is very dark gray sand about 5 inches thick. The underlying layers are sand to a depth of 82 inches or more. The upper 20 inches is light brownish gray and has pale brown mottles, the next 45 inches is gray and has mottles, and the lower 12 inches is gray and has no mottles.

Included with this soil in mapping are a few small areas of soils that have a black or very dark gray, sandy surface layer 6 to 10 inches thick. In a few areas are small inclusions of Chipley, Placid, Plummer, and Myakka soils. A few small areas of Pompano soils have 2 to 5 percent slopes. About 250 acres mapped as Pompano soil adjacent to the Santa Fe River along the northern boundary of the county is occasionally flooded for periods of about 1 to 3 weeks. Total included areas are about 15 percent or less.

This Pompano soil has a water table that is less than 10 inches from the surface for 2 to 6 months during most years. Surface runoff is slow. The available water capacity is very low. Permeability is very rapid. The natural fertililty is low. Organic matter content of the surface layer is moderately low to moderate.

The natural vegetation of this soil is chiefly slash pine. The understory is gallberry, waxmyrtle, pineland threeawn, dwarf huckleberry, brackenfern, bluestem, and panicum. The vegetation of the slightly depressional areas in the sandy uplands is mostly wetland grasses. Most areas are still in native vegetation. A few small areas have been cleared and are in improved pasture.

This soil has very severe limitations for cultivated crops because of wetness and poor soil qualities. The water table is hard to control. Adapted crops are limited to special crops which usually are more tolerant of wet conditions, require less space for root development, and a shorter period to reach maturity. They are generally better adapted than most field crops grown in the county. Many areas do not have good drainage outlets. If a good water control system and intensive management practices are used, the soil produces fair to good yields of such special crops as beans, squash, cabbage, lettuce, and tomatoes. Fair yields of corn and soybeans can also be produced under these conditions. A good type of water control system is one that adequately removes excess water in wet seasons and provides subsurface irrigation in dry seasons. Management practices include row crops rotated with close growing, soil improving crops; returning all crop residue to the soil; and bedding of row crops. Proper amounts of fertilizer and lime need to be added in accordance to the need of the crop grown. Areas of this soil on the flood plain along the Santa Fe River are poorly suited to crops.

If a water control system and good management are used, the soil is moderately well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water after heavy rains. Irrigation is needed during droughty periods for shallow rooted pasture plants, such as white clover. During these droughty periods, the water table falls below the rooting zone of the plants, and the soil cannot retain sufficient moisture for best growth. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil for woodland is moderate. Slash pine is the best adapted species for planting. The soil is wet during much of the year. Equipment use and seedling mortality are severe limitations. Plant competition is moderate.

This Pompano soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed to rapidly remove the excess water during wet periods and to adequately control the water table. The high water table can prevent adequate filtration of effluent through the thick sandy texture, which could result in contamination of ground water supplies. If used as sites for sewage lagoons and trench landfills, this soil has a potential hazard of contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed.

The soil has poor potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is fair.

The Pompano soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the loose, sandy surface texture are the main limitations. Some form of water control to rapidly remove the water during rainy periods is needed. When the soil is drained, the surface layer becomes dry and loose. This causes severe problems in trafficability and in wind erosion. Windbreaks and a good vegetative cover, the addition of good topsoil, or some form of surface stabilization can help overcome these problems.

This Pompano soil is in capability subclass IVw and has a woodland ordination symbol of 4w.

16—Surrency sand. This nearly level, very poorly drained soil is in ponds and depressional areas in the broad flatwoods and in areas of wet prairie on uplands. Slopes are less than 1 percent. The areas are relatively small and range from about 10 to 40 acres.

Typically, the surface layer is black sand about 15 inches thick. The subsurface layer is light gray sand to a depth of 28 inches. Between 28 and 80 inches, the subsoil is sandy clay loam. The upper 27 inches is gray, and the lower 25 inches is light gray.

Included with this soil in mapping are small areas of Monteocha, Pomona, Samsula, and Wauberg soils. Also included are small areas of soils that have a 10- to 24-inch, black or very dark gray sand or loamy sand surface layer over a gray sandy clay loam subsoil. In some delineations are small areas of soils which are similar to this Surrency soil but which have 3 to 10 inches of well-decomposed organic material covering the surface. In some small areas the subsoil decreases in clay content by 20 percent or more at a depth of about 55 to 60 inches. Total included areas are about 20 percent or less.

This Surrency soil has a water table that is within 10 inches of the surface for about 6 months or more during most years. Water is on the surface for 4 months or more. The available water capacity ranges from low to high in the surface and subsurface layers and from low to medium in the subsoil. Permeability is moderately rapid to rapid in the sandy surface and subsurface layers and slow to moderately slow in the loamy subsoil. Natural fertility is medium in the surface layer and is low in the subsurface layer and subsoil. Organic matter content is high to very high in the surface layer.

The natural vegetation is chiefly cypress. Swamp tupelo, pond pine, bay, and other water-tolerant hardwoods are in some areas. In a few areas water-tolerant grasses grow. Most of the areas are still in natural vegetation. A few areas have been cleared and are used for vegetable crops or have been filled and used for urban development.

Under natural conditions, this soil is not suited to cultivated crops or improved pasture. Not only is there a very severe problem of wetness caused by ponding, but drainage and water control are also a severe problem. Adequate water control systems are difficult to establish because of a lack of suitable drainage outlets in many areas. If a good water control system can be developed and maintained and if good management practices are used, most locally adapted vegetable crops and grass or grass-clover pasture plants can be successfully grown.

This soil is not recommended for slash, loblolly, or longleaf pines under natural conditions because of the excessive wetness and ponding. Use of equipment, plant competition, and seedling mortality are severe limitations.

This soil has severe limitations for urban uses. The ponding and slow internal drainage are the dominant features that severely restrict its use. Water is on or near the surface much of the time. Drainage systems that adequately remove the water and effectively regulate the water table are expensive and hard to establish and maintain. Most areas lack good water outlets. Even where good drainage systems can be installed, keeping the areas adequately drained is a continuing concern. Sufficient fill material can be added to alleviate surface wetness. A major water control system is required to lower and maintain the water table at a depth needed to use this soil for sewage lagoons and trench landfill.

This soil has poor potential as habitat for openland and woodland wildlife. The ponded areas are not desirable for this type of wildlife, and attempts to improve these conditions effectively would probably be unsatisfactory. The potential as habitat for wetland wildlife is fair.

The Surrency soil has severe limitations as sites for recreational areas. The ponding and sandy texture are the major problems. Before the soil can be used, drainage and a good water control system are necessary. The addition of sufficient good fill material is needed to raise the surface enough to prevent continuing wetness.

This Surrency soil is in capability subclass VIw. There is no woodland ordination symbol.

17—Wauchula sand. This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. This soil is in small and large, irregularly shaped or meandering areas that range from about 20 to 800 acres.

Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is black, and the lower 3 inches is dark gray. The subsurface layer is light brownish gray sand about 6 inches thick. The upper part of the subsoil is 4 inches of dark reddish brown loamy sand, in which many sand grains have an organic coating, and 5 inches of dark brown sand. Below this is a leached layer of pale brown, mottled fine sand about 5 inches thick. The lower part of the subsoil is a loamy layer that extends to a depth of 62 inches. The upper 9 inches is gray, mottled fine sandy loam; the next 19 inches is light brownish gray, mottled loamy sand; and the lower 6 inches is light gray, mottled fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray, mottled sandy clay loam.

Included with this soil in mapping are small areas of Mulat, Newnan, Pelham, Pomona, Riviera, and Sparr soils. Also included are small areas of poorly drained soils that have a brownish stain in the subsurface layer. The sand grains are uncoated or only thinly coated. Total included areas are 15 percent or less.

The Wauchula soil has a water table that is at a depth of less than 10 inches for 1 to 4 months and is at a depth of 10 to 40 inches for about 6 months. During driest seasons, the water table recedes to a depth of more than 40 inches. The available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, low to high in the upper part of the subsoil, and medium to high in the lower part. Permeability is moderately rapid to rapid in the surface and subsurface layers, moderate to moderately rapid in the upper part of the subsoil, and slow to moderately slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the subsoil. Organic matter content is low.

The natural vegetation of this soil is slash and longleaf pines. The understory is waxmyrtle, palmetto, gallberry, briars, pineland threeawn, and other low-growing shrubs and grasses. Most areas are still in woodland. Some areas have been cleared, however, and are in improved pasture or small areas of special crops.

This soil has severe limitations for cultivated crops because of wetness. The number of adapted crops is very limited unless good water control measures are used. If a good water control system and good management are used, the soil is suited to a number of crops, including corn, soybeans, squash, beans, eggplant, pepper, cabbage, and sweet corn. A good water control system is the type that removes excess water during wet seasons and provides subsurface irrigation during dry seasons. Management practices include row crops rotated with close growing, soil improving crops; leaving all crop residue on the soil; and applying fertilizer and lime according to the need of the crop being grown.

If a water control system and good management are used, the soil is well suited to improved grass or grass-clover pasture. Water control measures are needed to remove excess surface water during long rainy periods. Irrigation is needed for best yields of white clover or other adapted, shallow rooting pasture plants during droughty periods. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil is moderately high for slash pine. Potential productivity for longleaf pine is moderate. Slash pine is the recommended species for planting. This soil has moderate restrictions for use of equipment during wet seasons. It has moderate seedling mortality because of the slightly droughty condition of the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility. Competition of other plants with young pine seedlings is also a moderate limitation.

This Wauchula soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major problem. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If this soil is used for sewage lagoons, contamination of ground water is a potential hazard. Liquid waste material can seep through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed.

This soil has poor potential as habitat for openland, woodland, and wetland wildlife.

The soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is a major problem. Some form of good water control is needed. Trafficability and wind erosion are problems, especially during drier periods, because of the sandy surface layer. A good vegetative cover or some other form of surface stabilization can help overcome this problem.

This Wauchula soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

18—Wauchula-Urban land complex. This complex consists of poorly drained, nearly level Wauchula soils and Urban land. It is in irregularly shaped, relatively small to large areas. Slopes range from 0 to 2 percent. Most of this complex is within the eastern and northern parts of Gainesville. Small acreages are in the urban sections of Micanopy, Waldo, and Hawthorne.

About 50 to 85 percent of each delineation is open areas of Wauchula soils. These open areas are gardens, vacant lots, lawns, and playgrounds. They are so small or so intermingled with areas of Urban land that it is impractical to map them separately. About 10 to 20 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil materials during urban construction.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with houses, streets, parking lots, sidewalks, industrial buildings, airports, and other structures. The Urban land of this map unit is generally developed on Wauchula sand.

Typically, the surface layer of Wauchula soils is black to dark gray sand about 8 inches thick. The subsurface layer is sand about 20 inches thick. The upper 6 inches is light brownish gray; the next 4 inches, in which many sand grains have organic coatings, is dark reddish brown; the next 5 inches is dark brown, and the lower 5 inches is pale brown. The subsoil extends to a depth of 62 inches. The upper 9 inches is gray fine sandy loam; the next 19 inches is light brownish gray loamy sand; and the lower 6 inches is light gray fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray sandy clay loam.

Included with the unit in mapping are small areas of Pomona, Pelham, Mulat, Newnan, Sparr, and Surrency soils. These included areas make up about 10 to 20 percent of the open areas in some delineations.

In the Wauchula soils, the water table is within 10 inches of the surface for about 1 to 3 months during most years. During dry periods, it recedes to a depth of more than 40 inches. Natural fertility and organic matter content are low. Permeability of the sandy surface and subsurface layers is rapid. It is slow to moderately slow in the loamy subsoil. Available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, and low to high in the subsoil.

The natural vegetation is slash and longleaf pines. The understory is palmetto, gallberry, waxmyrtle, pineland threeawn, and other adapted shrubs and herbs.

Open areas are suited to most lawn grasses and many kinds of ornamental plants adapted to this area. These open areas have severe limitations for most recreational uses because of wetness during periods of high rainfall. Some form of good drainage system helps overcome the wetness. Some areas of this complex, however, do not have good water outlets, which prevents the establishment of a good drainage system.

For the foreseeable future, the use of this complex is urban related.

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

19—Monteocha loamy sand. This nearly level, very poorly drained soil is in wet ponds and shallow depressional areas in the flatwoods. Slopes are less than 2 percent. It is in relatively small areas that range from about 8 to 35 acres.

Typically, the surface layer is black loamy sand about 12 inches thick. The subsurface layer is light brownish gray sand to a depth of 18 inches. The upper part of the subsoil is brown sand to a depth of 48 inches. Below this a subsoil of fine sandy loam extends to a depth of 85 inches. The upper 11 inches is grayish brown, and the lower 26 inches is light brownish gray. Between 85 and 94 inches the underlying material is light gray sand.

Included with this soil in mapping are small areas of Placid, Samsula, and Surrency soils. Included are soils that have characteristics which are similar to Monteocha soils but which have the dark brown subsoil layer below a depth of 30 inches. In the center of some mapped areas there is a thin 1- to 5-inch covering of well decomposed organic material on the surface. Total included areas are 20 percent or less.

This Monteocha soil has a water table that is within 10 inches of the surface for more than 6 months during most years. Most areas are covered with water for more than 4 months. Available water capacity is high to very high in the surface layer and medium in the subsurface layer and subsoil. Permeability is rapid in the surface layer, moderately rapid to rapid in the subsurface layer and upper part of the subsoil, and moderately slow to moderate in the lower part. Natural fertility is medium in the surface layer and low in the subsurface layer and subsoil. Organic matter content is high to very high in the surface layer.

The natural vegetation is chiefly cypress. Some swamp tupelo, pond pine, bay, and other water-tolerant hardwoods are in some areas. Water-tolerant grasses grow in a few areas. Most of the areas are still in native vegetation. A few areas have been cleared and filled. Housing and industrial developments are in these areas.

Under natural conditions, this soil is not suited to cultivated crops or improved pasture. Not only is ponding a very severe problem but drainage and water control is also. Adequate water control systems are difficult to establish. Most areas are isolated ponds that do not have suitable drainage outlets. A good water control system normally requires an extensive system of canals and ditches. If the areas can be adequately drained, if a good water control system can be maintained, and if good management practices are used, adapted grass or grass-clover pasture can be grown.

This soil is not recommended for slash, loblolly, or longleaf pine under natural conditions because of the excess wetness and ponding. Equipment use, plant competition, and seedling mortality are severe limitations.

This soil has severe limitations for urban uses. The ponding and the thick sandy texture severely restrict the soil for this use. Water is on or near the surface during much of the time. A good drainage system that adequately removes the water and effectively regulates the water table is expensive and hard to establish and maintain. Most areas lack good water outlets. Even where drainage systems are installed, keeping the areas adequately drained is a continuing problem. Sufficient fill material can be added to prevent ponding. A major water control system is required to lower and maintain the water table below the depth needed for sewage lagoons and trench landfills. In addition, the sidewalls and floors of the trenches and pits need lining and sealing to prevent contamination of the ground water by seepage.

This soil has very poor potential as habitat for openland wildlife. The ponds are not desirable for this type of wildlife, and attempts to improve these conditions effectively would probably be unsatisfactory. Potential for woodland wildlife habitat is also very poor. The potential as habitat for wetland wildlife is good because of the excessive wet conditions of the soil.

The Monteocha soil has severe limitations as sites for recreational areas. The ponding is the major problem. Before the soil can be used, drainage and a good water control system are necessary. The addition of sufficient good fill material is needed to raise the surface enough to prevent continuing wetness.

This Monteocha soil is in capability subclass VIIw. It is not assigned a woodland ordination symbol.

20—Tavares sand, 0 to 5 percent slopes. This is a nearly level to gently sloping, moderately well drained soil. This soil is deep and sandy. It is on slightly convex slopes in broad areas of the flatwoods and along gentle slopes of the rolling uplands. The areas are mainly irregular in shape and range from about 10 to 125 acres.

Typically, the surface layer is dark gray sand about 8 inches thick. The underlying layers are sand to a depth of 80 inches or more. The upper 11 inches is pale brown, the next 17 inches is very pale brown, and the lower 44 inches is very pale brown or white and has mottles.

Included with this soil in mapping are small areas of Tavares soils that have 5 to 8 percent slopes. Also included are small areas of Chipley, Candler, Apopka, Pompano, and Zolfo soils. About 120 acres of this soil mapped along the Santa Fe River is occasionally flooded. Total included areas are about 15 percent.

In this Tavares soil, the water table is at a depth of 40 to 72 inches for a cumulative period of 6 months or more during most years. It recedes to more than 72 inches below the surface during droughty periods. Surface runoff is slow. The available water capacity is very low to low. Permeability is rapid to very rapid. Natural fertility is low, and organic matter content is low to moderate in the surface layer.

The natural vegetation of this soil is chiefly slash and longleaf pines; turkey, post, bluejack, live, and water oaks; and native grasses. Most areas are still in natural vegetation. Most of the cleared areas are in improved pasture. Some are in cultivated crops.

This soil has severe limitations for most cultivated crops. Droughtiness and rapid leaching of applied plant nutrients are the major limiting factors. Most crops, including corn, peanuts, soybeans, tobacco, and watermelons, can be grown. Good management is required to reach maximum yields. Good management includes alternating row crops with strips of close growing crops; using close growing, soil improving cover crops at least two thirds of the time; returning all crop residue to the soil; and applying fertilizer and lime according to the need of the crops being grown. Because of the very low available water capacity of the soil, droughtiness in the root zone is a problem during drier periods. If a source of water is available, irrigation is usually feasible for high value crops.

This soil is moderately well suited to improved pasture of deep rooted grasses and legumes if the pasture is well managed. The soil is droughty and has very low to low available water capacity to a depth of 40 inches or more below the surface. Irrigation is usually necessary during the dry seasons for the production of shallow rooted pasture plants.

Potential productivity of this soil for slash and longleaf pines is moderately high. The low organic matter content and droughty conditions of the surface and upper part of the underlying layers cause moderate seedling mortality. Competition of other plants is also moderate. Except for short periods after rain, the coarse textured surface layer is loose. This loose sandy texture moderately restricts the use of normal woodland equipment during harvesting operations.

This Tavares soil has moderate limitations for septic tank absorption fields. The potentially high water table during wet seasons and the thick sandy texture can prevent adequate filtration of effluent, which could result in contamination of ground water supplies. Limitations for sewage lagoons and trench landfills are severe because of wetness and the possibility of contamination of ground water by seepage. Where trenches or pits are dug, sidewalls can cave. This soil has slight limitations for dwellings without basements, small commercial buildings, and local road and streets.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because of the absence of water areas.

The soil has severe limitations for recreational uses. The sandy surface layer causes problems in trafficability and in wind erosion. Establishing and maintaining good vegetative cover, windbreaks, addition of suitable topsoil, or some form of surface stabilization can be used to help overcome these problems.

This Tavares soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

21—Newnan sand. This nearly level, somewhat poorly drained soil is in small to relatively large areas in the flatwoods. Slopes are nearly level to slightly convex and range from 0 to 2 percent. The areas generally range from about 10 to 250 acres.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is light brownish gray sand to a depth of 12 inches. The upper part of the subsoil is 4 inches of dark brown sand, in which the sand grains are well coated with organic material, and 4 inches of dark brown sand that is mottled. Below this is a leached layer of light gray to white sand to a depth of 56 inches. The lower part of the subsoil is loamy, light gray, and mottled. The upper 3 inches is loamy sand, the next 16 inches is fine sandy loam, and the lower 7 inches is sandy clay loam.

Included with this soil in some areas are Mulat, Pomona, Sparr, and Wauchula soils. In some areas are soils that have characteristics similar to Newnan soils except that they have a brown, organically stained layer directly below the surface layer or have only 1 to 3 inches of leached, light gray or white material between the surface layer and the stained layer. About 65 acres mapped as Newnan soil is within the flood plain of the Santa Fe River and is occasionally flooded. Total included areas are about 20 percent or less.

This Newnan soil has a water table that is at a depth of 18 to 30 inches for 1 to 2 months during most years and at a depth of 30 to 60 inches for 2 to 5 months. During drier periods, it is at a depth of more than 60 inches. The available water capacity is very low to low to a depth of about 12 inches and low to medium from 12 to 82 inches. Permeability is rapid to a depth of about 12 inches, moderately rapid to rapid from 12 to 16 inches, rapid from 16 to 56 inches, moderately rapid from 56 to 59 inches, and slow to moderately slow from 59 to 82 inches. Natural fertility is low in the sandy upper 56 inches and medium in the loamy subsoil below. Organic matter content is moderately low.

Most areas of this soil are still in natural vegetation, which is chiefly longleaf and slash pines and water oak. The understory is running oak, palmetto, waxmyrtle, huckleberry, brackenfern, blueberry, briars, gallberry, bluestem, and pineland threeawn. A few areas are cleared and are in improved pasture or special crops.

This soil has severe limitations for cultivated crops because of the poor soil qualities and periodic wetness. Applied plant nutrients leach rapidly through the sandy subsurface layer. Root retardation of some crops is caused by the high water table during wet periods. Subsurface drainage or some other form of water control may be needed.

This soil is best adapted to vegetable crops and such general farm crops as corn and soybeans. Good management is necessary for best yields. This includes growing crops in rotation with close growing, soil improving cover crops; returning all crop residue to the soil; and proper seedbed preparation, fertilization, and liming. The upper part of the sandy subsurface layer during dry periods is droughty. Irrigation of high value crops generally is feasible where a source of water is available.

The soil is well suited to pasture of improved bahiagrass. High level management is needed for good yields. This includes good fertilization, liming as needed, and a good grazing rotation program. If shallow rooted plants are grown, irrigation is normally needed for persisting, good quality pasture.

Potential productivity of this soil for slash pine is moderately high. Potential productivity for longleaf pine is moderate. The loose, sandy surface and subsurface layers moderately limit the use of normal woodland equipment. Because of the droughty conditions during dry seasons and other poor qualities, the degree of seedling mortality is moderate. Plant competition is also moderate.

This Newnan soil has severe limitations for septic tank absorption fields. The high water table during wet seasons prevents good downward drainage of the effluent. The effluent may be mixed with the ground water as the water table moves laterally and upward, the surface and upper part of the subsurface layer can become contaminated. Limitations as sites for sewage lagoons and trench landfills are severe because of the wetness and possibility of contamination of ground water by seepage. The sandy texture causes some problems in trafficability if the soil is used for landfills. Limitations for dwellings without basements, small commercial buildings, and local roads and streets are moderate because of the wetness problem.

This soil has poor potential as habitat for openland wildlife. It has fair potential for woodland wildlife. Potential as habitat for wetland wildlife is very poor because this soil lacks the ponds and wetland vegetation that are desirable for this type of wildlife.

The soil has severe limitations for recreational uses. The sandy surface layer causes problems in trafficability. Some wind erosion is a problem during dry periods where the surface is unprotected. The establishment and maintenance of a good vegetative cover or windbreaks and the addition of suitable topsoil or some form of surface stabilization could be used to overcome these problems.

This Newnan soil is in capability subclass IIIs and has a woodland ordination symbol of 3w.

22—Floridana sand, depressional. This nearly level, very poorly drained soil is in seasonally ponded, depressional areas and swamps. Slopes are less than 2 percent. The areas are variable in shape and range from about 15 to 75 acres.

Typically, the surface layer is black sand about 14 inches thick. The subsurface layer is gray sand to a depth of 30 inches. The subsoil extends to a depth of 65 inches. It is gray sandy clay loam. Between depths of 65 and 74 inches, the underlying material is light gray sandy loam.

Included with this soil in mapping are small areas of Riviera and Wauchula soils. Also included are some small areas of soils which are similar to the Floridana soils except that the loamy subsoil is at a depth of 40 to 80 inches. In the center of some depressions are small areas where the surface is covered with 3 to 8 inches of organic material. About 80 acres mapped as Floridana soil along the Santa Fe River is occasionally flooded. Total included areas are less than 20 percent.

This depressional Floridana soil has water standing on the surface for about 6 months or more during most years. For much of the year, the water table is less than 10 inches below the surface. Available water capacity is medium to a depth of about 14 inches, low from 14 to about 30 inches, and medium below 30 inches. Permeability is rapid to 30 inches and slow between 30 to 74 inches. Natural fertility and organic matter content are high to about 14 inches and low below this depth.

Natural vegetation is chiefly cypress, gum, maple, scattered slash pine, and water-tolerant grasses. The areas are still in natural vegetation.

Under natural conditions, this soil is not suited to cultivated crops and improved pasture. The excess wetness and the problem of water control are the main limitations. Water is on the surface for much of the year. Adequate water control systems are difficult to establish because of the lack of suitable outlets. If a good water control system can be developed and maintained and if the pasture is well managed, some grass or a combination of grass and clover can be grown.

This soil has low potential for pine trees because of water on or near the surface during much of the year. The excess wetness presents severe problems in most woodland management, including seedling mortality, plant competition, and use of equipment.

This soil has severe limitations for all urban uses, including use as sites for septic tank absorption fields, dwellings, small commercial buildings, sewage lagoons, trench landfill, and roads and streets. Areas are ponded, and water stands on the surface during much of the year. Before use, these areas must be filled with suitable material, have a good drainage system to adequately control the high water table, and have protection from ponding. Efficient drainage systems are hard to develop. Even where drainage systems are installed, keeping the areas adequately drained is normally a continuing problem. Mounding is needed for septic tank absorption fields.

This soil has very poor potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is good. Shallow water areas, which are desirable for this type of wildlife, can be easily developed or may occur naturally.

The Floridana soil has severe limitations as sites for recreational areas. The ponding is the major problem. Before the soil can be used, drainage and a good water control system are necessary. The addition of a good fill material is needed to help improve trafficability and raise the surface sufficiently to prevent continuing wetness.

This depressional Floridana soil is in capability subclass VIIw. It is not assigned a woodland ordination symbol.

23—Mulat sand. This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth to slightly concave and range from 0 to 2 percent. The soil usually is in irregularly shaped small areas and ranges from about 15 to 60 acres.

Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is very dark gray, and the lower 3 inches is dark gray. The subsurface layer is grayish brown to light gray sand to a depth of 26 inches. The subsoil extends to a depth of 54 inches and is gray. The upper 4 inches is loamy sand, the next 17 inches is fine sandy loam, and the lower 7 inches is loamy sand. Between depths of 54 and 80 inches, the underlying material is light gray loamy sand.

Included with this soil in mapping are small areas of Pelham, Plummer, Pomona, and Wauchula soils. Also included are a few small areas of soils which are similar to the Mulat soil but which have a loamy sand surface layer. Total included areas are about 20 percent or less.

This Mulat soil has a water table that is at a depth of 10 inches for 2 to 4 months and at a depth of 10 to 30 inches for about 2 to 4 months during most years. During drier seasons, the water table recedes to a depth of more than 30 inches. Surface runoff is slow. The available water capacity is low to medium. Permeability is moderately rapid to rapid in the surface and subsurface layers and slow to moderately slow in the subsoil. Permeability is moderately rapid to rapid in the underlying material. Natural fertility is low, and organic matter content of the surface layer ranges from moderate to moderately low.

The natural vegetation is chiefly slash pine. Some areas have a mixed stand of slash and longleaf pines and some sweetgum, red maple, and water oak. The understory is dominantly gallberry, waxmyrtle, briars, pineland threeawn, dwarf huckleberry, brackenfern, and various bluestems and panicums. Most areas are still in natural vegetation. Most cleared areas are in improved pasture. A few are in cultivated crops.

This soil has severe limitations for cultivated crops because of wetness and low fertility. If a good water control system and good management practices are used, the soil is moderately well suited to well suited to such crops as corn, soybeans, watermelons, tomatoes, squash, peppers, eggplants, cucumbers, sweet corn, and beans. Tobacco and peanuts are not recommended. A good water control system is one that removes excess water rapidly during wet seasons. Management practices are a crop rotation system that includes close growing, soil improving crops and returning all crop residue to the soil. Other important management practices include good seedbed preparation, bedding the rows, and proper fertilization and liming.

If a water control system and good management practices are used, this soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove the excess water after heavy rains. For best yields of shallow rooting pasture plants, irrigation is needed during dry seasons. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil for slash pine is high. It is moderately high for longleaf pine. Slash pine is the species recommended for planting. The wet condition of the soil in periods of high rainfall severely limits the use of normal woodland harvesting and management equipment. The mortality of young pine seedlings is severe. Wetness and low fertility are the major problems in natural regeneration in pine plantations. Plant competition is moderate.

This Mulat soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If used for sewage lagoons or trench landfills, this soil has a potential hazard of the contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The sidewalls need to be well lined and sealed to prevent this problem.

This soil has fair potential as habitat for wetland and openland wildlife and poor potential as habitat for woodland wildlife.

The soil has severe limitations for recreational uses. The water table is at or very near the surface during wet seasons. The areas need some form of water control that rapidly removes excess water and regulates the water table. Where areas are drained to keep the water table at a depth low enough for the best use, the sandy surface layer becomes dry and has a tendency to be loose. The loose, dry sand causes problems in trafficability and of wind erosion. The maintenance of a good vegetative cover and windbreaks and the addition of good fill material or some other form of surface stabilization help overcome these problems.

This Mulat soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

25—Pomona sand, depressional. This nearly level, very poorly drained soil is in shallow depressional areas and along narrow drainageways in the flatwoods. Slopes are nearly smooth or slightly concave and range from 0 to 2 percent. These areas are relatively small and irregularly shaped or elongated. They range from about 10 to 35 acres.

Typically, the surface layer is very dark gray sand about 4 inches thick. The subsurface layer is light gray sand to a depth of 25 inches. The upper part of the subsoil is dark brown sand to a depth of 32 inches; many of the sand grains are coated with organic material. The next layer is grayish brown sand to a depth of 52 inches. Below this, the lower part of the subsoil is gray sandy loam to a depth of 73 inches. Between depths of 73 and 80 inches, the underlying material is gray sandy loam and loamy sand.

Included with this soil in mapping are small areas of Monteocha, Plummer, Pompano, and Surrency soils. Total included areas are about 15 percent.

In this Pomona soil, the water table is less than 10 inches below the surface for about 6 months or more. Water is on the surface for about 4 months or more during most years. The available water capacity is low in the surface and subsurface layers and low to high in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers, moderate to rapid in the upper part of the subsoil, and moderately slow to moderate in the lower part. Natural fertility is low. Organic matter content in the surface layer is moderately low.

The natural vegetation is chiefly cypress, swamp maple, tupelo, bay, and some scattered pond pine. In a few areas vegetation is water-tolerant grasses and shrubs or a mixture of hardwoods and grasses. The areas are still in natural vegetation.

This soil is not suited to cultivated crops or improved pasture. The excess wetness, ponding, and poor soil qualities are major limitations that are hard to overcome. Water is on the surface for much of the year. Adequate water control systems are difficult to establish. Many areas are isolated ponds or wet depressions that do not have suitable drainage outlets. A good water control system would require an extensive system of canals and ditches.

This soil is not recommended for slash or longleaf pine under natural conditions because of the excess wetness and ponding. Use of equipment, seedling mortality, and plant competition are severe.

This soil has severe limitations for urban uses. The ponding conditions and thick sandy texture are the dominant features that severely restrict the soil for this use. Water is on or near the surface during much of the time. Good drainage systems that adequately remove the water and effectively regulate the water table are expensive and hard to establish and maintain. Most areas lack good water outlets. Even where drainage systems are installed, keeping the areas adequately drained is a continuing problem. Before using this soil as sites for homes, small commercial buildings, and septic tank absorption fields, the surface needs to be raised with suitable fill material. The water table needs to be maintained below sewage lagoons and trench landfills. This requires a major water control system. In addition, the sidewalls and floors of the trenches and pits need lining and sealing to prevent contamination of the ground water by seepage.

This soil has very poor potential for use as habitat for openland and woodland wildlife. The ponded areas are not desirable for this type of wildlife, and attempts to improve these conditions effectively would probably be unsatisfactory. The soil has good potential as habitat for wetland wildlife.

The Pomona soil has severe limitations as sites for recreational areas. The ponding and sandy surface texture are the major problems. Before the soil can be used, drainage and a good water control system are necessary. The addition of a good fill material is needed to help improve the trafficability and to raise the surface sufficiently to prevent continuing wetness.

This Pomona soil is in capability subclass VIIw. It is not assigned a woodland ordination symbol.

26—Samsula muck. This nearly level, very poorly drained organic soil is in large and small swamps, marches, and ponded areas in the broad flatwoods. Slopes are usually slightly concave and range from 0 to 1 percent. Areas are either circular, irregular in shape, or elongated. They are both large and small in size and range from about 20 to 300 acres.

Typically, the surface layer is muck about 35 inches thick. The upper 8 inches is very dark brown, and the lower 27 inches is very dark gray. Between depths of 35 and 75 inches, the underlying layer is sand. The upper 7 inches is dark gray, the next 11 inches is light brownish gray, and the lower 17 inches is light gray.

Included with this soil in mapping are small areas of Monteocha, Okeechobee, Placid, Surrency, and Terra Ceia soils. A few areas have small inclusions of soils that have organic material 40 to 60 inches thick over sandy or loamy material. Total included areas are about 20 percent or less.

This Samsula soil has water at or on the surface for more than 6 months during most years. The water table is within 10 inches of the surface for most of the remainder of the year, except during long, extended dry periods. The available water capacity is very high in the organic layer. It is very low in the underlying sandy layer. Permeability is rapid. Natural fertility is medium. Organic matter content in the surface layer is very high.

The natural vegetation of the soil is chiefly cypress. Bay, black gum, and swamp maple are in some areas. Water-tolerant grasses are in a few areas. Most areas of this soil are still in natural vegetation.

This soil has severe limitations for crops. The excessive wetness caused by ponding is the major problem and is very difficult to overcome. Many areas of this soil do not have adequate drainage outlets. A good drainage system is one that adequately removes the excess water when crops are on the soil but keeps the soil saturated with water at other times. If good management practices and a good water control system are maintained, the soil is suited to crops that are somewhat tolerant of wet conditons. Most locally grown vegetable crops are adapted. Management practices include good seedbed preparation, growing water-tolerant cover crops when regular crops are not being grown, returning all crop residue to the soil, and proper fertilizing and liming in accordance with the needs of the crops.

Under natural conditions, this soil is too wet for improved pasture. Drainage and good water control are necessary before pasture plants can be grown. In many areas good drainage outlets are not available, or if they are available, an extensive system of ditches is needed to reach the outlets so the water can be adequately removed. If a good water control system and good pasture management practices are used, high quality pastures can be grown. A good water control system is one that not only adequately removes the ponded water, but maintains the water table near the surface in order to decrease subsidence as much as possible. Good fertilization is necessary. Lime can be added as needed. Controlled grazing permits maximum growth of pasture.

This soil is not recommended for commercial woodland production of slash, loblolly, or longleaf pines. The very wet conditions of the soil, the problems of regulating the water table at a depth desirable for good root development, and the unstable conditions of the organic soil material cause severe problems in woodland management.

This Samsula soil has severe limitations for urban uses. The high water table, ponding, excess humus, low soil strength, and potential seepage are major limitations that are hard to overcome. Good drainage and water control systems require a major network of canals and ditches. Keeping the areas adequately drained is a continuing problem. Many areas do not have suitable drainage outlets. The organic material is unstable, and it subsides when drained. This organic material needs to be removed and replaced with suitable fill material before an area is developed for urban uses.

These areas have good potential as habitat for wetland wildlife. These shallow water areas are desired by this type of wildlife. Potential is very poor for openland wildlife and is poor for woodland wildlife. The areas are too wet to produce a good source of food and cover for these types of wildlife.

The soil has severe limitations for recreational uses. The excessive wetness and excess humus are the major limitations. Good drainage systems that adequately remove the water are expensive to establish and maintain. When the soil is drained, the exposed dry surface layer becomes dusty. This condition, along with the unstable conditions of the soil, causes severe problems in trafficability. If areas of this soil have to be used for recreation, the organic material needs to be removed and replaced with suitable material.

This Samsula soil is in capability subclass IVw. It is not assigned a woodland ordination symbol.

27—Urban land. In areas mapped as Urban land, 85 percent or more of the surface is covered with shopping centers, parking lots, buildings, streets, sidewalks, and related facilities. The natural soil cannot be observed. The few small open areas, mostly parks and vacant lots, are soils of the Arredondo, Blichton, Millhopper, Sparr, and Wauchula series. Many of these open areas have been altered by cutting and shaping or by having fill material spread on the surface. Slopes range from 0 to 2 percent.

Included with this Urban land in mapping are small areas that are only about 55 to 85 percent covered with urban facilities. Total included areas are about 15 percent.

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

28—Chipley sand. This nearly level, somewhat poorly drained soil is in relatively small areas of the broad flatwoods and in both small and large areas on the transition between the broad flatwoods and rolling uplands. Slopes are nearly level to slightly concave and range from 0 to 2 percent. The areas are irregular in shape and range from about 15 to 150 acres.

Typically, the surface layer is sand about 12 inches thick. The upper 6 inches is very dark gray, and the lower 6 inches is dark grayish brown. The underlying layers are sand to a depth of more than 81 inches. In sequence from the top, the upper 13 inches is grayish brown; the next 24 inches is light gray and has yellowish red mottles; and the lower 32 inches is light gray but has no mottles.

Included with this soil in mapping are small areas of Myakka, Pompano, Tavares, and Zolfo soils. Also included are a few small areas of somewhat poorly drained and poorly drained soils that have a very dark gray surface layer 10 to 16 inches thick over a grayish underlying layer. The underlying layer is sandy to a depth of 80 inches or more and has less than 5 percent silt and clay in the control section. About 15 acres mapped as Chipley soil along the Santa Fe River is occasionally flooded. Total included areas are about 15 percent.

This Chipley soil has a water table that is 20 to 40 inches below the surface for 2 to 4 months during most years. During extremely wet seasons, the water table rises to a depth of 15 to 20 inches for brief periods of less than 2 weeks. It recedes to a depth of more than 40 inches during dry periods. Surface runoff is slow. The available water capacity is low, and the permeability is rapid to a depth of more than 80 inches. Natural fertility is low, and organic matter content is moderate to moderately low in the surface layer.

Natural vegetation of this soil is slash and longleaf pine and water, laurel, and live oak. The understory consists of waxmyrtle, sumac, blackberry, gallberry, scattered sawpalmetto, carpetgrass, and pineland threeawn and other native weeds and grasses. Most areas are still in natural vegetation. Most cleared areas are in improved pasture. Some are used for crops.

This soil has severe limitations for cultivated crops because of periodic wetness and poor soil qualities. The high water table, which is at a depth of about 20 to 40 inches during wet seasons, can cause some retardation of root development. If good management practices and a water control system are used, the soil produces good yields of such crops as corn, soybeans, squash, beans, peppers, eggplant, and cucumbers. A good water control system is one that quickly removes the excess water during wet periods and provides subsurface irrigation during droughty periods. Good management includes crop rotation with close growing, soil improving cover crops; the return of all crop residue to the soil; and the proper application of fertilizer and lime.

The soil is moderately well suited to improved pasture. Bahiagrass and bermudagrass produce good quality grazing under high level management. This includes proper establishment of plants, fertilization, liming, and controlled grazing.

This soil has high potential productivity for pine trees. Slash pine is the best adapted species. The loose sandy surface layer causes moderate restrictions for use of normal woodland equipment. Plant competition is moderate because of the droughty conditions in the upper 15 to 25 inches of the soil during dry periods and because of the low fertility.

This Chipley soil has severe limitations for septic tank absorption fields. The high water table during wet seasons prevents good downward absorption of the effluent. The high, fluctuating water table and thick sandy texture can also prevent adequate filtration of the effluent. This could result in contamination of ground water supplies. The soil has severe limitations as sites for sewage lagoons and trench landfills because of the wetness and possibilization of contamination of ground water by seepage. It has moderate limitations for dwellings without basements, small commercial buildings, and local roads and streets.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor.

The soil has severe limitations for recreational uses. The sandy surface layer causes problems in trafficability and, during dry periods, of wind erosion. The establishment and maintenance of a good vegetative cover and windbreaks, or the addition of suitable topsoil or some other form of surface stabilization can help overcome these problems.

This Chipley soil is in capability subclass IIIw and has a woodland ordination symbol of 2s.

29B—Lochloosa fine sand, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is in small and large areas on the rolling uplands. Slopes are slightly convex. The areas are irregular in shape and range from about 10 to 100 acres.

Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand or sand to a depth of 31 inches. It has light gray and yellowish brown mottles below a depth of 21 inches. The subsoil extends to 76 inches. The upper 4 inches is dark gray, mottled fine sandy loam; the next 19 inches is gray sandy loam; and the lower 22 inches is gray sandy clay loam. Between depths of 76 and 83 inches, the underlying material is mixed light gray and greenish gray sandy clay loam.

Included with this soil are small areas of Blichton, Bonneau, Kendrick, Micanopy, and Millhopper soils. Also included in some delineations are small areas of soils that are similar to Lochloosa soils except that the clay content of the subsoil decreases by more than 20 percent of its maximum within a depth of 60 inches. Also included are small areas of soils that are similar to Lochloosa soils but have 5 to 20 percent weathered rock fragments in the subsoil. The rock fragments are 2 to 76 millimeters in diameter. A few areas have small inclusions of Lochloosa soils that have 5 to 8 percent slopes. Siliceous limestone boulders and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 15 percent.

This Lochloosa soil has a water table that is about 30 to 40 inches below the surface for 1 to 4 months during most years. The water table rises to a depth of 20 to 30 inches for 1 to 3 weeks. Surface runoff is slow. The available water capacity is low to medium in the sandy surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer.

The natural vegetation of this soil is chiefly slash and loblolly pine, oak, dogwood, hickory, magnolia, and sweetgum. The understory consists chiefly of waxmyrtle, wild grape, dwarf huckleberry, toothachegrass, several varieties of bluestems, low panicums, and creeping beggarweed.

This soil has moderate limitations for cultivated crops. The major limitation is wetness, but erosion is also a hazard. The crops best adapted to this soil are those that are tolerant of slightly wet conditions. Such crops as corn, watermelons, tobacco, and peanuts are adapted, but the soil may need some drainage during extended wet seasons for best yields. Soybeans are generally well suited to this soil. Tobacco can be drowned during periods of high rainfall. Irrigation may be needed. It is cost-effective for some high value crops during prolonged droughty periods. Good management practices are a crop rotation that includes close growing crops on the soil at least half the time, soil improving cover crops, and all crop residue left on the soil. Best yields require good seedbed preparation, proper fertilization, and liming.

This soil is well suited to pasture. Such grasses as coastal bermudagrass and improved bahiagrasses produce high quality grazing when the pasture is well managed. These plants require good fertilization, liming, and controlled grazing for highest yields. Shallow rooted grasses are not generally well suited to this soil. These plants cannot produce good quality grazing during dry seasons because of the droughty conditions of the soil, unless it is adequately irrigated.

Potential productivity of this soil for slash and loblolly pine is high. Woodland management has no significant limitations.

This Lochloosa soil has severe limitations for septic tank absorption fields. The high water table during wet seasons prevents good absorption of effluent. Limitations of the soil as sites for sewage lagoons and trench landfills are severe because of the wetness and possibility of contamination of ground water by seepage. Limitations for dwellings without basements, small commercial buildings, and local roads and streets are slight.

This soil has fair potential as habitat for openland wildlife. Potential is good for woodland wildlife. The soil has very poor potential as habitat for wetland wildlife. It does not have the ponded areas and wetland vegetation desired by this type of wildlife.

The soil has severe limitations for recreational uses in areas where the surface texture is sand or fine sand. The loose sandy surface layer causes problems in trafficability and, during dry periods, of wind erosion. The establishment and maintenance of a good vegetative cover and windbreaks or the addition of suitable topsoil or some other form of surface stabilization can help overcome these problems.

This Lochloosa soil is in capability subclass IIw and has a woodland ordination symbol of 2o.

29C—Lochloosa fine sand, 5 to 8 percent slopes. This sloping, somewhat poorly drained soil is in relatively small areas on sharp breaking slopes and along long, narrow slopes of the upland. The areas are mostly irregular or elongated in shape and range from about 10 to 50 acres.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is light yellowish brown, mottled fine sand to a depth of 25 inches. The subsoil extends to a depth of 67 inches. The upper 5 inches is yellowish brown, mottled sandy loam; the next 5 inches is mottled light yellowish brown and gray sandy clay loam; and the lower 32 inches is gray, mottled sandy clay loam. Between depths of 67 to 80 inches, the underlying material is gray, mottled sandy clay and fine pockets of sandy loam and sandy clay loam.

Included with this soil are small areas of Blichton, Kendrick, Micanopy, and Norfolk soils. Also included are small areas of soils that are similar to Lochloosa soils in drainage and texture but have a subsoil less than 20 inches below the surface. Small areas of Lochloosa soils that have 2 to 5 percent slopes are included. Small moderately eroded spots are in some areas. Rock outcrops and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 20 percent.

This Lochloosa soil has a water table that is about 30 to 40 inches below the surface for 1 to 3 months during most years. The water table may be at a depth of 20 to 30 inches for 1 to 3 weeks. Wetness is caused by hillside seepage. Surface runoff is medium on this soil. The available water capacity is low in the sandy surface layer and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Organic matter content is low in the surface layer.

The natural vegetation of this soil is chiefly slash and loblolly pines, oak, dogwood, hickory, and sweetgum. The understory is native shrubs and grasses. Although many areas of this soil are still in native vegetation, a large acreage has been cleared and is in improved pasture of deep rooted grasses and legumes adapted to the soil. A few areas are in cultivated crops.

This soil has severe limitations for cultivated crops because of the hazard of erosion and periodic wetness. The soil needs some form of water control system designed to remove the surface water slowly to prevent erosion and to provide good internal drainage. If good management practices are used, the soil is moderately well suited to such crops as corn, soybeans, peanuts, watermelons, cucumbers, tobacco, squash, and peppers. Good management includes rotating crops, keeping close growing crops on the land at least two-thirds of the time, planting soil improving cover crops, returning all crop residue to the soil, and applying fertilizer and lime as needed.

This soil is well suited to improved pasture. Bahiagrass and improved bermudagrass are well adapted to this soil. Productivity potential is high if they are properly established, fertilized, limed, and managed. A good sod needs to be established as soon as possible after land preparation to prevent erosion. Shallow rooting pasture plants, such as white clover, are poorly adapted because of the low available water capacity and slightly droughty conditions within the root zone of these plants during drier periods.

Potential productivity of the soil for woodland is high. Good stands of slash or loblolly pines can be grown if good woodland management practices are used. Woodland management problems are slight.

This soil has slight limitatid as soon as possible after land preparation to prevent erosion. Shallow rooting pasture plants, such as white clover, are poorte because of slope. Limitations for use as septic tank absorption fields are severe because of the water table, which restricts drainage during wet periods. The effluent can be forced to the surface by hillside seepage as it moves upward and laterally through the upper layers of the soil. Limitations for sewage lagoons are severe because of the periodic wetness, the slope, and possible contamination of ground water by seepage. If this soil is used for sewage lagoons, the sandy sidewalls need to be lined and sealed. Limitations for use as sites for landfill are severe because of the high water table during wet periods.

This soil has fair potential for use as habitat for openland wildlife. Potential is good for woodland wildlife. The soil has very poor potential for wetland wildlife habitat because it does not have water areas needed for this type of wildlife.

This sandy Lochloosa soil has problems in trafficability that severely limit it for recreational areas. During dry periods, wind erosion is a hazard. The establishment of some form of surface stability is needed. Slope is also a severe limitation for playgrounds. The soil needs to be shaped and leveled for this use.

This Lochloosa soil is in capability subclass IIIe and has a woodland ordination symbol of 2o.

30B—Kendrick sand, 2 to 5 percent slopes. This gently sloping, well drained soil is in both small and large areas on the gently rolling uplands. These areas are mostly irregularly shaped or elongated and range from about 20 to 200 acres.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 26 inches. The subsoil extends to a depth of 90 inches or more. The upper 5 inches is yellowish brown fine sandy loam; the next 20 inches is dark yellowish brown, mottled sandy clay loam; the next 22 inches is dark yellowish brown sandy clay loam; the next 10 inches is yellowish brown, mottled fine sandy loam; and the lower 7 inches is yellowish brown sandy clay loam.

Included with this soil in mapping are some small areas of soils that have similar characteristics to the Kendrick soils except that they have loamy sand surface and subsurface layers less than 20 inches thick over a sandy clay loam subsoil. Small areas of soils that are similar to the Kendrick soils but have fine sand surface and subsurface layers or have a subsoil that is sandy clay throughout are included. Also included are small areas of Arredondo, Blichton, Bonneau, Lochloosa, and Norfolk soils. A few areas of Kendrick soils have 0 to 2 percent slopes or 5 to 8 percent slopes. Small moderately eroded spots are in a few areas. Sinkholes and limestone boulders are in some areas and are shown by appropriate symbols. Total included areas are about 15 percent.

In this Kendrick soil, the available water capacity is low in the surface and subsurface layers, medium in the upper 5 inches of the subsoil, and medium to high below this depth. Permeabiity is rapid in the surface and subsurface layers. Permeability is moderate to moderately rapid in the upper 5 inches of the subsoil, moderately slow to moderate in the next 42 inches, and slow in the lower 17 inches. Natural fertility is low in the sandy surface layer and medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer. The water table is more than 72 inches below the surface. Surface runoff is moderately slow.

Natural vegetation of this soil is chiefly slash, loblolly, and longleaf pines, oak, dogwood, hickory, magnolia, and sweetgum. The understory consists of several varieties of bluestem, lopsided indiangrass, toothachegrass, hairy panicum, fringeleaf paspalum, briers, creeping beggarweed, eastern bracken, huckleberry, blueberry, greenbrier, and sedges. Most areas, however, are cleared and are used for crops and improved pasture.

This soil has moderate limitations for crops because of the hazard of erosion. It is well suited to such crops as corn, soybeans, peanuts, tobacco, watermelons, cucumbers, cantaloupes, and most vegetable crops grown in the county. Moderate erosion control measures are needed. Management practices are crop rotations that include soil improving cover crops on the soil at least half the time and leaving all crop residue on the soil. Good management also includes correct seedbed preparation, good fertilization, and liming as needed. During long droughty periods, irrigation is needed for maximum yields and may be feasible for high value crops (fig. 10).

This soil is well suited to improved pasture of deep rooted grasses and legumes. High quality grazing and hay yields can be produced if good pasture management practices are used. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Because of the droughty conditions of the sandy surface and subsurface layers during periods of low rainfall, good yields of shallow rooted pasture plants cannot normally be produced without supplemental irrigation.

The potential productivity of this soil for slash and loblolly pine is high. Potential productivity for longleaf pine is moderately high. There are moderate limitations to use of normal woodland equipment. Seedling mortality and plant competition are moderate.

This soil has only slight limitations as sites for septic tank absorption fields, dwellings, small commercial buildings, trench landfills, and local roads and streets. Limitations of the soil as sites for sewage lagoons are severe because of possible contamination of ground water by seepage through the sandy subsurface layer. The sandy part of the sidewalls needs to be lined and sealed.

This soil has fair potential as habitat for openland wildlife. Potential for woodland wildlife is good. Potential for wetland wildlife habitat is very poor because of lack of water areas.

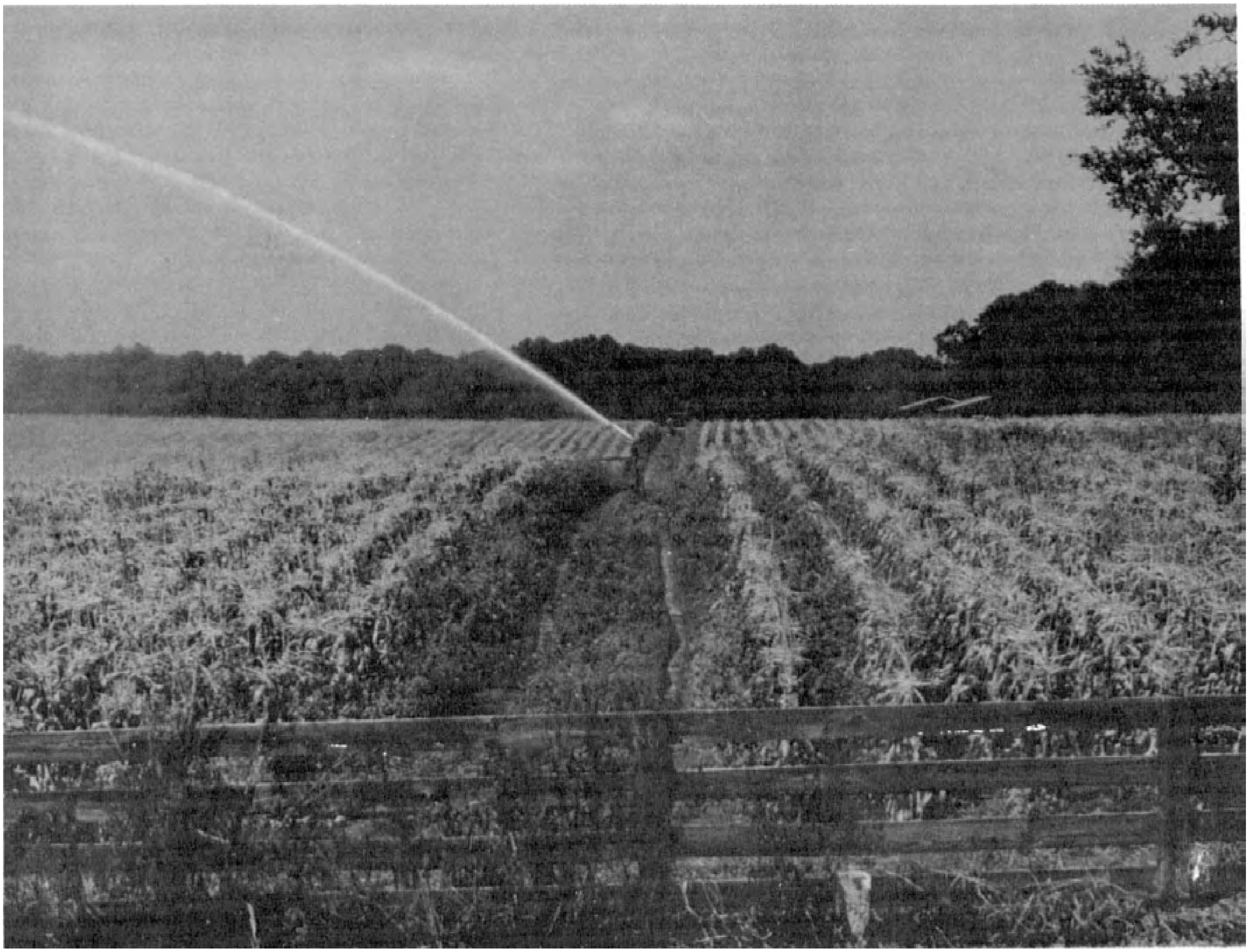


Figure 10.—Corn being irrigated on Kendrick sand, 2 to 5 percent slopes. Irrigation is needed during extended dry periods.

This Kendrick soil has severe limitations for recreational areas because of the sandy surface. Trafficability is a problem. Wind erosion is a hazard during drier periods. The maintenance of a good vegetative cover, windbreaks, or some other form of surface protection is needed.

This Kendrick soil is in capability subclass IIe and has a woodland ordination symbol of 2s.

30C—Kendrick sand, 5 to 8 percent slopes. This sloping, well drained soil is usually in elongated areas on long slopes of uplands. The areas are small to relatively large and range from about 10 to 125 acres.

Typically, the surface layer is grayish brown sand about 6 inches thick. The subsurface layer is yellowish brown sand to a depth of 24 inches. The subsoil extends to a depth of 76 inches or more. The upper 5 inches of the subsoil is yellowish brown, mottled sandy loam; the next 27 inches is strong brown sandy clay loam; and the lower 20 inches is yellowish brown, mottled sandy clay loam.

Included with this soil are small areas of soils that are similar to Kendrick soils but have a brownish yellow or yellowish brown loamy subsoil less than 20 inches below the surface or have fine sand surface and subsurface layers. Also included are a few areas of soils that are sandy clay at a depth of 20 to 40 inches. Small areas of

Arredondo, Blichton, Gainesville, and Lochloosa soils are in some areas. A few areas of Kendrick soils have 2 to 5 percent slopes or 8 to 12 percent slopes. Small moderately eroded spots are included in some areas. Limestone boulders and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 20 percent.

In this Kendrick soil, the available water capacity is low in the sandy surface and subsurface layers and medium to high in the subsoil. Permeability is rapid in the sandy surface and subsurface layers, moderate in the upper part of the subsoil, and slow to moderately slow in the lower part. Natural fertility is low in the sandy layers and medium in the loamy subsoil. Organic matter content is low. The water table is more than 72 inches below the surface. Surface runoff is medium.

The natural vegetation includes slash, loblolly, and longleaf pines and oak, dogwood, and hickory. The understory is chiefly a mixture of bluestem, panicum, paspalum, toothachegrass, creeping beggarweed, huckleberry, eastern bracken, and briers. Most areas are cleared and are in improved pasture of deep rooting grasses and legumes. Some are in cultivated crops.

This soil has severe limitations for cultivated crops because of the hazard of erosion. It is moderately well suited to most crops grown in the county. It produces good yields if management is at a high level. Intensive erosion control measures are needed. These include contour cultivation of row crops and crop rotation that keeps close growing crops on the soil at least two-thirds of the time. Other practices are returning all crop residue to the soil and properly fertilizing and liming as needed. Although irrigation is needed during long droughty periods for maximum yields, it may not be a practical option for most crops.

This soil is well suited to such improved pasture grasses as Coastal bermudagrass and bahiagrasses. Good quality grazing and hay yields can be produced with good management measures, which include proper establishment, fertilization, liming, and controlled grazing. Establishing good vegetative cover as rapidly as possible protects the surface and prevents excess erosion.

The potential productivity of this soil for slash and loblolly pines is high. Potential for the production of longleaf pine is moderately high. Limitations to use of normal woodland equipment are moderate. Seedling mortality and plant competition are moderate.

This soil has slight limitations as sites for septic tank absorption fields, dwellings, trench type sanitary landfills, and local roads and streets. Limitations for use as sites for small commercial buildings are moderate because of the slope. The soil has severe limitations as sites for sewage lagoons because of potential contamination of ground water by seepage of effluent through the sandy subsurface layer.

This soil has medium potential as habitat for openland wildlife. Potential for woodland wildlife habitat is good and for wetland wildlife habitat is very poor.

This Kendrick soil has severe limitations for recreational uses because of the sandy surface. During dry periods wind erosion is a hazard. The maintenance of a good vegetative cover, windbreaks, or some form of surface protection is needed. The slope is a moderate limitation for playground areas. Before the soil can be used for this purpose, land shaping is necessary.

This Kendrick soil is in capability subclass IIIe and has a woodland ordination symbol of 2s.

31A—Blichton sand, 0 to 2 percent slopes. This nearly level to gently sloping, poorly drained soil is on relatively broad flats and at the base of slopes of the gently rolling uplands. Areas are irregular in shape and range from about 10 to 50 acres.

Typically, the surface layer is very dark gray sand about 6 inches thick. The subsurface layer is light brownish gray sand to a depth of 24 inches and has about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is gray sandy loam; the next 33 inches is gray sandy clay loam that is 7 percent plinthite, by volume; and the lower 14 inches is mixed gray and olive gray sandy clay loam that has mottles of brown, red, and yellow.

Included with this soil in mapping are small areas of Bivans, Lochloosa, and Lynne soils. Small areas of soils that are similar to this Blichton soil but that have a 10- to 18-inch, black or very dark gray loamy sand surface layer over a sandy clay subsoil are in some areas. Small areas of Blichton soils that have slopes of 2 to 5 percent are included. Total included areas are less than 20 percent.

This Blichton soil has a water table that is less than 10 inches below the surface for 1 to 4 months during most years. Surface runoff is slow. The available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and slow to moderately slow in the loamy subsoil. Natural fertility is low to medium, and organic matter content is moderately low to moderate.

Natural vegetation includes hickory; magnolia; slash, longleaf and loblolly pines; sweetgum; and pineland threeawn, bluestems, and sawpalmetto.

This soil has severe limitations for cultivated crops because of wetness. The number of adapted crops is limited. If a good water control system and soil improving measures are used, the soil is well suited to a number of special crops, such as snapbeans, squash, cucumbers, cabbage, eggplant, and peppers. Good management practices include rotating row crops with close growing, soil improving crops; leaving all crop residue on the soil; seedbed preparation that includes bedding the rows; and proper application of fertilizer and lime as needed.

This soil is well suited to pasture. Improved bahiagrass, bermudagrass, and white clover produce top quality pasture if good management practices are used. Water control measures are needed to remove excess surface water after long rainy periods. Proper fertilization and liming and controlled grazing are necessary to maintain vigorous plant growth.

Potential productivity of the soil for pine trees is high. The soil has moderate limitations for normal woodland equipment operations during harvesting. Plant competition is moderate.

This soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major problem. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If used as sewage lagoons, this soil has a potential hazard of contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed to prevent this seepage. The moderate shrink-swell potential can cause an additional problem for walls and foundations and local roads and streets if corrective measures are not taken during construction.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is only fair because the areas do not have water areas.

The Blichton soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is the main limitation. Some form of water control is needed which quickly removes the excess water during rainy periods. Intensively used recreational areas have problems in trafficability and wind erosion during drier periods. Maintaining good vegetative cover or some other form of surface stabilization helps overcome these problems.

This Blichton soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

31B—Blichton sand, 2 to 5 percent slopes. This gently sloping, poorly drained soil is on gently rolling uplands. Slopes are slightly convex. The areas are mostly irregular in shape and elongated and range from about 10 to 40 acres.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. It is about 3 percent nodules of ironstone and fragments and nodules of phosphatic limestone. The subsurface layer extends to a depth of 28 inches. The upper 7 inches is grayish brown sand, and it has about 2 percent nodules of ironstone and fragments of phosphatic limestone. The next 15 inches is light brownish gray loamy sand. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is dark gray sandy clay loam and is about 4 percent nodules of ironstone and fragments of phosphatic limestone. The next 28 inches is dark gray sandy clay loam that is about 10 percent plinthite and about 3 percent nodules of ironstone and weathered phosphatic limestone. The lower 18 inches is gray sandy clay loam that has dark reddish brown mottles.

Included with this soil in mapping are small areas of Bivans and Lochloosa soils. Small areas of poorly drained soils that have a 10- to 18-inch, black or very dark gray sandy surface layer over a sandy clay subsoil are also included. Small areas of Blichton soils that have slopes of 0 to 2 percent or 5 to 8 percent are included in a few areas. A few areas mapped as Blichton soils contain less than 5 percent plinthite. Total included areas are about 12 percent or less.

In this Blichton soil, the subsurface layer and the upper part of the subsoil are saturated by a perched water table for 1 to 4 months during most years. Surface runoff is medium. The available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and slow to moderately slow in the loamy subsoil. Natural fertility is low to medium, and organic matter content is moderately low to moderate.

Natural vegetation consists of mostly hickory, magnolia, and pineland threeawn; slash, longleaf, and loblolly pines; and sweetgum and bluestem.

This soil has severe limitations for cultivated crops. Wetness is the major limitation; however, erosion is a hazard where the surface is not protected. If a water control system and good management practices are used, the soil is well suited to a number of special crops and is moderately well suited to such crops as corn and peanuts. Management practices are a crop rotation system that includes soil improving cover crops on the soil at least half the time; leaving all crop residue on the soil; and a water control system that intercepts seepage water from adjacent higher elevations and also removes excess internal water. Good seedbed preparation, fertilization, and liming are also needed for best yields.

This soil is well suited to pasture. Improved varieties of grasses, such as bermudagrass and bahiagrass, are well adapted. White clover is also adapted when properly managed. Good management is required for top quality yields. This includes proper fertilization, liming, and controlled grazing.

This soil has high potential productivity for pine trees. Limitations for equipment use during harvesting and plant competition are moderate.

This soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness, which is mainly caused by hillside seepage, is the major problem. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If used for sewage lagoons and landfills, the soil has a potential hazard of contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed. The shrink-swell potential is a moderate limitation for building foundations and walls and road or street construction if corrective measures are not taken.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because there are no water areas.

This Blichton soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is the main problem. If this soil is used for athletic fields and playground areas, the surface needs to be leveled and shaped and some form of water control, such as subsurface drainage, needs to be used to quickly remove the excess water during wet periods. Trafficability and wind erosion are problems during drier periods. The establishment and maintenance of a good vegetative cover, the addition of good topsoil, windbreaks, or some other form of surface stabilization can help overcome these problems.

This Blichton soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

31C—Blichton sand, 5 to 8 percent slopes. This sloping, poorly drained soil is on the rolling uplands. The areas are irregular in shape and elongated and range from about 5 to 45 acres.

Typically, the surface layer is dark gray sand about 5 inches thick. It is about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsurface layer is sand to a depth of 31 inches. The upper 21 inches is gray. The lower 5 inches is light gray. It is about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 78 inches. The upper 6 inches is light brownish gray sandy loam. It is about 4 percent nodules of ironstone and fragments of phosphatic limestone. The next 12 inches is light brownish gray sandy clay loam and is about 2 percent nodules of ironstone and fragments of phosphatic limestone. It is about 6 percent plinthite, by volume. The next 17 inches is light gray sandy clay loam and is about 1 percent nodules of ironstone and weathered fragments of phosphatic limestone. About 8 percent is plinthite, by volume. The lower 12 inches is light gray sandy clay loam. Between depths of 78 and 80 inches, the underlying material is gray sandy clay loam.

Included with this soil in mapping are small areas of Bivans, Boardman, Lochloosa, and Wacahoota soils. Small areas of Blichton soils that have 2 to 5 percent slopes or have less than 5 percent plinthite are included. Total included areas are about 15 percent or less.

This Blichton soil is saturated by a perched water table within 10 inches of the surface for 1 to 4 months during most years. Wetness is caused by hillside seepage. Surface runoff is rapid. The available water capacity is low in the sandy surface and subsurface layers, and it is low to medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers. It is slow to moderately slow in the loamy subsoil. Natural fertility is low to medium, and organic matter content is moderately low.

Natural vegetation consists mostly of hickory, magnolia, and pineland threeawn; slash, longleaf, and loblolly pines; and sweetgum.

This soil has very severe limitations for cultivated crops because of the wetness and the severe hazard of erosion. Hillside seepage is a severe problem during wet seasons and is difficult to control. The soil is only moderately suited to such crops as corn, peanuts, and certain vegetable crops if it is well managed. Intensive erosion control measures are needed. These include water control measures which intercept and remove the surface water slowly; planting row crops on the contour; and rotating row crops with cover crops that are on the soil at least two-thirds of the time. All crop residue needs to be returned to the soil. Good seedbed preparation, fertilization, and liming are also necessary for good yields.

This soil is well suited to improved pasture and produces good quality grazing if good pasture management practices are used. This includes good fertilization and liming and controlled grazing. Erosion is a severe hazard if the surface is not well protected. Ground cover must be established as rapidly as possible to minimize the problem.

Potential productivity of this soil for pine trees is high. The soil has moderate limitations for equipment use during harvesting operations because of the slope, wetness, and the sandy surface layer. Plant competition is also moderate.

This soil has severe limitations for most urban uses, including sites for dwellings, small commercial buildings, absorption fields for septic tanks, trench landfills, sewage lagoons, and local roads and streets. Wetness caused by hillside seepage is the major limitation (fig. 11). Some form of water control, such as subsurface drainage, is needed to remove the excess water during wet periods. The shrink-swell potential is a moderate limitation for building foundations and walls and in road or street construction if corrective measures are not taken.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because shallow water areas, which are essential for this type of wildlife, are difficult to develop on these hillsides.

This Blichton soil has severe limitations for such recreational uses as athletic fields, playgrounds, camp sites, and picnic areas because of wetness, the sandy surface texture, and slope. Some form of water control is needed to remove the excess water and control the hillside seepage during rainy periods. Land shaping,

Figure 11.—An area of Blichton sand, 5 to 8 percent slopes, under construction for urban development. Severe erosion on this slope is due to wetness from hillside seepage.

which is necessary before the soil can be used for playground areas, exposes and intermixes some areas of the subsoil. This could cause additional problems in trafficability during rainy periods. The addition of suitable topsoil or some other form of surface improvement is needed.

This Blichton soil is in capability subclass IVw and has a woodland ordination symbol of 2w.

32B—Bivans sand, 2 to 5 percent slopes. This gently sloping, poorly drained soil is on relatively broad flats and at the base of slopes of the rolling uplands. The areas are irregular in shape and range from about 10 to 55 acres.

Typically, the surface layer is dark gray sand about 6 inches thick. The subsurface layer is gray sand 9 inches thick. It has a few nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 61 inches. It has a few fine and medium sized nodules and fragments of ironstone and phosphatic limestone. The upper 12 inches is dark gray, mottled sandy clay;

the next 18 inches is gray, mottled sandy clay; and the lower 16 inches is gray, mottled sandy clay loam. Between depths of 61 to 81 inches, the underlying material is gray, mottled sandy clay loam.

Included with this soil in mapping are small areas of Blichton, Boardman, Lochloosa, and Micanopy soils. Small areas of soils which are similar to Bivans soils but which have a very dark gray or black surface layer 7 to 14 inches thick over a sandy clay subsoil are also included. Small areas of Bivans soils that have 0 to 2 percent slopes are included in a few areas. Total included areas are less than 20 percent.

This Bivans soil has a perched water table that is in the surface and subsurface layers and the upper part of the subsoil for 1 to 4 months during most years. Surface runoff is moderate. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is low to medium. Organic matter content of the surface layer is moderately low to moderate.

Natural vegetation is slash, longleaf, and loblolly pines; live, laurel, and water oaks; and sweetgum, hickory, holly, and magnolia. The understory is chiefly waxmyrtle, blackberry, greenbrier, bluestem, low paspalum, pineland threeawn, and dwarf huckleberry.

This soil has severe limitations for cultivated crops. The major limitations are wetness caused by a perched water table during wet seasons; the shallow, clayey subsoil; and susceptibility to erosion. Vegetable crops are generally better suited to this soil than general farm crops. If good management practices and a water control system are used, the soil is well suited to most locally grown vegetable crops and moderately suited to such general farm crops as corn, soybeans, and watermelons. Water control is needed to intercept and slowly remove excess surface water and seepage. Good management also includes contour cultivation, crop rotations that include a close growing cover crop at least two-thirds of the time, returning all other crop residue to the soil, proper seedbed preparation, and fertilizing and liming according to the needs of the crop being grown.

This soil is well suited to improved pasture and produces high quality grazing if pasture is well managed. Improved varieties of grasses, such as bahiagrass and Coastal bermudagrass, are well adapted. Clover is also adapted when properly managed. Good management includes proper fertilization and liming and controlled grazing, which is needed to maintain vigorous plant growth.

This soil has high potential productivity for slash, longleaf, and loblolly pines. The soil has moderate limitations for normal woodland equipment uses during harvesting because of wetness. Plant competition is also moderate.

This soil has severe limitations for such urban uses as sites for septic tank absorption fields, sewage lagoons, trench landfills, dwellings, small commercial buildings, and local roads and streets. The perched water table during wet seasons and slow internal movement of water through the clayey subsoil are the major problems for septic tank absorption fields. Wetness is the major problem for sewage lagoons. The perched water table and shallow, clayey subsoil are the major limitations for trench landfills. The high shrink-swell potential of the clayey subsoil and wetness are the major limitations for dwellings or small commercial buildings. The low strength, wetness, and high shrink-swell potential of the clayey subsoil are major limitations for constructing local roads and streets.

This soil has fair potential as habitat for openland and woodland wildlife. Potential for wetland wildlife is very poor because of the lack of shallow water areas.

This Bivans soil has severe limitations for use as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the sandy surface texture are the major limiting factors. If used for athletic fields and playgrounds, the soil needs leveling and shaping and some form of water control, such as subsurface drainage, to quickly remove the excess water during wet periods. Trafficability and a hazard of wind erosion during drier periods are limitations. The establishment and maintenance of a good vegetative cover, the addition of good topsoil, windbreaks, or some other form of surface stabilization can be used to overcome these problems.

This Bivans soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

32C—Bivans sand, 5 to 8 percent slopes. This is a sloping, poorly drained soil on short breaking slopes and along hillsides of the uplands. The areas are irregular and elongated in shape. They range from about 5 to 40 acres.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is light brownish gray sand about 5 inches thick. It has a few nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 59 inches. The upper 20 inches is gray sandy clay and a few nodules of ironstone and fragments of phosphatic limestone. The next 29 inches is gray, mottled sandy clay. Between depths of 59 and 80 inches, the underlying material is gray, mottled sandy clay.

Included with this soil in mapping are small areas of Blichton, Boardman, Lochloosa, and Wacahoota soils. Small areas of soils that are similar to Bivans soils but that have a very dark gray or black loamy sand surface layer 8 to 12 inches thick over a sandy clay loam subsoil are also included in some areas. Small areas of Bivans soils that have slopes of 2 to 5 percent are included. Total included areas are about 15 percent or less.

In this Bivans soil, the subsurface layer and upper part of the subsoil are saturated by a perched water table for

1 to 3 months during most years. Wetness is caused mainly by hillside seepage. Surface runoff is rapid. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is low to medium, and the organic matter content is moderately low to moderate in the surface layer.

Natural vegetation is slash and loblolly pines; live, laurel, and water oaks; and sweetgum, hickory, and magnolia. The understory is mostly waxmyrtle, briers, native grasses, and herbs.

This soil has very severe limitations for cultivated crops. Wetness caused by hillside seepage and susceptibility to erosion are the major limitations. Erosion is a severe hazard because of the slow internal movement of water and the rapid surface runoff. The shallow, clayey subsoil also causes some problems in workability during cultivation. If a water control system and other very good management practices to reduce potential erosion are used, the soil is moderately suited to special crops and such general farm crops as corn, soybeans, and watermelons. Water control is needed to remove surface water slowly and to intercept seepage water. Good management includes contour cultivation, close growing cover crops on the soil at least three-fourths of the time, returning all crop residue to the soil, proper seedbed preparation, regular applications of fertilizers, and liming as needed.

This soil is well suited to improved pasture. Erosion is a severe limitation where the surface is not protected during rainy periods. A good cover needs to be established as rapidly as possible. Proper management is needed to produce good quality pasture. This includes correct fertilization and liming and controlled grazing to maintain a good cover and to produce the highest yields.

Potential productivity of this soil for pine trees is high. The soil has moderate limitations for equipment use during harvesting operations because of the wetness and the sandy surface layer. In areas where trees are cut and the soil is denuded of protective vegetative cover, some erosion is a hazard. This soil is moderately limited by plant competition and has slight limitations of seedling mortality.

This soil has severe limitations for most urban uses, including sites for dwellings, small commercial buildings, absorption fields for septic tanks, trench landfills, sewage lagoons, and local roads and streets. Wetness caused by hillside seepage, slow permeability, high shrink-swell potential, clayey subsoil, soil strength, and slope are the major limitations. Some form of water control, such as subsurface drainage, is needed to remove the excess water during wet periods. Wetness is a severe limitation for dwellings and small commercial buildings. The high shrink-swell potential of the clayey subsoil is a major problem which needs to be overcome before and during construction of buildings and local roads and streets. The low soil strength also is a severe problem that needs to be corrected before construction of local roads and streets.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because this soil does not have the water areas desired by this type of wildlife.

This Bivans soil has severe limitations for recreational uses because of the wetness and texture. If this soil is used intensively for playgrounds and athletic fields, land shaping is required to smooth the slopes. This exposes and intermixes much of the underlying clayey subsoil and causes additional problems in trafficability. The addition of suitable topsoil or some form of hard surfacing and water control are needed if this soil is to be developed for recreational uses.

This Bivans soil is in capability subclass IVw and has a woodland ordination symbol of 2w.

32D—Bivans sand, 8 to 12 percent slopes. This strongly sloping, poorly drained soil is on uplands. The areas are on small, sharp-breaking slopes and long, irregularly shaped, seepy hillsides. The areas range from about 5 to 25 acres.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is dark grayish brown sand about 6 inches thick. Both layers are about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil is gray sandy clay to a depth of 56 inches. It is about 3 percent nodules of ironstone and fragments of phosphatic limestone. Between depths of 56 and 80 inches, the underlying material is light gray, mottled sandy clay.

Included with this soil in mapping are small areas of Blichton, Boardman, Lochloosa, and Wacahoota soils. A few included areas are soils that are similar to Bivans soils but have 5 to 10 percent nodules of ironstone and fragments of phosphatic limestone in the surface layer and subsoil. Also included are small areas of soils similar to Bivans soils except that they have a very dark gray or black loamy sand surface layer 7 to 12 inches thick over a sandy clay subsoil. Small areas of Bivans soils have slopes of 5 to 8 percent. Total included areas are about 15 percent or less.

This Bivans soil is saturated with a perched water table caused mainly by hillside seepage. The water table is less than 10 inches below the surface for 1 to 3 months during most years. Surface runoff is rapid. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the sandy surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is medium. Organic matter content is moderately low in the surface layer.

Natural vegetation is a mixture of slash and loblolly pine, oaks, hickory, sweetgum, and magnolia. The understory consists of waxmyrtle and native grasses and herbs.

This soil is not suited to cultivated crops. Major limiting factors are wetness caused by hillside seepage and the severe hazard of erosion caused by rapid surface runoff and slow internal drainage. The shallow, clayey subsoil, which is sticky and plastic, causes problems in workability when the soil is cultivated.

This soil is suited to improved pasture but needs intensive management. A good sod should be established as quickly as possible after land preparation because of the hazard of erosion on unprotected slopes. Proper applications of fertilizers and lime and controlled grazing are needed to produce good quality pasture and to assure a good protective cover at all times.

This soil has high potential productivity for slash, loblolly, and longleaf pines. Slash pine is the best species for planting. The soil has moderate limitations for equipment use and of plant competition. During logging operations, if the surface is denuded of all vegetative cover, erosion is a hazard.

This soil has severe limitations for urban uses. The hillside seepage caused by the perched water table and the slow permeability are the major limitations for septic tank absorption fields. Wetness is the major limitation for sewage lagoons and sanitary landfill sites. The clayey subsoil is not a good source of material to use as cover for landfills because of the problem of workability and compaction. The wetness, high shrink-swell potential of the clayey subsoil, and slope are the major limitations when dwellings or small commercial buildings are to be constructed. The high shrink-swell potential, low strength, and wetness are the major problems for construction of local roads and streets.

This soil has fair potential as habitat for openland and woodland wildlife. Potential as habitat for wetland wildlife is very poor because of the absence of shallow water areas.

This Bivans soil has severe limitations for recreational uses because of the wetness and texture. If it is used intensively for playgrounds and athletic fields, land shaping is needed to smooth the slopes. This exposes and intermixes the underlying clayey subsoil and causes additional problems in trafficability and water ponding on the surface. Ponding during rainy periods is caused by the slow infiltration. The addition of suitable topsoil or some form of hard surface and water control are needed if this soil is developed for recreation.

This Bivans soil is in capability subclass VIw and has a woodland ordination symbol of 2w.

33B—Norfolk loamy fine sand, 2 to 5 percent slopes. This gently sloping, well drained soil is in relatively small areas on the rolling uplands. Slopes are slightly convex. The areas are irregular in shape and range from about 10 to 50 acres.

Typically, the surface layer is dark grayish brown loamy fine sand about 9 inches thick. The subsoil extends to a depth of 62 inches. The upper 6 inches is yellowish brown fine sandy loam; the next 26 inches is dark yellowish brown sandy clay loam; the next 14 inches is dark yellowish brown sandy clay; and the lower 7 inches is dark yellowish brown clay that has gray mottles. Between depths of 62 and 80 inches, the underlying material is light gray, mottled clay.

Included with this soil in mapping are small areas of Bivans, Kendrick, Lochloosa, and Micanopy soils. Included in some areas are small areas of Norfolk soils that have slopes of 0 to 2 percent and 5 to 8 percent. Limestone boulders and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 15 percent.

This Norfolk soil has a water table that is at a depth of about 48 to 72 inches for 1 to 3 months during most years. Surface runoff is medium. The available water capacity is low in the surface layer and medium to high in the subsoil. Permeabililty is rapid in the surface layer, moderately slow to moderate in the upper part of the subsoil, and very slow to slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and medium in the sandy clay loam and sandy clay subsoil. Organic matter content is low to moderately low.

The natural vegetation of this soil is chiefly slash and loblolly pines, oak, hickory, dogwood, and sweetgum. The understory consists chiefly of toothachegrass, hairy panicum, fringeleaf paspalum, low panicum, blackberry, greenbrier, creeping beggarweed, dwarf huckleberry, and various bluestems. Most areas of this soil have been cleared and are in cultivated crops or improved pasture.

This soil has moderate limitations for crops because of the hazard of erosion. It is well suited to such crops as corn, soybeans, peanuts, tobacco, watermelons, cucumbers, cantaloupes, and most vegetable crops grown in the county (fig. 12). Moderate erosion control measures are needed. Management practices include alternating row crops with strips of a cover crop, crop rotations that include cover crops on the soil at least half the time, and returning residue from all crops to the soil. Good management also includes correct seedbed preparation, good fertilization, and liming as needed. During long droughty periods, irrigation is needed to produce maximum yields and is practical for high value crops.

This soil is well suited to improved pasture. Improved bahiagrasses and coastal bermudagrasses are well adapted. High quality grazing and hay yields can be produced if good management practices are used. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Deep rooted plants are not usually adversely affected by droughty conditions. If shallow rooted plants are grown, irrigation is needed during the droughty periods to produce good yields.

Potential productivity of the soil for slash and loblolly pines is high. Potential productivity for longleaf pine is moderately high. Limitations are slight for use of normal woodland equipment and seedling mortality. Plant competition is moderate.

This soil has moderate limitations as sites for septic tank absorption fields because of wetness. Limitations for trench sanitary landfills are also slight. The soil has moderate limitations as sites for sewage lagoons. It has only slight limitations as sites for dwellings without basements, small commercial buildings, and local roads and streets.

Potential of this soil as habitat for openland wildlife and woodland wildlife is good. Potential as habitat for wetland wildlife is very poor because of the lack of shallow water areas.

This Norfolk soil has slight limitations for recreational uses. During long dry periods, however, some wind erosion is a hazard in areas where the surface is not protected.

This Norfolk soil is in capability subclass IIe and has a woodland ordination symbol of 2o.

33C—Norfolk loamy fine sand, 5 to 8 percent slopes. This sloping, well drained soil is in irregularly shaped areas on small, sharp-breaking slopes and in irregularly shaped and elongated areas on the long hillsides of the rolling uplands. These areas range from about 8 to 35 acres.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand about 5 inches thick. The subsoil extends to a depth of 75 inches or more. The upper 35 inches is yellowish brown sandy clay loam; the next 16 inches is yellowish brown, mottled sandy clay loam; and the lower 13 inches is mottled, yellowish brown and gray sandy clay.

Included with this soil in mapping are small areas of Kendrick, Lochloosa, and Bivans soils. Also included are small areas of soils that have a yellowish brown, clayey subsoil at a depth of less than 20 inches and have gray mottles within 30 inches of the surface. In a few small areas, the subsoil extends to a depth of less than 60 inches. Also included are small areas of soils that are similar to Norfolk soils but have more than 5 percent, by volume, nodules and fragments of ironstone. Limestone boulders and sinkholes are included in some areas and are shown by appropriate symbols. Total included areas are about 20 percent.

This Norfolk soil has a water table that is at a depth of 48 to 72 inches for 1 to 2 months during most years. Wetness is caused by hillside seepage. Surface runoff is rapid. The available moisture capacity is low in the sandy surface and subsurface layers and medium to high in the loamy and clayey subsoil. Permeability is rapid in the surface and subsurface layers. It is moderately slow in the upper part of the subsoil and very slow to slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and medium in the underlying subsoil. Organic matter content is low to moderately low.

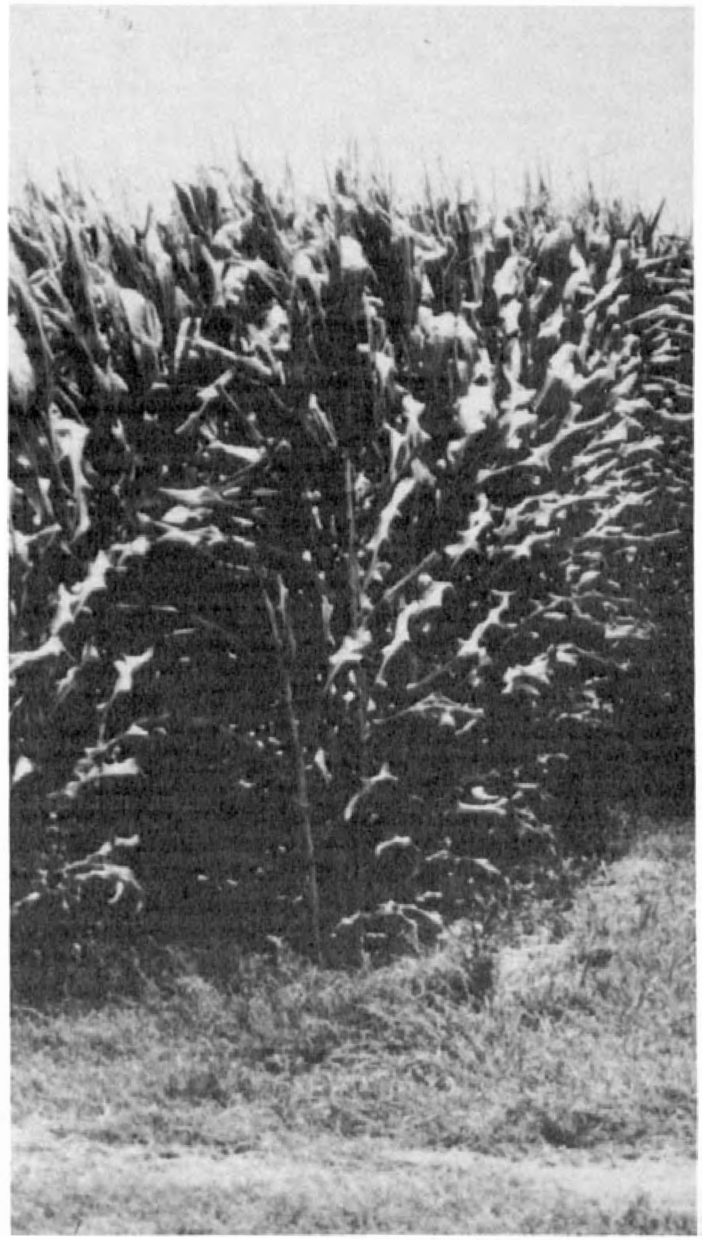


Figure 12.—Top quality corn on Norfolk loamy fine sand, 2 to 5 percent slopes. This soil is classed as prime farmland.

The natural vegetation of this soil is chiefly slash and loblolly pines; laurel, live, red, and water oaks; and hickory, magnolia, dogwood, and sweetgum. The understory is briers, greenbrier, huckleberry, creeping beggarweed, and various bluestems, panicums, and paspalums. Most areas of this soil are cleared and are in improved pasture. Some areas are in cultivated crops.

This soil has severe limitations for cultivated crops because of the hazard of erosion. It is well suited to most crops grown in the county and produces good yields if a high level of management is used. Intensive erosion control measures are needed. These include contour cultivation of row crops alternating with strips of cover crops and crop rotations that include close growing crops on the soil at least two-thirds of the time. Other management practices are returning all crop residue to the soil, proper fertilization and liming, and irrigation. Irrigation may be practical for high value crops. The irrigation system should be carefully designed and operated to avoid excess application rates that could cause runoff and erosion.

This soil is well suited to improved pasture. Coastal bermudagrass and bahiagrasses produce high quality grazing and hay yields if well managed. Good management includes proper establishment of plants, fertilization, liming, and controlled grazing. A good vegetative cover needs to be established as rapidly as possible to protect the surface and control erosion. Shallow rooted pasture plants are not well adapted to this soil.

The potential productivity of this soil for slash and loblolly pines is high. The potential productivity for longleaf pine is moderately high. The soil has slight limitations for use of normal woodland equipment, seedling mortality, and plant competition.

This soil has slight limitations as sites for dwellings without basements and for local roads and streets. Limitations are moderate for septic tank absorption fields because of wetness. The soil has slight limitations for trench landfills. It is moderately limited for sewage lagoons. Seepage is the main limitation. The soil has moderate limitations as sites for small commercial buildings because of the slope.

This soil has good potential as habitat for openland and woodland wildlife. Potential for wetland wildlife use is very poor because this soil does not have the shallow water areas needed for this type of wildlife.

This Norfolk soil has slight limitations for most recreational uses. In droughty periods soil blowing may be a problem on windy days unless the surface is protected. This soil has moderate limitations for use as playgrounds because of the slope. Land shaping is needed before the soil is used for playgrounds.

This Norfolk soil is in capability subclass IIIe and has a woodland ordination symbol of 2o.

34—Placid sand, depressional. This nearly level, very poorly drained soil is along poorly defined drainageways and in wet depressional areas both in the flatwoods and on sandy ridges. Slopes range from 0 to 2 percent. The areas are circular, elongated, or irregularly shaped and are about 10 to 50 acres.

Typically, the surface layer is sand about 15 inches thick. The upper 8 inches is black, and the lower 7 inches is very dark gray. The underlying layers are sand to a depth of more than 82 inches. The upper 6 inches is grayish brown, the next 26 inches is light brownish gray, and the lower 35 inches is light gray.

Included in some areas are small areas of Pompano and Samsula soils. Total included areas are less than 15 percent.

This Placid soil has a water table that is within 10 inches of the surface for 6 to 12 months of the year. The surface is usually covered with water for 6 months or more. The available water capacity is high to a depth of about 15 inches and low below this depth. Permeability is rapid throughout. Internal drainage is slow because it is impeded by the water table. Natural fertility and organic matter content are high to a depth of about 15 inches and very low below this depth.

Natural vegetation is chiefly cypress, gum, and bay trees with an understory of water-tolerant grasses.

Under natural conditions, this soil is not suited to cultivated crops and improved pasture. The excessive wetness and the problem of water control are the main limitations. Water is on the surface for much of the year. Adequate water control systems are difficult to establish. Most areas are in isolated ponds or wet depressions that do not have suitable drainage outlets. A good water control system normally requires an extensive system of canals and ditches. If a good drainage system can be installed and pasture is well managed, adapted grass or grass-clover pasture can be grown.

This soil is not recommended for slash or longleaf pines under natural conditions because of the excessive wetness and ponding. The soil does have a thick surface layer with good organic content, which is normally favorable for young seedling growth. Establishing an adequate rooting system for the young trees is very hard, however, and seedling mortality is severe. The soil has severe limitations for the use of normal woodland equipment and plant competiton.

This soil has severe limitations for urban uses. The ponding and the thick sandy texture are the dominant features that severely restrict the soil for this use. Water is on or near the surface during much of the time. Good drainage systems that adequately remove the water and effectively regulate the water table are expensive and hard to establish and maintain. Most areas lack good water outlets. Even where drainage systems are installed, keeping the areas adequately drained is a continuing problem. Before this soil is used as sites for homes, small commercial buildings, and septic tank absorption fields, the areas need to be filled with suitable soil material. The water table needs to be maintained below sewage lagoons and trench landfills. This requires a major water control system. In addition, the sidewalls and floors of the trenches and pits need lining and sealing to prevent contamination of the ground water by seepage.

Potential of the soil for use as habitat for openland wildlife is very poor. The ponded areas are not suited to this type of wildlife, and attempts to improve these conditions effectively would probably be unsatisfactory. Potential for woodland wildlife is also very poor. This soil has good potential as habitat for wetland wildlife.

The Placid soil has severe limitations as sites for recreational areas. The ponding and sandy texture are the major limitations. Before the soil can be used, drainage and a good water control system are necessary. The addition of a good fill material is needed to improve trafficability and to raise the surface sufficiently to prevent continuing wetness.

This Placid sand, depressional, is in capability subclass VIIw; it is not assigned a woodland ordination symbol.

35B—Gainesville sand, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil has sandy texture to a depth of 80 inches or more. It is in both small and large, irregularly shaped areas on the gently rolling uplands. Most areas range from about 10 to 250 acres.

Typically, the surface layer is dark grayish brown sand about 7 inches thick. The underlying layer extends to a depth of 82 inches or more. The upper 22 inches is yellowish brown sand, and the lower 53 inches is strong brown loamy sand.

Included with this soil in mapping are small areas of Arredondo, Fort Meade, Kendrick, and Lake soils. A few small areas of Gainesville soils that have 5 to 8 percent slopes are included. Total included areas are less than 15 percent.

In this Gainesville soil, the available water capacity is low, and the permeability is rapid. Organic matter content ranges from low to moderately low, and natural fertility is low. Surface runoff is slow. The water table is more than 72 inches below the surface.

Natural vegetation of this soil consists of slash, loblolly, and longleaf pines; laurel, live, and water oaks; and dogwood, magnolia, hickory, and maple trees. The understory consists chiefly of several varieties of panicum, bluestem, paspalum, lopsided indiangrass, and sedges. Most areas are cleared and used for crops and improved pasture.

This soil has severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients are the principal limitations. Good yields of such crops as corn, tobacco, peanuts, tomatoes, cucumbers, and watermelons, however, can be produced with high level management. Management practices are a crop rotation system that includes close growing, soil improving cover crops; the return of all crop residue to the soil; proper fertilization; and liming as needed. Irrigation is needed during droughty periods because the soil has low available water capacity in the root zone of plants. Wind erosion is active on this soil, especially during dry periods, and the surface needs to be protected at all times.

This soil is well suited to improved pasture of deep rooted grasses and legumes if good management practices are used. To maintain a good vegetative cover and reach maximum potential in productivity, careful management is required. This includes proper establishment of plants, fertilization, liming, and proper grazing. This soil is not suited to improved pasture of shallow rooting legumes and grasses because of droughtiness.

The potential productivity of the soil for pine trees is moderately high. Although seedling mortality and limitations to equipment use are slight, the soil is moderately limited by competition of other plants with young pine seedlings.

This soil has slight limitations as sites for dwellings, absorption fields for septic tanks, and roads and streets. It has severe limitations as sites for sewage lagoons. Contamination of ground water by seepage is a possibility. If the soil is to be used for sewage lagoons, the sidewalls and floors of the pits need to be well lined and sealed.

Potential of this soil for openland and woodland wildlife is fair. Potential for use as wetland wildlife is very poor because areas of this soil do not have suitable habitat.

The Gainesville soil has severe limitations for recreational uses because the sandy surface is a limitation for trafficability. During dry periods wind erosion is a hazard. Protecting the surface by maintaining a good vegetative cover, by windbreaks, or by some form of surface cover is needed.

This Gainesville soil is in capability subclass IIIs and has a woodland ordination symbol of 3s.

35C—Gainesville sand, 5 to 8 percent slopes. This sloping, well drained soil has sandy texture to a depth of 80 inches or more. It is in irregularly shaped areas on small, sharp breaking slopes and in relatively small elongated areas along long slopes of uplands. The size of the areas vary from about 8 to 40 acres.

Typically, the surface layer is dark grayish brown sand about 5 inches thick. The underlying layer is sand to a depth of 80 inches or more. The upper 37 inches is yellowish brown, and the lower 38 inches is strong brown.

Included with this soil in mapping are a few small areas of Arredondo, Kendrick, and Lake soils. A few areas of this soil include small spots of Gainesville soils that have 0 to 5 percent slopes. Total included areas are about 15 percent.

This Gainesville soil has low available water capacity and rapid permeability. Organic matter content is low to moderately low, and natural fertility is low. Surface runoff is slow. The water table is at a depth of more than 72 inches.

Natural vegetation consists of slash and longleaf pines; live and water oaks; and magnolia, hickory, and dogwood trees. The understory is briers, bluestem, pineland threeawn, panicum, and sedges. Most areas are cleared and are in improved pasture.

This soil has very severe limitations for cultivated crops. Droughtiness, rapid leaching of plant nutrients, and a moderate hazard of erosion are the principal limitations. The surface of this soil is also susceptible to wind erosion. Corn, peanuts, tomatoes, cucumbers, and watermelons are some of the better adapted crops and produce moderately good yields with high level management. Special soil improving and erosion control measures are needed. Management practices are a crop rotation system that includes close growing, soil improving cover crops; returning all crop residue to the soil; and proper fertilization and liming. Irrigation is needed during dry periods and can be practical for high value crops.

This soil is moderately well suited to improved pasture of deep-rooted grasses and legumes. Good pasture management is necessary for good quality pasture. This includes proper establishment of plants, fertilization, and controlled grazing. This soil is not suited to improved pasture of shallow-rooted legumes and grasses.

The potential productivity of this soil for longleaf and slash pine is moderately high. The soil has only slight limitations for normal woodland equipment use. Mortality of young seedlings is slight. Competition of other plants with young pine seedlings is moderate.

This soil has slight limitations as sites for dwellings, local roads and streets, and septic tank absorption fields. Where homes or other facilities that use septic tanks are concentrated, ground water contamination is a hazard. The soil has moderate limitations as sites for small commercial buildings because of the slope. It has severe limitations as sites for sewage lagoons because of the possibility of contamination of ground water by seepage. To prevent this, the sidewalls and floor of the pits need to be lined and sealed. The sandy surface presents some problems in trafficability in areas where the soil is used for trench landfills. Areas cleared of vegetation are subject to wind erosion.

This soil has fair potential for use as openland and woodland wildlife habitat. It has very poor potential for use as wetland wildlife habitat.

This soil has severe limitations for recreational uses because the sandy surface is a problem for trafficability. During dry periods, wind erosion is a hazard. The maintenance of a good vegetative cover, windbreaks, or some other form of protection is needed.

This Gainesville soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

36—Arents, 0 to 5 percent slopes. Arents are areas which have been excavated and backfilled with alternating layers of refuse and mixed soil material. The surfaces of these areas usually have slope gradients of less than 2 percent; however, in places some mounds have slopes of more than 2 percent.

These are sanitary landfills that range from about 10 to 125 acres. The landfills consist of a series of excavated pits, the floors of which are normally kept about 1 foot or more above the water table. The size and shape of these pits are determined, to a large extent, by the depth to the water table. Average width of the pits is about 50 to 100 feet, and the average depth is about 6 to 16 feet. The floors of the pits have a gradual grade toward one end to trap and remove surface drainage.

These areas are made up of alternating layers of refuse and garbage and mineral soil material. The areas receive daily deposits of refuse and garbage that are spread and packed into layers about 3 to 5 feet thick. These layers then receive a daily cover of about 6 inches of the mineral soil material that was originally excavated and piled adjacent to the pits. After the pits has been filled with layers of daily deposited refuse and soil material, a final top cover of about 3 feet of soil material is placed over the surface and is well packed.

Included with this unit are areas of mixed soil material that has been excavated and piled adjacent to the pits for use as cover material. This cover material is less than 20 percent of the area.

In the Arent soils, the natural fertility varies from low to medium, and permeability usually varies from rapid to moderate. Organic matter content is usually low in the layers of mineral soil material. The depth to the water table varies, but is usually 6 feet or more below the surface.

This map unit is not suitable for cultivated crops. It is too variable and unpredictable to give any degree of suitability for improved pasture. Seedbed preparation and crop cultivation are a problem because of the variability in thickness and unevenness of the mineral soil material. Settling and decomposition may cause voids to form, making cultivation and grazing difficult. Predicting potential productivity is not possible because of the variability of the inherent factors of the mixed material.

This unit is too variable to give an accurate potential for woodland production. Most woodland management problems would range from severe to moderate if the unit were to be used for this purpose.

This unit has very low potential for most urban uses. The main limitations are the potential settling, the health hazards, and highly variable soil material for any construction.

Arents are not placed in a capability subclass and are not assigned a woodland ordination symbol.

37—Zolfo sand. This nearly level, somewhat poorly drained soil is on slight rises of the flatwoods and in the rather broad transitional area between the rolling uplands of the western part of the county and the flatwoods of the eastern part. Slopes are nearly level and range from 0 to 2 percent. The areas are irregular in shape and range from 25 to 75 acres.

Typically, the surface layer is dark gray sand about 8 inches thick. The subsurface layer is sand and extends to a depth of 60 inches. The upper 6 inches is grayish brown; the next 20 inches is pale brown with mottles; and the lower 26 inches is very pale brown and has mottles. The subsoil is dark brown to dark reddish brown sand to a depth of 82 inches or more.

Included with this soil in mapping are small areas of Chipley, Pottsburg, Sparr, and Tavares soils. Also included are small areas of soils that are similar to the Zolfo soil but have a water table at a depth of 40 to 72 inches during wet periods. Total included areas are about 15 percent or less.

This Zolfo soil has a water table that is at a depth of 24 to 40 inches for 2 to 6 months during most years and may be at a depth of 10 to 24 inches for periods of about 2 weeks or less during very wet periods. Surface runoff is slow. The available water capacity is low to medium to a depth of 60 inches and medium to high below this depth. Permeability is rapid to a depth of 60 inches and moderate below. Natural fertility is low. Organic matter content of the surface layer is low.

Natural vegetation of this soil is slash and longleaf pines and water, laurel, and live oak. The understory consists of waxmyrtle, sumac, gallberry, palmetto, pineland threeawn, bluestem, carpetgrass, and panicum. The acreage is about evenly divided between cropland, improved pasture, and woodland.

This soil has severe limitations for cultivated crops because of periodic wetness and poor soil qualities. The high water table, which is at a depth of about 24 to 40 inches during wet seasons, can cause some retardation of root development. If good management practices and a water control system are used, the soil produces good yields of such crops as corn, soybeans, squash, beans, peppers, eggplant, and cucumbers. Good management practices are a crop rotation system that includes close growing, soil improving cover crops; the return of all crop residue to the soil; and proper fertilization and liming.

The soil is moderately well suited to improved pasture. Bahiagrass and bermudagrass produce good quality grazing if high level management is used. This includes proper establishment of plants, fertilization, liming, and controlled grazing.

Potential productivity of the soil for woodland is moderately high. Slash pine is the best adapted species for planting. The loose, sandy surface texture causes moderate restrictions for use of equipment. The low natural fertility, low available water capacity, and low organic matter content of the sandy surface and subsurface layers cause moderate limitations of seedling mortality and plant competition.

This soil has moderate limitations for such urban uses as dwellings without basements, small commercial buildings, and local roads and streets. Limitations are severe for septic tank absorption fields. The high water table during wet seasons prevents good absorption of the effluent. The high, fluctuating water table and thick sandy texture also prevent adequate filtration of the effluent. This results in contamination of ground water supplies. The soil has severe limitations as sites for sewage lagoons and trench landfills because of the wetness and possibility of contamination of ground water by seepage.

This soil has poor potential as habitat for openland wildlife and wetland wildlife. Potential as habitat for woodland wildlife is fair.

This Zolfo soil has severe limitations for recreational uses. The sandy surface causes problems in trafficability, and, during dry periods, wind erosion is a hazard. The establishment and maintenance of a good vegetative cover, using windbreaks, or the addition of suitable topsoil or some other form of surface stabilization can overcome these problems.

This Zolfo soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

38—Pits and Dumps. This map unit consists of pits from which limestone has been or is being removed during surface mining operations and dumps where the excavated overburden material has been piled adjacent to the pits. Individual areas of pits and dumps are usually impractical to separate at the scale in which they are mapped.

The pits vary from about 5 to 75 acres in size and about 30 to 70 feet in depth. They are quite variable in age, ranging from pits that are currently being mined to old abandoned ones that are approximately 65 to 75 years old.

The dumps mostly consist of large areas of heterogeneous soil material that has been excavated from the surface of the limestone and piled adjacent to the pits. This mixed soil material commonly is about 1 to 15 percent, by volume, fragments and boulders of limestone, which are intermixed with the soil material. This material is in relatively narrow piles which are about 6 to 30 feet high and are around the perimeter of the pits.

Included with this map unit are some pits in which the soil has been excavated for use in road construction and for fill material on sites for buildings. These pits, locally known as borrow pits, are about 4 to 20 acres in size and about 5 to 10 feet in depth. Small piles of limestone that has been excavated and stored on the floor of some of the pits for future use are also included. Pits too small to delineate are shown by the standard pick and shovel symbol.

Most of these pits and dumps are in the western part of the county, where several are presently being mined. Many abandoned pits, however, are throughout most areas of the county. They are at varying stages of natural revegetation. The type of vegetation depends upon the site location and the kind of original overburden material.

Many of these pits contain water and have high potential for fish if stocked and managed properly. These water areas are mapped separately on the soil map.

Areas of this map unit have fair to good potential for most wildlife habitat. Under the present conditions they are not suited to crops, improved pasture, commercial woodland, and urban or most recreation uses. If they were reshaped and revegetated to conform with the existing landscape, the potential for these uses would vary in accordance with the site location and kinds of soil material used to reshape the areas.

This Pits and Dumps unit is not placed in a capability subclass and is not assigned a woodland ordination symbol.

39B—Bonneau fine sand, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is in small to relatively large areas on uplands. Slopes are generally slightly convex. The areas are irregular in shape and range from about 10 to 40 acres.

Typically, the surface layer is dark gray fine sand about 9 inches thick. The subsurface layer is brownish yellow fine sand to a depth of 29 inches. The subsoil extends to a depth of 84 inches or more. The upper 9 inches is yellowish brown fine sandy loam; the next 22 inches is mottled gray and brownish yellow sandy clay loam; the next 15 inches is gray and yellowish brown sandy clay loam; and the lower 9 inches is gray, mottled sandy clay loam.

Included with this soil are small areas of Arredondo, Kendrick, Lochloosa, Micanopy, and Millhopper soils. Some areas include Bonneau soils that have slopes of 0 to 2 percent or 5 to 8 percent. Also included in the Orange Heights area are about 50 acres of soils that are similar to the Bonneau soil but are more than 5 percent plinthite. Limestone boulders and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 20 percent or less.

This Bonneau soil has a water table that is at a depth of 40 to 60 inches for 1 to 3 months and at a depth of 60 to 72 inches for 2 to 3 months during most years. The water table may be perched at a depth of about 36 to 40 inches for less than 1 month during some years. Surface runoff is slow. Permeability is moderately rapid to rapid in the sandy surface and subsurface layers. Permeability is moderately slow to moderate in the upper part of the subsoil and very slow to slow in the lower part. The available water capacity is low in the sandy surface and subsurface layers and medium in the subsoil. Natural fertility is low in the sandy layers and medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer.

The natural vegetation is chiefly slash, longleaf, and loblolly pines; laurel, live, water, and red oaks; and hickory, dogwood, and sweetgum. The understory consists of wild grape, American beautyberry, and waxmyrtle. The most common forbs and grasses include huckleberry, blueberry, eastern bracken, creeping beggarweed, toothachegrass, hairy panicum, and several varieties of bluestems. Most areas of this soil have been cleared and are used for improved pasture or crops.

This soil has moderate limitations for crops because of the soil quality. Most locally grown crops, including corn, soybeans, peanuts, tobacco, watermelons, cucumbers, cantaloupes, and vegetables, are adapted to this soil but require high level management for maximum yields. Management practices are a crop rotation system that includes cover crops on the soil at least half the time and leaving all crop residue on the soil. Good management also includes correct seedbed preparation, good fertilization, and liming as needed. The sandy surface and subsurface layers are droughty during long periods of low rainfall. During these periods, irrigation is needed and may be practical for high value crops, such as tobacco and watermelons.

This soil is well suited to Coastal bermudagrass and improved bahiagrass pasture. High quality grazing and hay yields can be obtained if pasture is well managed. Practices include proper establishment of plants, fertilization, liming, and controlled grazing. Because of the droughty conditions of the sandy surface and subsurface layers during periods of low rainfall, the soil is not well suited to shallow rooting pasture plants, such as white clover.

This soil has high potential productivity for slash and loblolly pines. Potential is moderately high for the production of longleaf pine. The sandy surface and subsurface texture is a moderate limitation for use of equipment during drier periods. Seedling mortality is moderate, and plant competition is slight.

This soil has only slight limitations as sites for dwellings without basements and small commercial buildings and for local roads and streets. Limitations for septic tank absorption fields are moderate because of the water table. The water table restricts drainage during wet periods. The soil has severe limitations for sewage lagoons because of possible contamination of ground water by seepage of effluent through the sandy subsurface layer. If used for sewage lagoons, the sandy sidewalls need to be lined and sealed. The soil has severe limitations for trench landfills and moderate limitations for area landfills. Wetness in the lower part of the subsoil and underlying material is the main limitation.

This soil has good potential as habitat for openland and woodland wildlife. Potential for wetland wildlife habitat is poor because of lack of water areas.

This Bonneau soil has severe limitations for recreational areas because of the sandy surface layer. Trafficability is a problem and wind erosion is a hazard during drier periods. The maintenance of a good vegetative cover, using windbreaks, or adding some form of surface protection is needed.

The Bonneau soil is in capability subclass IIs and has a woodland ordination symbol of 2s.

41B—Pedro fine sand, 0 to 5 percent slopes. This nearly level to gently sloping, well drained soil is in relatively small areas on the broad plains of uplands. Slopes are smooth to slightly convex. The areas are irregular in shape and range from about 5 to 35 acres.

Typically, the surface layer is dark gray fine sand about 5 inches thick. The subsurface layer is light yellowish brown fine sand about 7 inches thick. The subsoil is strong brown sandy clay loam about 5 inches thick. The underlying material to a depth of 72 inches or more is white limestone soft enough to be dug with light power equipment.

Included with this soil in mapping are small areas of soils that are similar to this Pedro soil in drainage, color, and thickness but have a sandy clay subsoil. Apopka, Candler, and Jonesville soils are included in some areas. Limestone boulders and sinkholes are common in areas of this soil and are shown by appropriate symbols. Total included areas are about 20 percent or less.

In this Pedro soil, the available water capacity is low in the sandy surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and moderately rapid in the loamy subsoil. Natural fertility is low in the sandy surface layer and medium in the loamy subsoil. Organic matter content is low. Surface runoff is slow. The water table is more than 72 inches below the surface.

The natural vegetation of this soil is slash and longleaf pines and post, live, laurel, and red oaks. The understory is made up chiefly of several varieties of bluestem, hairy panicum, huckleberry, blackberry, dog fennel, scattered palmetto, and pineland threeawn. Most areas are cleared and are in crops or improved pasture.

This soil has very severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients are the principal limitations. Limestone boulders and shallow depth to the underlying limestone are hazards for equipment use when cultivating crops and preparing the land. Wind erosion is active on this soil. Peanuts and watermelons are the best adapted, locally grown crops, but moderate to good yields of tobacco, corn, cucumbers, cantaloupes, and soybeans can also be produced if high level management is used. Management practices are planting crops on the contour with alternating strips of close-growing crops, a crop rotation system that includes close-growing plants on the soil at least three-fourths of the time, and fertilizing and liming all crops well. All crop residue should be returned to the soil. Crops need irrigation during dry periods to produce good yields. Where water is available, irrigation is usually practical for the adapted high value crops.

This soil is moderately well suited to pasture. Deep rooted plants, such as Coastal bermudagrass and bahiagrasses, are well adapted, but yields are reduced by prolonged droughts. The soil is not suited to shallow rooted pasture plants because of lack of sufficient water in the rooting zone. Rock outcrops are a hazard for mowing unless they are removed. Good fertilization is needed. Grazing should be controlled to permit plants to maintain vigorous growth for best yields.

Potential productivity of the soil for slash and longleaf pines is moderately high. The loose sandy surface and the frequent rock outcrops are moderate limitations to the use of equipment. Seedling mortality is moderate. The lack of a good, deep root system is caused by the shallow depth to underlying limestone. Windthrow hazard is moderate.

This soil has severe limitations as sites for dwellings, small commercial buildings, and local roads and streets. Digging in the underlying limestone and removing large limestone boulders are limitations for excavating building foundations and construction sites. The underlying limestone usually contains some small solution holes that have been filled with the overlying soil material. Additional solution holes can form and cause settlement. Limitations for sewage lagoons and trench landfills are severe. The excessive seepage through the sandy surface layers and porous underlying limestone can cause contamination of ground water. When areas of this soil have to be used for lagoons or landfills, the sidewalls and floor of the pits need to be well lined and sealed to prevent seepage. The soil has severe limitations as absorption fields for septic tanks because of the shallow depth to the underlying limestone. This limestone is somewhat porous and, in places, cavernous, which can cause contamination of the ground water by seepage.

Potential of this soil as habitat for openland and woodland wildlife is fair. Potential for wetland wildlife is very poor.

This Pedro soil has severe limitations for recreational uses. The shallow depth to limestone and sandy surface texture are the major limitations. Wind erosion is a hazard, and trafficability is difficult in areas where the surface is not protected by a good vegetative cover or some other form of surface stabilization. The limestone boulders should be removed before the soil is used for active recreation.

This Pedro soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

42B—Pedro-Jonesville complex, 0 to 5 percent slopes. This complex consists of small areas of nearly level to gently sloping, well drained Pedro and Jonesville soils that are so intermixed that they cannot be separated at the scale of mapping. Slopes are smooth to slightly convex. Mapped areas of this complex are irregular in shape and range from about 10 to 50 acres.

These soils are intermixed across the landscape. Individual areas of each soil range from about 1/10 of an acre to 3 acres.

Pedro fine sand makes up about 40 to 55 percent of each mapped area. Typically, the soil has a dark gray fine sand surface layer about 5 inches thick. The subsurface layer is light yellowish brown sand about 7 inches thick. The subsoil is strong brown sandy clay loam about 5 inches thick. The underlying material to a depth of 72 inches or more is white, partially decomposed limestone soft enough to be dug with light power equipment, such as a backhoe.

In the Pedro soil, the available water capacity is low in the sandy surface and subsurface layers and medium in the thin, loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and moderately rapid in the loamy subsoil. Organic matter content is low, and natural fertility is low to medium. Surface runoff is slow. The water table is below a depth of 72 inches.

Jonesville sand makes up about 35 to 45 percent of each mapped area. Typically, the surface layer is dark gray sand about 7 inches thick. The subsurface layer is pale brown sand to a depth of 29 inches. The subsoil extends to a depth of 33 inches. It is brownish yellow sandy clay loam. Below this is limestone to a depth of 80 inches or more. This limestone is partially weathered and soft enough to be dug with light power equipment.

In the Jonesville soil, the available water capacity is low in the surface layer and very low to low in the subsurface layer. It is low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Organic matter content is moderately low. Natural fertility is low to medium. Surface runoff is slow. The water table is more than 72 inches below the surface.

Included with these soils in mapping are soils that have pedon characteristics similar to the Cadillac soils. Also included in some areas are soils that have sandy surface and subsurface layers less than 20 inches thick, a yellowish brown or strong brown sandy clay subsoil, and soft limestone at a depth of 20 to 50 inches. Included in a few areas are included soils that are sandy to a depth of less than 20 inches and have a loamy or clayey, yellowish brown subsoil that has gray mottles at a depth of 25 to 40 inches. These included soils are strongly acid to slightly acid in the surface layer and strongly acid to mildly alkaline in the subsoil. Limestone boulders and sinkholes are common in areas of this complex. About 12 acres mapped as this complex is within the flood plain of the Santa Fe River and is occasionally flooded. Included areas make up 5 to 25 percent of each mapped area.

The natural vegetation of this complex is longleaf pine; scattered slash pine; and live, laurel, and post oaks. The understory is chiefly a mixture of bluestem, panicum, huckleberry, blackberry, dog fennel, sedges, and pineland threeawn. Most areas are cleared and are in crops or improved pasture.

The soils of this complex have severe limitations for cultivated crops. Droughtiness, rapid leaching of plant nutrients, and shallow depth to limestone are the major limitations (fig. 13). Wind erosion is also active unless the surface is well protected. With high level management practices, moderate to good yields of most locally grown crops can be produced. Peanuts, tobacco, and watermelons are the best adapted crops.

Figure 13.—Pedro-Jonesville complex, 0 to 5 percent slopes. The underlying limestone crops out on the shallow Pedro soil.

Management practices are planting crops on the contour in alternating strips with close-growing crops; a crop rotation system that includes close-growing plants on the soil at least three-fourths of the time; and fertilizing and liming all crops. Residue from soil improving crops and other crops can be returned to the soil. Irrigation of crops is needed during dry periods to produce good yields. Where water is available, irrigation is usually practical for the adapted, high value crops.

Soils of this complex are well suited to pasture. Deep rooted plants, such as Coastal bermudagrass and bahiagrasses, are well adapted, but yields are reduced by prolonged droughts. The soils are not suited to shallow rooted pasture plants. Rock outcrops are a hazard during mowing and land preparation and need to be removed if possible. Good fertilization is needed. Controlled grazing permits plants to maintain growth.

Potential productivity of the soils for woodland is moderately high. This complex has moderate limitations for use of equipment because of the rock outcrop and loose, sandy surface layer. Plant competition is moderate on the Jonesville soil. Seedling mortality is moderate. Windthrow is moderate on the Pedro soil.

The Pedro soil of this complex has severe limitations as sites for dwellings, small commercial buildings, and local roads and streets. Digging in the underlying, shallow limestone and removing large limestone boulders are limitations for excavating building foundations. The Jonesville soil of this complex has slight limitations for buildings without basements, small commercial buildings, and local roads and streets. The underlying limestone usually contains some small solution holes that have been filled with the overlying soil material. Additional solution holes can form and cause settlement. Limitations for sewage lagoons and trench landfills are severe. Seepage through the sandy surface layer and porous underlying limestone can cause contamination of ground water. When areas of this complex have to be used for these purposes, the sidewalls and floors of the pits need to be well lined and sealed. These soils have severe limitations for absorption fields for septic tanks because of the shallow depth to the underlying limestone. This limestone is somewhat porous and, in places, cavernous, which can cause contamination of ground water by seepage.

Potential of these soils as habitat for openland and woodland wildlife is fair. Potential for wetland wildlife is very poor. Water areas suitable for this type of wildlife are not within this complex.

This complex has severe limitations for recreational uses. The shallow depth to limestone and sandy surface texture are the major limitations. Wind erosion and trafficability are limitations in areas where the surface is not protected by a good vegetative cover or some other form of surface stabilization. The limestone boulders need to be removed before the soils are used for active recreation.

This Pedro-Jonesville complex is in capability subclass IVs and has a woodland ordination sybmol of 3s.

44B—Blichton-Urban land complex, 0 to 5 percent slopes. This complex consists of poorly drained, nearly level to gently sloping Blichton soils and Urban land. It is in irregularly shaped, relatively small areas in the southern and western parts of urbanized Gainesville.

About 50 to 85 percent of each delineation is open areas of Blichton soils. These open areas are gardens, vacant lots, lawns, and playgrounds. They are so small or so intermingled with areas of Urban land that it is impractical to map them separately. About 20 to 30 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil materials during urban related construction and development.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with houses, streets, parking lots, sidewalks, industrial buildings, and other structures. The Urban land of this map unit is generally developed on Blichton sand or fine sand.

Typically, the surface layer of Blichton soils is dark grayish brown sand about 6 inches thick. The subsurface layer is grayish brown to light brownish gray sand to a depth of about 22 inches. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is dark gray loamy sand, and the lower 46 inches is dark gray or gray sandy clay loam.

Bivans, Kanapaha, and Sparr soils make up about 10 to 20 percent of the open areas in some delineations. A few small areas of Blichton soils that have 5 to 8 percent slopes are also included.

In the Blichton soils, the water table is within 10 inches of the surface for about 1 to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches. Natural fertility is low. Organic matter content is low to moderate. Permeability of the sandy surface and subsurface layers is rapid, and it is slow to moderately slow in the loamy subsoil. Available water capacity is low in the sandy surface and subsurface layers and low to medium in the subsoil.

Natural vegetation is slash, longleaf, and loblolly pines, sweetgum, magnolia, hickory, maple, waxmyrtle, pineland threeawn, and other adapted shrubs and herbs.

Open areas are suited to most lawn grasses and many kinds of ornamental plants adapted to this area. These open areas have severe limitations for most recreational uses because of wetness during periods of high rainfall. Some form of a good drainage system helps overcome wetness. Some areas of this complex lack good water outlets, however, which can prevent the establishment of good drainage systems.

For the foreseeable future, the use of this complex is urban-related. This complex is not assigned to a capability subclass. It does not have a woodland ordination symbol.

45—Urban land-Millhopper complex, 0 to 2 percent slopes. This complex consists of Urban land intermixed with nearly level areas of Millhopper soils. The areas are irregular in shape and range from 15 to 200 acres. This complex is in urbanized Gainesville.

About 50 to 85 percent of each delineation is Urban land. This Urban land consists of areas covered with buildings, streets, parking lots, sidewalks, and other structures. The Urban land of this map unit is generally developed on Millhopper sand or fine sand.

About 15 to 50 percent of each delineation is open areas of Millhopper soils. These open areas are vacant lots, lawns, parks, or playgrounds. These areas are either so small or so intermixed with areas of Urban land that it is impractical to map them separately. About 30 to 45 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil materials during urban related construction and development.

Typically, the surface layer of Millhopper soils is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown to very pale brown sand to a depth of 58 inches. The subsoil extends to 89 inches or more. The upper 6 inches is yellowish brown, mottled loamy sand; the next 22 inches is gray, mottled sandy clay loam; and the lower 3 inches is light gray, mottled sandy loam.

Included with this complex in mapping are other soils closely associated with the Millhopper soils, such as Arredondo, Lochloosa, and Sparr soils. Small included areas of Millhopper soils that have slopes of 2 to 5 percent are in a few areas.

The Millhopper soils of this complex have a water table at a depth of 40 to 60 inches for 1 to 4 months and at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, and it is slow to moderate in the subsoil. Natural fertility is low. Organic matter content is low to moderately low in the surface layer.

Natural vegetation of Millhopper soils consists chiefly of live, laurel, post, and water oaks; slash and longleaf pines; sweetgum; and cherry laurel. A few hickory trees are in these areas. The understory is chiefly lopsided indiangrass, hairy panicum, low panicum, greenbrier, hawthorn, persimmon, fringeleaf paspalum, hoary tickclover, dwarf huckleberry, chalky and creeping bluestems, and pineland threeawn.

The open areas of this complex are generally well suited to most lawn grasses and ornamental plants adapted to the area. With some form of surface stabilization to improve the trafficability, the areas are also well suited to recreational uses.

For the foreseeable future, the use of this complex is urban-related. This complex is not assigned to a capability subclass. It does not have a woodland ordination symbol.

46B—Jonesville-Cadillac-Bonneau complex, 0 to 5 percent slopes. This complex consists of small areas of nearly level to gently sloping, well drained Jonesville and Cadillac soils and moderately well drained Bonneau soils. These soils are so intermixed that they cannot be separated at the scale of mapping. These soils are intermixed across the landscape. Individual areas of each soil range from about 1/10 of an acre to 5 acres. Mapped areas of this complex are irregular in shape and range from about 25 to 125 acres.

Jonesville sand makes up about 45 to 55 percent of each mapped area. Typically, the soil has a dark gray sand surface layer about 7 inches thick. The subsurface layer is pale brown fine sand to a depth of 29 inches. The subsoil extends to a depth of 33 inches and is brownish yellow sandy clay loam. Below this is white limestone to a depth of 80 inches or more. This limestone is soft enough to be dug with light power equipment, such as a backhoe.

In the Jonesville soil, the available water capacity is low in the sandy surface layer, low to very low in the sandy subsurface layer, and medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and moderately slow to moderate in the loamy subsoil. Organic matter content is moderately low. Natural fertility is low to medium. Surface runoff is slow. The water table is at a depth of more than 72 inches.

Cadillac fine sand makes up about 25 to 35 percent of each mapped area. Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 52 inches. The upper 22 inches is light yellowish brown, and the lower 33 inches is very pale brown. The subsoil extends to a depth of 76 inches. The upper 7 inches is yellowish brown fine sandy loam, and the lower 17 inches is strong brown sandy clay loam. Between a depth of 76 and 118 inches, the underlying material is clay. The upper 22 inches is yellowish brown and has mottles, and the lower 20 inches is gray and has some limestone fragments.

In the Cadillac soil, the available water capacity is low in the sandy surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the sandy layers and slow to moderate in the loamy subsoil. Organic matter content is low to moderately low. Natural fertility is low in the sandy surface and subsurface layers and medium in the loamy subsoil. The water table in this soil is at a depth of more than 72 inches. Surface runoff is slow.

Bonneau fine sand makes up about 5 to 10 percent of each mapped area. Typically, the surface layer is dark gray fine sand about 9 inches thick. The subsurface layer is brownish yellow fine sand to a depth of 29 inches. The subsoil is sandy clay loam that extends to a depth of 84 inches or more. The upper 9 inches is yellowish brown, and the lower 47 inches is gray and has yellowish and brownish mottles.

In this Bonneau soil, the water table is about 40 to 72 inches below the surface for 1 to 3 months during most years. During dry seasons, it is more than 72 inches below the surface. Permeability is moderately rapid to rapid in the sandy surface and subsurface layers. It is moderately slow to moderate in the upper part of the subsoil and very slow to slow in the lower part. The available water capacity and the natural fertility are low in the sandy surface and subsurface layers and medium in the subsoil. Organic matter content is low to moderately low.

Included with these soils in mapping are many areas of soils that have pedon characteristics similar to the Pedro soils. Also included are some soils that have a grayish brown, sandy surface layer; a pale brown, sandy subsurface layer that extends a depth of 20 to 40 inches; and a yellowish brown or strong brown sandy clay loam subsoil that reaches a depth of more than 60 inches. Some soils have sandy surface and subsurface layers 40 to 50 inches thick, a subsoil 4 to 10 inches thick that is yellowish brown or strong brown sandy loam or sandy clay loam, and soft, white limestone at a depth of about 45 to 60 inches. Included in some areas are soils that have fine sand surface and subsurface layers less than 20 inches thick, a yellowish brown or strong brown sandy clay subsoil, and soft limestone at a depth of about 30 to 50 inches. Some areas have included soils that have pedon characteristics similar to the Arredondo and Candler soils. Limestone boulders and sinkholes are common. About 12 acres mapped as this complex along the Santa Fe River is occasionally flooded. Total included areas are 5 to 15 percent of each mapped area.

Natural vegetation of this complex is longleaf pine and post, bluejack, laurel, and live oaks. Scattered slash pine, red oak, and hickory are in many areas. The hickory trees are usually relatively small in size. The understory is chiefly a mixture of chalky bluestem and other bluestems, panicums, huckleberry, blackberry, blueberry, sedges, pineland threeawn, wild grape, honeysuckle, dayflower, eastern bracken, and scattered palmettos. Many areas are cleared and are in improved pasture or cultivated crops.

The soils of this complex have severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients are the principal limitations. Good yields of such crops as corn, tobacco, peanuts, soybeans, tomatoes, cucumbers, and watermelons can usually be produced if high level management practices are used. Some management practices are a crop rotation system that includes close growing, soil improving cover crops; returning all crop residue to the soil; and proper fertilization and liming as needed. Yields are sometimes restricted by droughty periods. Irrigation is needed during these droughty periods if maximum yields are expected. Wind erosion is active on these soils, and the surface needs to be protected at all times. Limestone boulders are hazards to cultivation.

This complex is well suited to improved pasture of deep rooting grasses and legumes if good management practices are used. To maintain a good vegetative cover and reach maximum potential in productivity, careful management is required. This includes proper establishment of plants, fertilization and liming, and controlled grazing. The soils are not suited to improved pasture of shallow rooted legumes and grasses because of the droughtiness. Limestone boulders are a hazard to mowing unless they are removed.

The potential productivity of the soils for commercial woodland is moderately high. Although both longleaf and slash pine normally are natural species, slash pine is recommended for planting. The sandy surface layer is a moderate restriction for equipment use. Young pine seedlings normally have moderate mortality because of the droughty conditions and low fertility of the sandy surface and subsurface layers. Plant competition is also moderate for the Jonesville and Bonneau soils and slight for Cadillac soil.

These soils have slight limitations as sites for dwellings, small commercial buildings, and local roads and streets. During excavation for building foundations, large boulders may have to be removed. Limitations for sewage lagoons and trench landfills are severe because of the excessive seepage through the sandy layers and porous underlying limestone. This seepage can cause contamination of ground water. When areas of this complex are used for lagoons and landfills, the sidewalls and floors of the pits need to be well lined and sealed to prevent seepage. The Jonesville soil has severe limitations for use as absorption fields for septic tanks because of the shallow depth to the underlying limestone. This limestone is somewhat porous and, in places, cavernous. Contamination of ground water by seepage is a possibility. Areas of Cadillac soil in this complex have slight limitations for septic tank absorption fields. The Bonneau soil in this complex has moderate limitations for this use because of the depth to the water table during wet seasons.

These soils have fair potential for openland and woodland wildlife. Potential for wetland wildlife is very poor because of the lack of ponds and wetland vegetation that is desirable as a habitat for this type of wildlife.

This complex has severe limitations for recreational uses. Wind erosion and maintaining good trafficability are severe problems. The establishment and maintenance of a good vegetative cover and windbreaks, the addition of suitable topsoil, or some form of hard surfacing can be used to alleviate or overcome these problems.

This complex is in capability subclass IIIs. The Jonesville and Cadillac soils have a woodland ordination symbol of 3s, and the Bonneau soil has a woodland ordination symbol of 2s.

47B—Candler-Apopka complex, 0 to 5 percent slopes. This complex consists of relatively small areas of nearly level to gently sloping, well drained to excessively drained Candler and Apopka soils. These soils are so intermixed that they cannot be separated at the scale at which they are mapped. The areas are irregular in shape and range from about 20 to 80 acres. In places, the soils of this complex are in long, narrow areas. The Candler soil is mostly in slightly concave areas about 25 to 50 feet wide, and the Apopka soil is mostly on slightly convex ridges about 20 to 40 feet wide. The difference in elevation is only about 6 to 18 inches between the ridges or bulges and the slight depressions. The slight depressions of Candler soil generally contain fewer areas of other soils than the adjacent slight ridges of Apopka soil. In places, these soils are in small, irregularly shaped areas intermixed with each other. These areas are about 1/12 acre to 2 acres and have no noticeable difference in elevation.

Candler fine sand makes up about 40 to 50 percent of each mapped area. Typically, the soil has a dark gray fine sand surface layer about 6 inches thick. In the underlying material, the upper 54 inches is brownish yellow fine sand, and the lower 24 inches is very pale brown fine sand and thin, discontinuous, yellowish brown loamy sand lamellae. The lamellae are about 1/32 to 1/16 inch thick.

In the Candler soil, the available water capacity is low. Permeability is rapid. Natural fertility and organic matter content are low. Surface runoff is very slow. The water table is more than 72 inches below the surface.

Apopka sand makes up about 35 to 45 percent of each mapped area. Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer is fine sand about 57 inches thick. The upper 41 inches is light yellowish brown, and the lower 16 inches is very pale brown. The subsoil extends to a depth of 80 inches. It is yellowish brown sandy clay loam.

In the Apopka soil, the available water capacity is very low to a depth of about 63 inches and medium below this depth. Permeability is rapid to a depth of about 63 inches and moderate between 63 and 80 inches. Natural fertility and organic matter content are low. Surface runoff is very slow. The water table is more than 72 inches below the surface.

Included with these soils in mapping are small areas of soils that have pedon characteristics similar to Arredondo, Kendrick, and Millhopper soils. Some areas of this unit have soils that have pedon characteristics similar to Jonesville and Pedro soils. Fragments and boulders of limestone, which range from about 15 to 76 centimeters in diameter, occur at random in some of the soils and make up 5 percent or less of the volume. In some areas of this complex, surface and subsurface layers are sand instead of fine sand. Included areas make up about 5 to 25 percent of each delineation.

Natural vegetation of this complex is longleaf pine and post, bluejack, turkey, live, and laurel oaks. The understory is a mixture of eastern bracken, bluestem, blackberry, dwarf huckleberry, low panicum, and sedges. Many areas have been cleared and are in cultivated crops or improved pasture or are used for urban development.

This complex has severe limitations for most cultivated crops because of the droughtiness and low fertility. If high level management practices are used, moderate yields of corn and peanuts can be grown. The soils produce good yields of watermelons. Yields are restricted by droughty periods, and irrigation is needed to attain good yields. Management practices are soil improving cover crops included in a crop rotation system; returning all crop residue to the soil; and regular applications of fertilizer and lime. Wind erosion is a hazard where the surface is not protected.

The soils of this complex are moderately well suited to improved pasture of deep rooted grasses if good management practices are used. Production is usually restricted by periodic droughts. If grazing is controlled, plants remain vigorous. The soils are not suited to the production of shallow rooted legumes and grasses because of the lack of sufficient moisture.

Potential productivity of these soils for pine trees is moderate. Even though slash pine is not normally part of the native vegetation, it is the recommended species of pine to plant. The loose, sandy surface layer causes moderate limitations for normal equipment use during harvesting operations. Seedling mortality and plant competition are moderate because of the droughty conditions.

The soils of this complex have only slight limitations as sites for dwellings, small commercial buildings, local roads and streets, and absorption fields for septic tanks. Limitations as sites for trench sanitary landfills and sewage lagoons are severe because of possible contamination of ground water by seepage through the sidewalls and floor of the pits. If areas of this complex are to be used for these purposes, the pits should be well lined and sealed. Trafficability is a problem around the landfills.

These soils have fair potential as habitat for openland wildlife. Potential for woodland wildlife is poor. Potential as habitat for wetland wildlife is very poor because the areas do not have the needed water areas desired by this type of wildlife. These soils do not produce a good supply of food for most types of wildlife.

This complex has severe limitations for recreational uses. Wind erosion and maintaining good trafficability are severe problems. The establishment and maintenance of a good vegetative cover and windbreaks, or the addition of suitable topsoil or some form of hard surface can be used to alleviate or overcome these problems.

This complex is in capability subclass IVs. Candler soil has a woodland ordination symbol of 4s, and Apopka soil has a woodland ordination symbol of 3s.

48—Myakka sand. This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth to slightly convex and range from 0 to 2 percent. The areas are irregular or elongated in shape and range from about 10 to 100 acres.

Typically, the surface layer is dark grayish brown sand about 8 inches thick. The underlying layers are sand to a depth of 82 inches or more. In sequence from the top, the upper 16 inches is light gray, the next 6 inches is very dark brown and has sand grains well coated with organic materials; the next 5 inches is dark brown; the next 18 inches is very pale brown and has mottles; and the next 29 inches is light brownish gray.

Included with this soil are small areas of Pomona, Sparr, and Pompano soils. Included are small areas of poorly drained soils that have a stained layer that does not meet the requirements of a spodic horizon. Also included are a few areas of soils that are similar to the Myakka soil except that they have a well coated, organic-stained layer 14 to 19 inches below the surface. Total included areas are about 20 percent.

This Myakka soil has a water table that is at a depth of less than 10 inches for 1 to 4 months and at a depth of 10 to 40 inches for 2 to 4 months during most years. The water table recedes to a depth of more than 40 inches during drier seasons. Surface runoff is slow. The available water capacity is very low from 0 to 24 inches, medium to high from 24 to 30 inches, and very low to low below a depth of 30 inches. Permeability is rapid to a depth of about 24 inches, moderate to moderately rapid from 24 to 30 inches, and rapid below a depth of 30 inches. Natural fertility and organic matter content are low.

The natural vegetation of this soil is longleaf and slash pines. The understory is sawpalmetto, running oak, gallberry, waxmyrtle, huckleberry, pineland threeawn, bluestem, briers, brackenfern, and other native forbs and grasses. Most areas are still in natural vegetation. Some are cleared and are in improved pasture. A few areas are used for special crops.

This soil has very severe limitations for cultivated crops because of wetness and poor soil qualities. Adapted crops are limited. Special crops are generally better adapted than the general farm crops grown in the county. If good water control measures and intensive management practices are used, the soil produces fair to good yields of such crops as corn, soybeans, beans, squash, cabbage, lettuce, and tomatoes. A good type of water control system is one that adequately removes excess water in wet seasons and provides water through subsurface irrigation in dry seasons. Management practices are rotating row crops with close growing, soil improving crops, returning all crop residue to the soil, and bedding of rows. Proper amounts of fertilizer and lime need to be added in accordance to the need of the crop grown.

If water control and good management are used, the soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water after heavy rains. Irrigation is needed during droughty periods for shallow rooted pasture plants, such as white clover. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil for woodland use is moderate. Slash and longleaf pines are both adapted to the soil. The soil has moderate limitations for the use of normal woodland equipment. Seedling mortality is moderate because of the low available water in the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility. Competition of other plants with young pine seedlings is moderate.

The soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed which rapidly removes the excess water during wet periods and adequately controls the water table. If used as sites for sewage lagoons and trench landfills, the soil has a potential hazard of contamination of ground water by seepage of liquid waste material through the sandy sidewalls of the pits. The sidewalls need to be lined and sealed.

The soil has fair potential as habitat for openland wildlife and poor potential for woodland wildlife habitat. Potential as habitat for wetland wildlife is poor.

The Myakka soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the loose sandy surface texture are the main limitations. Some form of good water control is needed to rapidly remove the water during rainy periods. The loose sandy surface layer is a problem for trafficability. During dry seasons, it is subject to wind erosion. Windbreaks, a good vegetative cover, the addition of good topsoil material, or some other form of surface stabilization can be used to help overcome these problems.

This Myakka soil is in capability subclass IVw and has a woodland ordination symbol of 4w.

49A—Lochloosa fine sand, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is in relatively small to large areas in the broad flatwoods and the gentle, rolling uplands that border the flatwoods. Slopes are nearly smooth to slightly convex. The areas are irregular in shape and range from about 10 to 200 acres.

Typically, the surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 34 inches. The upper 7 inches is brown, and the lower 20 inches is very pale brown and has grayish and yellowish mottles. The subsoil extends to a depth of 80 inches or more. The upper 10 inches is pale brown, mottled very fine sandy loam; the next 13 inches is light brownish gray, mottled very fine sandy loam; and the lower 23 inches is gray, mottled sandy clay loam.

Included with this soil are small areas of Bonneau, Millhopper, and Sparr soils. Also included are a few small areas of somewhat poorly drained soils that have a sandy surface and subsurface layer 10 to 18 inches thick over a mottled, yellowish brown and gray sandy clay loam subsoil. In the Orange Heights area there are about 250 acres of soils that are similar to Lochloosa soils but have about 5 to 10 percent plinthite in the subsoil. A few small areas of Lochloosa soils that have slopes of 2 to 5 percent are included. Total included areas are about 15 percent or less.

This Lochloosa soil has a water table that is 30 to 40 inches below the surface for 2 to 4 months during most years. It rises to 15 to 30 inches for 2 to 4 weeks during most years. Surface runoff is slow. The available water capacity is medium to high in the sandy surface and subsurface layers and medium in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer.

The natural vegetation consists chiefly of slash and longleaf pines and water oak. Post, laurel, and live oaks also are in some areas. The understory is mostly waxmyrtle, huckleberry, blueberry, various types of bluestem, low panicum, pineland threeawn, brackenfern, baccharis, and some scattered sawpalmetto. Most areas of this soil are still in native vegetation. Some areas are cleared and are in improved pasture or crops.

This soil has moderate limitations for cultivated crops. The major limitations are wetness and soil qualities. Damage to some crops, such as tobacco, during wet seasons is caused by the high water table and retarded drainage. Irrigation is needed, and feasible, for some high value crops during extended droughty periods. Good management includes use of soil improving cover crops, the return of all crop residue to the soil, proper fertilization, liming, and water control where needed. This produces maximum yields.

The soil is well suited to improved pasture. Such grasses as Coastal bermudagrass and bahiagrasses produce good quality grazing if good management practices are used. Practices include good seedbed preparation, proper fertilization, liming, and controlled grazing. Shallow rooted pasture plants, such as white clover, need irrigation during droughty periods in order to maintain good quality grazing.

Potential productivity of the soil for woodland is high. Slash pine is the best adapted species of pine and is the one recommended for planting. Limitations are not significant for woodland use or management.

This soil has severe limitations for septic tank absorption fields. The high water table during wet seasons prevents good drainage of the effluent. This soil has severe limitations as sites for sewage lagoons and trench landfills because of the wetness and the possibility of contamination of ground water by seepage. Limitations for dwellings without basements, small commercial buildings, and local roads and streets are slight.

Potential of the soil as habitat for openland wildlife is fair. It is good for woodland wildlife habitat. Potential as habitat for wetland wildlife is poor because these areas lack the ponds and wetland vegetation that are desirable for this type of wildlife.

This Lochloosa soil has severe limitations for recreational uses. The sandy surface layer causes problems in trafficability during dry periods. Wind erosion of the sandy surface is a hazard during these periods. The establishment and maintenance of a good vegetative cover, windbreaks, the addition of suitable topsoil, or some other form of surface stabilization can be used to overcome these problems.

This Lochloosa soil is in capability subclass IIw and has a woodland ordination symbol of 2o.

50—Sparr fine sand. This nearly level, somewhat poorly drained soil is in relatively small areas on slight rises of the flatwoods and on nearly smooth to slightly convex slopes of the gently rolling uplands. Slope ranges from 0 to 2 percent. The areas are irregular in shape and range from about 10 to 75 acres.

Typically, the surface layer is fine sand about 8 inches thick. The upper 4 inches is dark gray, and the lower 4 inches is dark grayish brown. The subsurface layer is about 40 inches thick. The upper 17 inches is pale brown sand, the next 7 inches is very pale brown fine sand that has light yellowish brown and light gray mottles, and the lower 16 inches is light gray fine sand that has yellowish brown mottles. The subsoil extends to a depth of 84 inches or more and is light gray. The upper 8 inches is loamy sand, and the lower 28 inches is fine sandy loam.

Included with this soil in mapping are small areas of Lochloosa, Kanapaha, Newnan, Millhopper, and Zolfo soils. Also included are a few small areas of soils that are similar to Sparr soils but have a surface layer of loamy sand. A few areas are Sparr soils that have slopes of 2 to 5 percent. Total included areas are 15 percent or less.

This Sparr soil has a water table that is at a depth of 20 to 30 inches for about 1 to 2 months and at a depth of 30 to 40 inches for about 2 to 3 months during most years. During dry seasons it recedes to a depth of more than 40 inches. Surface runoff is slow. The available water capacity is medium in the sandy surface layer, low in the sandy subsurface layer, and medium in the loamy subsoil. Permeability is rapid to very rapid in the sandy surface and subsurface layers. It is moderate in the upper part of the subsoil and slow to moderately slow in the lower part of the subsoil. Natural fertility is low to a depth of about 48 inches and medium below this depth. Organic matter content is low to moderately low.

The natural vegetation consists chiefly of longleaf and slash pines and water, laurel, and live oaks. The understory consists of waxmyrtle, sumac, carpetgrass, pineland threeawn, a few scattered sawpalmetto, dwarf huckleberry, baccharis, low panicum, bluestem, running oak, and brackenfern. Most areas of this soil are still in native vegetation. Some areas are cleared, however, and are mostly in improved pasture.

This soil has severe limitations for cultivated crops because of periodic wetness and poor soil qualities. The high water table, which is at a depth of about 20 to 40 inches during wet seasons, can cause some retardation of root development. A well designed, simple drainage system can help eliminate this problem. If good management practices and a water control system are used, the soil is adapted to such crops as corn, soybeans, peanuts, squash, beans, peppers, eggplant, and cucumbers. Good management practices are a crop rotation system that includes close growing, soil improving cover crops on the soil at least two-thirds of the time; the return of all crop residue to the soil; and proper fertilization and liming.

The soil is moderately well suited to improved pasture. Bahiagrass and bermudagrass produce good quality pasture under high level management. This includes proper establishment of plants, fertilization, liming, and controlled grazing. If shallow rooted pasture plants such as white clover are grown, irrigation is needed for continued good quality pasture.

Potential productivity of this soil for woodland is moderately high. Slash pine is the best adapted species for this soil. The loose, sandy surface texture causes moderate restrictions to the use of equipment. Seedling mortality is moderate because of the low natural fertility, available water capacity, and organic matter content of the sandy surface and subsurface layers. Plant competition is moderate.

This soil has moderate to severe limitations for most urban uses. Limitation for septic tank absorption fields is severe. The high water table during wet seasons prevents good downward absorption of the effluent. The high fluctuating water table and thick sandy layers can also prevent adequate filtration of the effluent, resulting in contamination of ground water supplies. The soil has severe limitations as sites for sewage lagoons because of the wetness and possibility of contamination of ground water by seepage. If it is used for this purpose, the lagoon walls need to be well lined and sealed. Limitations are severe as sites for trench landfills because of the high water table and thick, sandy subsurface layer. The soil has moderate limitations for dwellings without basements, small commercial buildings, and local roads and streets.

Potential of this soil for use as habitat for openland and woodland wildlife is fair. The potential as habitat for wetland wildlife, however, is poor because the soil does not have the desirable water areas and wetland vegetation.

This Sparr soil has severe limitations for recreational uses. The sandy surface layer causes problems in trafficability and, during dry periods, of wind erosion. The establishment and maintenance of a good vegetative cover and windbreaks or the addition of suitable topsoil or some other form of surface stabilization can be used to overcome these problems.

This Sparr soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

51—Plummer fine sand. This nearly level, poorly drained soil is in the broad areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. Areas are relatively small and irregular in shape and are about 10 to 50 acres.

Typically, the surface layer is black fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 42 inches. The upper 8 inches is light brownish gray, the next 18 inches is gray, and the lower 10 inches is light gray. The subsoil extends to a depth of 81 inches or more. The upper 8 inches is light gray, mottled very fine sandy loam, and the lower 31 inches is light gray sandy clay loam.

Included with this soil in mapping are small areas of Mulat, Pomona, Pompano, and Sparr soils. Also included are a few areas in which the surface and subsurface layers are sand. About 15 acres mapped as this soil along the Santa Fe River is occasionally flooded. Total included areas in any one delineation are about 15 percent.

This Plummer soil has a water table that is at a depth of less than 10 inches for 1 to 3 months and is at a depth of 10 to 40 inches for about 3 to 4 months during most years. It recedes to more than 40 inches during drier seasons. The available water capacity is medium to high in the surface and subsurface layers and low to medium in the subsoil. Permeability is moderately rapid to rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is low. Organic matter content is moderately low.

The natural vegetation of this soil is chiefly longleaf and slash pines. The understory is dominantly gallberry, waxmyrtle, pineland threeawn, dwarf huckleberry, brackenfern, bluestem, and panicum. Most areas are still in native vegetation, but some areas have been cleared and are in pasture.

This soil has very severe limitations for cultivated crops because of wetness and low fertility in the sandy surface and subsurface layers. If a good water control system and good management practices are used, the soil is moderately well suited to corn, soybeans, and most special crops adapted to the area. The water control system needs to remove excess water rapidly during wet seasons. Management practices are a crop rotation system that includes close growing, soil improving crops and returning all crop residue to the soil. Other important management practices include good seedbed preparation, bedding rows, and proper fertilization and liming.

If a water control system and good management practices are used, the soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water after heavy rains. Irrigation is needed during droughty periods for shallow rooted pasture plants, such as white clover. Good management includes proper fertilization, and liming and controlled grazing.

Potential productivity of this soil as woodland is high. Slash pine is the recommended species for planting. The soil is severely restricted for the use of equipment during wet seasons. The droughty conditions of the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility are severe limitations contributing to seedling mortality. Plant competition is moderate.

This soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major limitation. A good drainage system is needed to rapidly remove the excess water during wet periods and to adequately control the water table. If the soil is used for sewage lagoons, contamination of ground water is a potential hazard. Liquid waste can seep through the sandy sidewalls of the pits. The sidewalls need to be well lined and sealed to prevent this problem.

Potential of the soil for use as habitat for openland, woodland, and wetland wildlife is fair.

The Plummer soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the loose sandy surface texture are the main limitations. Some form of good water control is needed to rapidly remove the water during rainy periods. The loose, sandy surface layer causes problems in trafficability, and, during dry seasons, it is subject to wind erosion. Windbreaks, a good vegetative cover, the addition of good topsoil material, or some other form of surface stabilization can help overcome these problems.

This Plummer soil is in capability subclass IVw and has a woodland ordination symbol of 2w.

52—Ledwith muck. This nearly level, very poorly drained soil is in small to relatively large areas of freshwater marshes and wet prairies. Slopes are nearly smooth to slightly concave and are less than 2 percent. The areas are irregular or elongated in shape and range from about 15 to 100 acres.

Typically, the surface layer is about 15 inches thick. The upper 9 inches is dark brown muck, and the lower 6 inches is black sandy loam. The subsurface layer is gray loamy sand about 2 inches thick. The subsoil is sandy clay to a depth of 62 inches. The upper 8 inches of the subsoil is very dark gray, the next 19 inches is dark gray, and the lower 18 inches is gray. Between depths of 62 and 84 inches the underlying material is gray sandy clay.

Included with this soil in mapping are small areas of Shenks and Surrency soils. Total included areas are about 15 percent or less.

This Ledwith soil has a water table that is within 10 inches of the surface for more than 6 months during most years. Most areas have water ponded on the surface for 4 months or more. The available water capacity is very high in the upper, 9-inch-thick organic surface layer, medium to high in the mineral surface and subsurface layers, and low to medium in the clayey subsoil. Permeability is rapid in the organic surface layer, moderate to rapid in the mineral surface and subsurface layers, and slow to very slow in the clayey subsoil. Natural fertility is medium. Organic matter content in the upper 9 inches is very high.

Natural vegetation is a mixture of wetland grasses, herbs, and shrubs. These include bulrush, goldenrod, maidencane, cordgrass, cattails, and buttonbush. The areas are mostly in natural vegetation. A few areas have been drained and are used for grazing.

This soil has severe limitations for cultivated crops. It is not suited to cultivated crops unless drained. The excessive wetness is a major problem. Water stands on the surface for much of the time. Most areas do not have suitable outlets for drainage. In areas where outlets are available, an extensive system of canals and ditches is required to adequately remove the excess water. The slow movement of water through the clayey subsoil requires an extensive network of lateral ditches. If a good water control system and good management are used, the soil is well suited to most vegetable crops adapted to the area. A well designed and maintained water control system provides rapid removal of excess water during long rainy periods. Good management is necessary for best yields. This includes good seedbed preparation, returning all crop residue to the soil, a crop rotation system that uses soil improving cover crops, and good fertilization.

The soil is too wet for improved pasture under natural conditions. If an adequate water control system is used, this soil is well suited to most grasses and clovers adapted to the area. A good drainage system adequately removes the excess water after heavy rains. Good management includes proper fertilization and controlled grazing.

This soil generally is in wet marshes and prairies of the county. Trees do not normally grow in these areas.

Because of the excess wetness and drainage problems, the soil is not generally recommended for commercial woodland. Equipment use limitations, seedling mortality, and plant competition are severe.

This soil has severe limitations for most urban uses. The ponded condition and slow internal movement of water through the clayey subsoil are severe hazards for absorption fields for septic tanks. The ponding and high water table are a potential cause of pollution if this soil is used for trench sanitary landfills or for sewage lagoons. Some form of good water control system and protection from ponding are needed to prevent this hazard. The clayey subsoil is not good cover material for landfills. The ponding and high shrink-swell potential of the soil severely restrict its use as sites for dwellings and small commercial buildings and for local roads and streets. Even where site conditions are improved sufficiently to overcome most of these problems, keeping the areas adequately drained is a continuing problem.

Potential of the soil as habitat for wetland wildlife is good. This soil, however, has poor potential for use as habitat for openland and woodland wildlife. The soil is too wet and does not produce good cover and food for these types of wildlife.

The Ledwith soil has severe limitations for use as recreational areas. The ponding, the unstable surface layer, and the slow internal movement of water are major problems. Before the soil can be developed as recreational areas, a good water control system is necessary. The organic material needs to be removed and replaced with enough good fill material to stabilize the surface and raise it sufficiently to help prevent continuing wetness.

This Ledwith soil is in capability subclass IIIw. It is not assigned a woodland ordination symbol.

53—Shenks muck. This nearly level, very poorly drained organic soil is in the wetter parts of the large prairies and marshes in the southern and eastern parts of the county. Slopes are nearly smooth to slightly concave and are less than 2 percent. The areas are usually irregular or elongated in shape and range from about 200 acres to more than 500 acres.

Typically, the surface layer is muck about 21 inches thick. The upper 18 inches is dark brown, and the lower 3 inches is black. The underlying material extends to a depth of 82 inches or more. The upper 7 inches is black clay loam, the next 23 inches is gray clay, the next 10 inches is dark gray clay, and the lower 21 inches is gray, mottled clay.

Included with this soil in mapping are small areas of Ledwith, Martel, Okeechobee, and Terra Ceia soils. Total included areas are less than 20 percent.

This Shenks soil has a water table that is at or above the surface except during extended dry periods. The available water capacity of the organic surface layer is very high, and it is medium to very high in the clayey underlying material. Permeability is rapid or very rapid in the surface layer and very slow or slow in the clayey material below. Natural fertility is high. Organic matter content of the surface layer is very high.

The natural vegetation is a mixture of wetland grasses, herbs, and shrubs. It includes maidencane, cordgrass, cattails, bulrush, goldenrod, cutgrass, buttonbush, and other aquatic plants. Most areas are still in native vegetation. Some have been drained and used for the production of vegetable crops.

This soil has severe limitations for cultivated crops because of the excessive wetness. The soil is not naturally suited to crops. If an adequate water control system and good management practices are used, the soil is well suited to such crops as corn, soybeans, squash, tomatoes, lettuce, celery, cabbage, eggplant, sweet corn, and snap beans. A well designed water control system is necessary before these crops can be grown. A well designed system is one that adequately removes the excess water when crops are on the soil but keeps the soil saturated with water at all other times to decrease subsidence as much as possible. Management practices are growing water-tolerant cover crops on the soil when regular crops are not being grown, returning all crop residue to the soil, good seedbed preparation, and proper fertilization. Some areas do not have adequate drainage outlets for a water control system.

This soil is not suited to pasture under natural conditions. Water is at the surface or stands on the surface for much of the year. An extensive system of dikes and canals, along with good outlets, is necessary for adequate drainage. In areas where a good water control system can be reasonably installed, the soil is well suited to improved pasture. Both deep rooted and shallow rooted plants can be grown with proper water control. A good water control system is one that not only removes the excess water from the soil but maintains the water table near the surface in order to decrease subsidence as much as possible. Controlled grazing permits maximum yields.

This soil is in wet areas of prairies and in freshwater marshes. Trees do not normally grow in these areas. Because of the excessive wetness and poor drainage, this soil is not recommended for commercial woodland. Most woodland management problems are severe.

The soil has severe limitations for urban uses. Excessive wetness caused by the high water table, ponding, the high humus content, high shrink-swell potential, and low strength of the underlying clayey material are major limitations that are hard to overcome. Good water control systems require a major network of canals and ditches. After a system has been installed, maintaining the system and keeping the areas adequately drained are continuing problems. When the soil is drained, subsidence of the organic layers is a problem. Because of the subsidence and the unstable condition, the organic layer needs to be removed and replaced with suitable fill material before any development begins.

Potential of this soil as habitat for wetland wildlife is good. The areas contain shallow ponds, which are desirable for this type of wildlife. Potential as habitat for openland and woodland wildlife is poor. The areas are too wet for these types of wildlife.

This Shenks soil has severe limitations for recreational uses. The ponding, the excess humus, and the slow internal movement of water through the clayey underlying material are the major limitations. Good water control systems that adequately remove the water are expensive to establish and maintain. When the soil is drained, the exposed humus surface layer becomes dusty. This dusty surface and the unstable conditions of the soil cause severe problems in trafficability.

This Shenks soil is in capability subclass IIIw. It is not assigned a woodland ordination symbol.

54—Emeralda fine sandy loam. This nearly level, poorly drained soil is in relatively small areas on rolling uplands of the prairies and in broad wet areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. The areas are irregular in shape and range from about 15 to 100 acres.

Typically, the surface layer is about 10 inches thick. The upper 5 inches is black fine sandy loam, and the lower 5 inches is very dark gray sand. The subsurface layer is light brownish gray sand about 8 inches thick. The subsoil is gray and extends to a depth of 56 inches. The upper 19 inches is sandy clay, and the lower 19 inches is sandy clay loam. Between depths of 56 and 80 inches, the underlying material is light gray sandy clay loam; the upper 10 inches of the underlying material has thin, discontinuous streaks of light gray sandy material that make up about 45 percent of its volume.

Included with this soil in mapping are small areas of Ledwith and Wauberg soils. Total included areas are about 15 percent.

This Emeralda soil has a water table that is less than 10 inches below the surface for 4 to 6 months during most years. The available water capacity is high in the surface layer, low in the subsurface layer, and medium to high in the subsoil. Permeability is rapid in the surface and subsurface layers and very slow to slow in the subsoil. Natural fertility is medium, and organic matter content is moderate to high in the surface layer.

The natural vegetation is a mixture of wetland grasses, herbs, and shrubs. It includes bulrush, carpetgrass, goldenrod, dwarf huckleberry, waxmyrtle, cordgrass, cutgrass, panicum, and some bluestems. Most areas are still in native vegetation, but a few have been cleared.

This soil has very severe limitations for cultivated crops. Wetness, a restricted root zone, slow internal drainage, and difficulty in drainage are major limitations that are very hard to overcome. Good water control systems are hard to establish and maintain. Many areas do not have adequate drainage outlets. The soil has a tendency to become waterlogged during wet seasons because of the slow internal movement of water through the shallow, clayey subsoil. The clayey subsoil causes problems in workability where the soil is cultivated. If a good water control system can be established and good management practices used, some vegetables can be grown.

This soil is suited to improved pasture, but intensive management is needed. Drainage is needed to remove excess internal water during wet seasons. Because of the slow internal movement of water through the clayey subsoil and the lack of good outlets of many areas, good water control systems are difficult to establish. Pasture management includes proper establishment of plants, fertilization, liming, and controlled grazing.

Mapped areas of this soil are in grassy wetlands where trees do not normally grow. Potential for commercial woodland production of slash pine is high, however, if drainage can be installed and maintained. The soil has severe limitations for use of normal woodland equipment during harvesting because of the wetness. Plant competition is also severe. Seedling mortality is moderate.

This soil has severe limitations for most urban uses, including septic tank absorption fields, sewage lagoons, trench landfills, dwellings, small commercial buildings, and local roads and streets. The high water table and slow internal movement of water through the clayey subsoil are the major problems where areas are to be used for septic tank absorption fields. Wetness is the major problem for sewage lagoons. Trench landfills are limited by the high water table and the shallow, clayey subsoil. The clay compacts when used as cover material. The high shrink-swell potential of the clayey subsoil and the wetness are major limitations for dwellings or small commercial buildings. The low strength, wetness, and high shrink-swell potential of the clayey subsoil are major limitations for local roads and streets.

Potential of this soil as habitat of wetland wildlife is good. Shallow water areas for use by wetland wildlife can be developed in these areas. Potential as habitat for openland wildlife is poor. It is fair for woodland wildlife.

This Emeralda soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the slow internal movement of water through the clayey subsoil are the major limiting factors. Areas of this soil are hard to adequately drain because of the slow internal drainage and lack of good drainage outlets.

This Emeralda soil is in capability subclass VIw. It is not assigned a woodland ordination symbol.

55B—Lake sand, 0 to 5 percent slopes. This is a nearly level to gently sloping, excessively drained soil that has sandy texture to a depth of more than 80 inches. Slopes are nearly smooth to convex. The soil is in irregularly shaped areas on the gently rolling uplands. The individual areas are both small and large in size and range from about 20 to 300 acres.

Typically, the surface layer is dark grayish brown sand about 8 inches thick. The underlying layer is sand to a depth of 82 inches or more. The upper 33 inches is yellowish brown, the next 28 inches is strong brown, and the lower 13 inches is yellowish brown and has thin streaks of light gray, clean sand grains.

Included with this soil in mapping are small areas of Arredondo, Candler, Gainesville, and Tavares soils. Also included are a few small areas of Lake soils that have 5 to 8 percent slopes. About 10 acres mapped as this soil along the Santa Fe River is occasionally flooded. Total included areas are about 15 percent or less.

Available water capacity in this Lake soil is very low to low. Permeability is rapid to very rapid. Organic matter content and natural fertility are low. Surface runoff is very slow. The water table is more than 72 inches below the surface.

The natural vegetation of this soil consists chiefly of longleaf pine, scattered slash pine, and water, laurel, live, post, and bluejack oaks. The understory is chiefly bluestem, paspalum, panicum, switchgrass, lopsided indiangrass, and pineland threeawn. Many of the areas have been cleared and are in improved pasture. A few cleared areas are in crops.

This soil has very severe limitations for cultivated crops. Plant nutrients applied to the soil leach rapidly because of the loose sandy texture. The soil is unable to retain sufficient moisture during drier periods for good plant growth. Corn, peanuts, tobacco, soybeans, and watermelons are grown on this soil, but they require good management practices to obtain fair to good yields. Management practices are a crop rotation system that includes soil improving cover crops at least three-fourths of the time, the return of all crop residue to the soil, and proper fertilization and liming. Irrigation is needed during droughty periods. Wind erosion is a hazard where the surface is not protected by a good vegetative cover or by windbreaks.

The soil is moderately suited to improved pasture. Deep rooting grasses, such as bahiagrass and bermudagrass, are well suited to the soil, but yields are reduced by periodic droughts. To maintain pasture for good grazing, careful management is required. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Irrigation helps improve the quality of the grazing and hay crops. It may be economically justifiable during long dry periods. This soil is not suited to shallow rooted pasture plants because it cannot retain sufficient moisture in the root zone.

Potential productivity of the soil is moderate to moderately high for commercial woodland. Longleaf and slash pines are the best adapted species. Slash pine is the recommended species for planting. During dry seasons the loose sandy surface layer causes moderate limitations for the use of equipment. Seedling mortality is moderate because of the droughty conditions of the sandy surface and underlying layers. Plant competition is also moderate.

This soil has slight limitations for dwellings, small commercial buildings, and local roads and streets. Limitation for septic tank absorption fields is normally slight. Ground water contamination is a hazard, however, in areas where homes are concentrated. The soil is unable to adequately filter large quantities of effluent. The soil has severe limitations for sewage lagoons and trench landfills because of possible seepage of the liquid waste through the sidewalls and floor of the pits. If the soil has to be used for these purposes, the floor and sidewalls of these pits need to be lined and sealed. Trafficability is a problem around landfills. The loose, sandy surface causes wind erosion where sites are cleared of vegetation for building construction.

Potential of this soil as habitat for openland and woodland wildlife is poor. The potential as habitat for wetland wildlife is very poor. The shallow water areas essential to this type of habitat are not present, nor can they be developed and maintained on this soil under normal conditions.

This Lake soil has severe limitations for recreational uses. It has a severe hazard of wind erosion. Maintaining good trafficability is difficult because of the loose sandy surface. The establishment and maintenance of a good vegetative cover, and windbreaks, or the addition of suitable topsoil or some form of hard surface can be used to improve or overcome these problems.

This Lake soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

56—Wauberg sand. This nearly level, poorly drained soil is mostly in large areas on prairie in the southern part of the county. Slopes are nearly smooth to slightly concave and range from 0 to 2 percent. The areas are irregular and elongated in shape. They range from about 40 to 500 acres.

Typically, the surface layer is sand about 9 inches thick. The upper 5 inches is black, and the lower 4 inches is very dark gray. The subsurface layer is about 15 inches thick. The upper 10 inches of this layer is grayish brown sand, and the lower 5 inches is light brownish gray sand. The subsoil is sandy clay loam to a depth of 63 inches. The upper 26 inches is dark gray, and the lower 23 inches is gray. Between depths of 63 and 81 inches, the underlying material is gray, mottled clay.

Included with this soil in mapping are small areas of Emeralda, Ledwith, Shenks, and Surrency soils. Also included are a few small areas of soils that have characteristics similar to those of the Wauberg soil except that they have a thinner, lighter colored surface layer or that the upper 4 to 8 inches of the subsurface layer is brownish sandy material. Total included areas are less than 20 percent.

This Wauberg soil has a water table that is less than 10 inches below the surface for 3 to 5 months during most years. The available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, and low to medium in the subsoil. Permeability is rapid to very rapid in the sandy surface and subsurface layers and slow to very slow in the subsoil. Natural fertility is low in the sandy surface and subsurface layers and medium in the subsoil. Organic matter content is moderately low to moderate.

Natural vegetation is a mixture of grasses, herbs, and shrubs. It includes bulrush, maidencane, waxmyrtle, sand cordgrass, bluestem, carpetgrass, briers, and panicum. The areas are still in native vegetation.

This soil has severe limitations for cultivated crops because of wetness. If a good drainage system is installed, the soil is moderately well suited to corn and soybeans and is well suited to certain special crops, including snap beans, cabbage, squash, and peppers. A good drainage system is one that removes excess surface and subsurface water rapidly. Management practices are seedbed preparation that includes bedding rows, rotating close growing crops with regular crops, returning all crop residue to the soil, and regular applications of fertilizer.

This soil is well suited to improved pasture. Simple drainage measures are needed to remove excess water during heavy rains. To maintain a good vegetative cover and reach maximum production, good pasture management is required. To produce good yields from shallow rooting plants, such as white clover, supplemental irrigation is needed during droughty periods. A well designed subsurface irrigation system is a good way to remove excess water during wet seasons and supply additional water during the drier seasons.

Potential productivity of this soil for pine trees is high. The shallow water table and slow internal drainage are moderate limitations for use of normal woodland equipment during wet seasons. The mortality of young pine seedlings and competition with other plants are also moderate. Many areas are on wet prairies where trees do not normally grow.

This soil has severe limitations for most urban uses, including use as sites for dwellings, small commercial buildings, absorption fields for septic tanks, trench landfills, and local roads and streets. Wetness is the major limitation. Water moves slowly through the slowly permeable subsoil. During wet seasons, when the water table is near the surface, drainage is a severe problem. The moderate shrink-swell potential may cause additional problems for building foundations and walls for construction of roads or streets if corrective measures are not taken. Contamination of ground water by seepage of waste material through the sandy subsurface layer is an additional hazard if the soil is used as a site for sewage lagoons.

Potential of this soil as habitat for openland, woodland, and wetland wildlife is fair. Individual areas of this soil do not have the shallow water areas which are needed for good wetland wildlife habitat. Areas of this soil, however, are commonly closely associated with soils which do have the shallow water areas and cover preferred by this type of wildlife.

The Wauberg soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is the main problem. Some form of good water control is needed. For intensive use of recreational areas, the soil has problems for trafficability and of wind erosion during drier periods. Maintaining a good vegetative cover or some other form of surface stabilization helps overcome these problems.

This Wauberg soil is in capability subclass IIIw and has a woodland ordination symbol of 2w.

57B—Micanopy loamy fine sand, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is in small areas on the rolling uplands. Slopes are slightly convex. The areas are irregular and elongated in shape and range from about 10 to 40 acres.

Typically, the surface layer is dark grayish brown loamy fine sand about 6 inches thick. The subsoil extends to a depth of 77 inches. The upper 6 inches is yellowish brown sandy clay loam; the next 6 inches is yellowish brown and gray, mottled sandy clay; the next 37 inches is gray, mottled sandy clay; and the lower 22 inches is gray, mottled sandy clay loam. Between a depth of 77 and 85 inches, the underlying material is intermixed gray and greenish gray sandy clay loam.

Included with this soil in mapping are small areas of Kendrick, Lochloosa, Bivans, and Norfolk soils. Also included are small areas of soils that have characteristics similar to those of the Micanopy soil in color, drainage, and thickness but have a sandy clay loam subsoil. Limestone boulders and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are less than 20 percent.

This Micanopy soil has a perched water table about 20 to 30 inches below the surface for cumulative periods of 1 to 3 months during most years. During dry periods the water table is at a depth of more than 60 inches. Surface runoff is medium. The available water capacity is low in the surface layer and medium in the subsoil. Permeability is rapid in the surface layer, moderate in the upper 6 inches of the subsoil, and very slow to slow below this depth. Natural fertility is low in the sandy surface and subsurface layers and medium in the clayey subsoil. Organic matter content of the surface layer is moderately low to high.

The natural vegetation of this soil is chiefly slash and loblolly pines; water, live, and laurel oaks; and dogwood sweetgum, and hickory. The understory is mainly chalk bluestem, waxmyrtle, toothachegrass, lopsided indiangrass, creeping bluestem, American beautyberry, creeping beggarweed, dwarf huckleberry, greenbrier, blackberry, low panicum, elderberry, pokeberry, and eastern brackenfern. Most areas are in cultivated crops or improved pasture.

This soil has moderate limitations for cultivated crops because of a perched water table near the surface during wet seasons. Erosion is also a hazard. The best adapted crops are those that are tolerant of slightly wet conditions. Soybeans, corn, and watermelons normally produce good yields if good management practices are used. Tobacco is subject to drowning during periods of high rainfall because of the slow internal movement of water through the shallow, clayey subsoil. Good management includes growing row crops in rotation with close growing cover crops, returning all crop residue to the soil, proper seedbed preparation, and use of proper amounts of fertilizer and lime.

This soil is well suited to pasture. Coastal bermudagrass and improved bahiagrasses produce high quality grazing when good management practices are used. These plants require good fertilization, liming, and controlled grazing for highest yields. Deep rooting plants are little affected by droughts. Shallow rooted pasture plants are only moderately suited to this soil because of the droughty condition of the surface layer and upper subsoil during dry seasons. For good yields, irrigation is needed during these periods.

Potential productivity for slash and loblolly pines is high. Where young seedlings are to be planted, slash pine is normally the recommended species. The soil has no significant limitations or hazards for woodland management.

This soil has severe limitations for most urban uses. The major limitations for septic tank absorption fields are the perched water table during wet seasons and slow internal movement of water through the clayey subsoil. The clayey subsoil causes problems in digging trenches or of compaction where the soil is used as cover for landfills. The major limitation of the soil as building sites for dwellings or small commercial buildings is the high shrink-swell potential of the clayey subsoil. The low strength and high shrink-swell potential of the clayey subsoil are severe limitations where local roads and streets are to be constructed.

Potential of this soil as habitat for openland wildlife is only fair; however, potential as habitat for woodland wildlife is good. Potential as habitat for wetland wildlife is very poor because of the lack of shallow water areas.

This Micanopy soil has moderate limitations for most recreational uses because of the perched water table and slow internal drainage during wet periods.

This Micanopy soil is in capability subclass IIw and has a woodland ordination symbol of 2o.

58B—Lake fine sand, 0 to 5 percent slopes. This nearly level to gently sloping, excessively drained soil is in small to large areas on gently rolling, limestone plains of the western part of the county. Most areas are within a 1- to 5-mile fringe area adjacent to deep, droughty sandy ridges. These ridges are along the extreme western boundary of the county. Slopes are nearly smooth to convex. The areas are irregular in shape and range from about 15 to 200 acres.

Typically, the surface layer is dark gray fine sand about 7 inches thick. The underlying layer is fine sand to a depth of 82 inches or more. The upper 4 inches is pale brown, the next 49 inches is very pale brown, and the lower 22 inches is very pale brown and has thin bands of brownish yellow, loamy sand lamellae.

Included with this soil in mapping are small areas of Arredondo, Cadillac, and Jonesville soils. Also included are small areas of excessively drained soils that are sandy to a depth of 80 or more inches but do not have thin bands of lamellae. Small limestone fragments and boulders 5 to 60 centimeters in diameter are in some pedons. A few limestone boulders are on the surface in some areas and are shown by the appropriate symbol. Total included areas are about 20 percent or less.

This Lake soil has low available water capacity. Permeability is rapid. Natural fertility is low. Organic matter content of the surface layer is low. Surface runoff is slow. The water table is at a depth of more than 72 inches.

This soil has very severe limitations for cultivated crops. Plant nutrients applied to the soil leach rapidly because of the sandy texture. The soil is unable to retain sufficient moisture during droughty periods for good plant growth. In order to improve the soil quality, good management practices are necessary. These practices include a crop rotation system that includes soil improving cover crops at least three-fourths of the time, the return of all crop residue to the soil, and proper fertilization and liming. Corn, peanuts, soybeans, tobacco, and watermelons are grown, but irrigation is needed during drier periods. Wind erosion is a hazard where the surface is not protected by a good vegetative cover or by windbreaks.

The soil is moderately well suited to improved pasture. Deep rooting grasses, such as bahiagrass and bermudagrass, are well suited to this soil, but yields are usually reduced by periodic droughts. To maintain pasture for good grazing, careful management is required. This includes proper establishment of plants, fertilization, liming, and controlled grazing. Irrigation helps improve the quality of the grazing and hay crops. It may be economically justifiable during long dry periods. Shallow rooted pasture plants are not suited to this soil.

Potential productivity of this soil is moderately high for slash, longleaf, or loblolly pines (fig. 14). The loose sandy surface layer causes moderate limitations to use of woodland eqı ɔment. Seedling mortality is moderate because of the droughty conditions of the soil. Plant competition is moderate.

This soil has slight limitations for dwellings, small commercial buildings, and local roads and streets. Limitation for septic tank absorption fields is normally slight. Ground water contamination is a hazard, however, in areas where homes that have septic tanks are concentrated. The soil has poor filtration. It has severe limitations for sewage lagoons and trench landfills because of seepage of the liquid waste material through the sidewalls and floor of the pits. Sidewalls can cave when the pits are dug. If the soil has to be used for lagoons or landfills, the floor and sidewalls of these pits need to be lined and sealed. Trafficability is a problem around the landfills. The loose, sandy surface can cause wind erosion where sites are cleared of vegetation for building construction.

Potential of this soil as openland and woodland wildlife habitat is fair. Potential as habitat for wetland wildlife is very poor. Areas of this soil do not have ponds which are needed for this wetland wildlife.

This Lake soil has severe limitations for recreational uses. Maintaining good trafficability is difficult on this loose sandy surface, and wind erosion is a hazard. The establishment and maintenance of a good vegetative cover and windbreaks or the addition of suitable topsoil or some form of hard surface can be used to improve or overcome these problems.

This Lake soil is in capability subclass IVs and has a woodland ordination symbol of 3s.

59—Pottsburg sand. This is a nearly level, poorly drained soil in the broad areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. The areas are usually irregular in shape and range from about 15 to 250 acres.

Typically, the surface layer is black sand about 8 inches thick. The subsurface layer is gray to light gray sand to a depth of 52 inches. The subsoil is dark grayish brown to very dark brown sand to a depth of 86 inches or more.

Included with this soil in mapping are small areas of Chipley, Myakka, Plummer, Pompano, and Zolfo soils. Also included are small areas of soils that are similar to this Pottsburg soil except that they have a black or very dark gray surface layer 8 to 15 inches thick or have a water table at a depth of 12 to 30 inches for about 1 to 4 months during most years. Total included areas are about 20 percent or less.

This Pottsburg soil has a water table that is at a depth of less than 12 inches for 1 to 4 months and is at a depth of 12 to 40 inches for 4 months or longer during most years. During drier periods the water table recedes to more than 40 inches below the surface. Surface runoff is slow. The available water capacity is low to a depth of about 52 inches and is medium to very high below this depth. Permeability is rapid to a depth of about 52 inches. It is moderate below this depth. Natural fertility is low. Organic matter content of the surface layer is moderately low to moderate.

The natural vegetation is chiefly slash and longleaf pines. The understory is mostly gallberry, palmetto, running oak, chalky bluestem, dwarf huckleberry, waxmyrtle, pineland threeawn, sumac, carpetgrass, inkberry, broomsedge bluestem, and panicum. Most areas are still in native vegetation or are planted pine plantations. Some areas have been cleared and are in improved pasture.

This soil has very severe limitations for cultivated crops because of wetness and poor soil qualities. Adapted crops are limited. Special crops are generally better adapted than the general farm crops grown in the county. If a good water control system and intensive management practices are used, the soil produces fair to good yields of such crops as corn, soybeans, snap beans, squash, cabbage, lettuce, sweet corn, and tomatoes. A good type of water control system is one that adequately removes excess water in wet seasons and provides water by subsurface irrigation in dry seasons. Some areas do not have suitable drainage outlets. Management practices are a crop rotation system that includes close growing, soil improving crops; returning all crop residue to the soil; good seedbed preparation; and additions of proper amounts of fertilizer and lime in accordance with the need of the crop grown.

If a water control system and good management practices are used, the soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water after heavy rains. Irrigation is needed during droughty periods for shallow rooted pasture plants, such as white clover. Good management includes proper fertilization and liming and controlled grazing.

Potential productivity of this soil as woodland is moderate. Slash and longleaf pines are both adapted to the soil. This soil has moderate limitations for use of normal woodland equipment. Seedling mortality is a moderate limitation because of the low available water capacity in the sandy surface and subsurface layers and the low natural fertility. Competition of other plants with young pine seedlings is moderate.

The soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench type sanitary landfills, and roads and streets. Wetness is the major limitation. A good drainage sytem is needed. A good drainage system rapidly removes the excess water during wet periods and adequately controls the water table. If the soil is used as sites for sewage lagoons and trench landfills, ground water can be contaminated by seepage of liquid waste material through the sandy sidewalls and floors of the pits. The pits need to be well lined and sealed.

Figure 14.—Planted slash pine on Lake fine sand, 0 to 5 percent slopes.

Potential of this soil as habitat for openland, woodland, and wetland wildlife is poor.

The Pottsburg soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, and the loose sandy surface are the main limitations. Some form of good water control is needed to rapidly remove the excess water during rainy periods. The loose, sandy surface layer is a problem for trafficability, and, during dry seasons, it is subject to wind erosion. Windbreaks, a good vegetative cover, and the addition of good topsoil material or some other form of surface stabilization can be used to help overcome these problems.

This Pottsburg soil is in capability subclass IVw and has a woodland ordination symbol of 4w.

60—Udorthents, 0 to 2 percent slopes. This soil consists of stratified soil material washed from limestone aggregates during mining operations and deposited on nearly level and slightly concave areas of the adjacent landscape. The greater part of this material is usually clayey. Sandy and loamy materials are in pockets and layers to a lesser extent. This overburden material is usually about 36 to 80 inches or more thick. The areas are mostly irregular in shape or elongated and range from about 15 to 60 acres.

Typically, this stratified overburden layer is about 72 inches thick. The upper 4 inches is dark grayish brown, mixed sandy, loamy, and clayey material and fine nodules of limestone. Below this the remaining overburden consists of intermixed layers and pockets of pale yellow, pale brown, light gray, and gray material that is clayey, loamy, and sandy. The underlying buried soil is sandy to a depth of about 90 inches or more. The upper 5 inches is grayish brown, and the next 13 inches is pale brown.

Included with this soil in mapping are small areas of mixed sandy overburden material that is about 4 to 8 feet thick and can have slopes of 0 to 5 percent. A few small areas of mixed soil material only about 12 to 36 inches thick are included. Total included areas are about 20 percent or less.

Water is perched in the overburden material after heavy rainfall for a length of time and at a depth that are variable and depend on the content and thickness of the clayey layers within the stratified material. Surface runoff is slow. The permeability of this overburden material varies from moderate to very slow. Permeability of the underlying, sandy buried soil is rapid. Available water capacity of the stratified material is variable but is dominantly medium to high. It is low in the underlying sandy soil. Natural fertility of the stratified soil material is medium. Organic matter content is low to moderately low.

Most areas are in improved pasture. Some small areas have been left to develop naturally and have scattered stands of slash and loblolly pines and live, laurel, and water oaks. The understory consists of carpetgrass and centipedegrass, blackberry, beggarweed, sedges, and shrubs.

This soil has very severe limitations for cultivated crops in most areas because of the difficulty of land preparation and cultivation of the sticky and plastic, clayey, mixed overburden material. In a few areas, where this overburden material is dominantly a mixture of sandy and loamy materials, the limitations are less severe. The soil produces fair to good yields of such crops as corn and peanuts if good management practices are used.

This soil is well suited to improved pasture of bermudagrasses and bahiagrasses. Good seedbed preparation has some problems because of the thick, clayey surface layer. After the pasture grasses have become established and if good management practices are used, the soil is capable of producing high yields of top quality hay and pasture for grazing.

Potential productivity of the soil for slash and loblolly pines is moderately high. The mortality of young pine seedlings is moderate because of the problems in site preparation and planting. During wet periods, the continual use of heavy equipment across the sticky, clayey overburden material causes moderate problems in equipment use. Plant competition is moderate.

This soil has severe limitations for most urban uses. The problems caused by the clayey overburden are the major limitations for most uses. The perched water table also causes problems for some uses. In areas where septic tank drainpipes are placed within the clayey overburden material, drainage is severely limited by slow percolation. Septic tank absorption fields can be improved by increasing the size of the absorption field, or, if possible, by placing the drainpipe in the underlying sand or fine sand. Where homes or other buildings are to be constructed, plans should include adequate size and strength of the foundation footings to overcome the high shrink-swell potential. The soil has severe limitations as sites for local roads and streets because of the high shrink-swell potential and low soil strength of the clayey overburden layer. Limitations for sewage lagoons are severe. Major limitations are the perched water table and possible contamination of the ground water by seepage if the lagoon floor is dug into the underlying sandy material. The soil has severe limitations for trench landfills because of possible seepage and the clayey overburden.

Potential of the soil for habitat of woodland wildlife is good, and for openland wildlife it is fair. This soil has poor potential as habitat for wetland wildlife. Areas of this soil do not have the shallow water sites needed to attract this type of wildlife.

Udorthents have severe limitations for recreational uses because of the sticky, clayey surface layer. If the soil is used for recreation, suitable soil material needs to be spread over the surface to improve trafficability.

This Udorthents soil is in capability subclass VIs and has a woodland ordination symbol of 3c.

61—Oleno clay, occasionally flooded. This nearly level, poorly drained soil is in small to relatively large areas on the flood plain of the Santa Fe River. This flood plain is along the northern boundary of the county. Slopes are nearly smooth or slightly concave and are less than 2 percent. The areas are generally meandering, elongated, or irregular in shape and range from about 25 to 250 acres.

Typically, the surface layer is dark gray clay about 6 inches thick. The subsoil is about 26 inches thick. It is dark gray or gray clay. The underlying material extends to a depth of 82 inches or more. The upper 10 inches is grayish brown fine sandy loam, the next 13 inches is gray fine sandy loam, the next 16 inches is dark gray fine sandy loam, the next 6 inches is gray sandy clay loam, and the lower 5 inches is greenish gray clay.

Included with this soil in mapping are small areas of Jonesville, Newnan, and Millhopper soils. Also included are small areas of soils that are similar to Oleno soils but have a clayey, fluvial surface layer about 10 to 24 inches thick. Included in a few areas are soils that have 24 to 47 inches of clayey material overlying sandy material; the sandy material extends to a depth of 80 inches or more. Some small areas have limestone within 20 inches of the surface. Total included areas are about 20 percent or less.

This Oleno soil is occasionally flooded for periods of about 1 month or less (fig. 15). The water table is at a depth of 6 to 18 inches for 6 to 8 months during most years. Surface runoff is slow. The available water capacity is very high in the clayey surface layer and subsoil, and it is very low to very high in the underlying material. Permeability is slow in the clayey surface layer and subsoil. It ranges from moderately rapid to slow in the underlying material. Natural fertility is medium, and organic matter content of the clay surface layer is moderate.

The natural vegetation is chiefly black tupelo, cypress, elm, red maple, holly, sweetgum, sweetbay magnolia, water oak, and scattered pine. The understory includes poison ivy, longleaf uniola, greenbrier, dollarwort, smilax, panicum, and a few palmetto.

This soil is not suited to cultivated crops because of the hazard of flooding, the high water table, and the clayey surface layer. These are severe limitations which are very hard or impractical to overcome. Even if a flood control system could be established, the slow internal movement of water through the clayey surface layer and subsoil still makes an extensive network of lateral ditches necessary to adequately control the water table. Water ponds on the surface after heavy rains because of the slow rate of infiltration. Working the clayey texture of the surface layer is a problem.

This soil is suitable for pasture where good flood and water control systems are installed. Good management includes good seedbed preparation, proper fertilization and liming, and controlled grazing.

Potential productivity of this soil for slash pine is high, but flooding is a hazard. The soil has severe limitations for normal woodland equipment use and seedling mortality. Plant competition is moderate.

This soil has severe limitations for most urban uses. The hazard of flooding and slow internal movement of water through the clayey subsoil are severe limitations for absorption fields for septic tanks. Flooding and the high water table are potential problems for trench sanitary landfills or sewage lagoons. Sewage lagoons are also limited by seepage. Some form of good water control system and protection from flooding are needed. The sticky, plastic clayey texture is poor cover material for landfills. The hazard of flooding and the high shrink-swell potential severely restrict this soil for dwellings and small commercial buildings. The potential hazard of flooding, low soil strength, and high shrink-swell potential are major limitations where local roads and streets are to be constructed.

The potential of this soil as habitat for openland, woodland, and wetland wildlife is fair.

The Oleno soil has severe limitations for recreational areas. The flooding potential, the high water table, and slow internal movement of water are the major limitations. Before the soil can be developed for recreation, a water control system and protection from flooding are necessary. The addition of good fill material can raise the surface sufficiently to prevent continuing wetness and to improve surface conditions.

This Oleno soil is in capability subclass Vw and has a woodland ordination symbol of 2w.

62C—Boardman loamy sand, 5 to 8 percent slopes. This sloping, poorly drained soil is on small, short breaking slopes and long hillsides of the uplands. Areas of this soil are predominantly in the southern part of the county. They are both irregular and elongated in shape and range from about 5 to 50 acres.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is about 8 inches thick. It is gray sand and is about 20 percent nodules and fragments of ironstone and weathered phosphatic limestone. The subsoil extends to a depth of 63 inches. The upper 10 inches is gray sandy loam and is about 20 percent fragments and nodules of ironstone and limestone; the next 14 inches is gray, mottled sandy clay loam and is about 15 percent fragments of weathered phosphatic limestone; the next 12 inches is gray sandy clay loam and is about 3 percent fragments and nodules of limestone; and the lower 13 inches is gray sandy clay. Between depths of 63 and 80 inches, the underlying material is greenish gray clay.

Included with this soil in mapping are small areas of Blichton, Bivans, and Lochloosa soils. Small areas of poorly drained soils that have a 10- to 18-inch surface layer of black or very dark gray loamy sand over a sandy clay subsoil are also included. Some areas include soils that have similar characteristics to those of Boardman soils but are less than 5 percent fragments and nodules of ironstone and limestone. Rock outcrops and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 20 percent or less.

The subsurface layer and upper part of the subsoil are saturated by a perched water table for 1 to 4 months during most years. Wetness is caused by hillside seepage. Surface runoff is rapid, and the hazard of erosion is severe. The available water capacity is low to about 14 inches, medium from 14 to 38 inches, and medium to high below 38 inches. Permeability is rapid in the surface and subsurface layers, moderate in the

Figure 15.—Natural vegetation, mainly water-tolerant hardwoods, in an area of poorly drained Oleno clay, occasionally flooded.

upper 10 inches of the subsoil, and slow in the lower part. Natural fertility is medium, and organic matter content is low to moderately low.

Natural vegetation on this soil is hickory, loblolly and slash pines, magnolia, sweetgum, and laurel, live, and water oaks. The understory includes waxmyrtle and native grasses. Some areas are cleared and are in pasture.

This soil has very severe limitations for cultivated crops. Wetness and susceptibility to erosion are the major limitations. Hillside seepage is a problem during wet seasons. The soil is moderately suited to corn, soybeans, watermelons, and special crops, if good management practices are used. These include crop rotations that keep the soil in close growing cover crops at least three-fourths of the time, the return of all crop residue to the soil, and proper fertilization and liming.

This soil is well suited to improved pasture. Erosion is a severe hazard where the surface is unprotected during rainy periods. A good cover established as rapidly as possible minimizes any potential erosion during initial growth. Proper management is needed to produce good quality pasture. This includes correct fertilization, liming, and controlled grazing.

This soil has high potential productivity for slash, loblolly, and longleaf pines. The wetness and slope cause moderate restrictions and limitations of equipment use, seedling mortality, and plant competition.

This soil has severe limitations for most urban uses, including use as sites for dwellings, small commercial buildings, absorption fields for septic tanks, trench landfills, and local roads and streets. Wetness is the major limitation. Water moves slowly through the clayey subsoil and a perched water table is near the surface during wet periods. The moderate to high shrink-swell potential is an additional problem for construction of building foundations, walls, and roads or streets if corrective measures are not taken. This soil has severe limitations for sewage lagoons because of seepage and wetness.

Potential of this soil as habitat for woodland wildlife is good, for openland wildlife it is fair, and for wetland wildlife it is very poor. Shallow water areas, which are essential for wetland wildlife, are difficult to establish on these hillsides.

This Boardman soil has severe limitations for recreational uses, such as athletic fields and playgrounds, because of the wetness and slope. Land shaping, which would be required to smooth the sloping soil, exposes and intermixes much of the underlying clayey subsoil. This causes additional problems in trafficability, especially during rainy periods. The addition of suitable topsoil or some form of hard surfacing and water control are needed.

This Boardman soil is in capability subclass IVw and has a woodland ordination symbol of 2w.

63—Terra Ceia muck. This nearly level, very poorly drained organic soil is in freshwater marshes and in large areas on wet prairies. This soil is in the southern and eastern parts of the county. Slopes are nearly smooth to slightly concave and are less than 1 percent. The individual areas are irregular or elongated in shape and range from 60 to 300 acres.

Typically, the surface layer is muck about 68 inches thick. The upper 12 inches is black, and the lower 56 inches is dark reddish brown. The underlying material is very dark gray clay to a depth of 75 inches or more.

Included with this soil in mapping are small areas of Ledwith, Martel, Monteocha, Okeechobee, Pompano, Samsula, and Shenks soils. Total included areas are less than 15 percent.

This Terra Ceia soil has a water table that is at or on the surface during most of the year. Available water capacity of the organic material is very high. Permeability is rapid in the organic material and very slow to slow in the underlying material. Natural fertility is high. Organic matter content in the muck is very high.

The native vegetation on this soil is a mixture of wetland grasses, herbs, and shrubs. It includes maidencane, cattail, cordgrass, bulrush, buttonbush, elderberry, waterhyacinth, arrowhead, pennywort, and dollarwort. Most areas are still in native vegetation.

This soil has severe limitations for cultivated crops because of the severe wetness. In its natural condition, the soil is not suited to crops. If this soil is drained and if a good water control system and good management practices are used, the soil produces good yields of such crops as corn, soybeans, squash, lettuce, celery, cabbage, eggplant, snap beans, and sweet corn. A well designed and properly maintained water control system is necessary. A good system is one that adequately removes the excess water when crops are on the soil and keeps the soil saturated with water at all other times to decrease subsidence as much as possible. Good management includes keeping water-tolerant cover crops on the soil when regular crops are not grown, returning all crop residue to the soil, good seedbed preparation, and proper fertilization.

This soil is not suited to pasture under natural conditions. Wetness caused by the high water table and standing water are the main limitations. These limitations can be overcome only by a well developed drainage and water control system. If a good water control system and good management practices are used, the soil is well suited to improved pasture. A good water control system removes the excess water from the soil but maintains water near the surface in order to decrease subsidence. Good management includes proper fertilization and controlled grazing to permit maximum yields.

This is a very wet organic soil, mostly in freshwater marsh and on wet prairies. Trees do not normally grow here. Because of the excessive wetness and very poor drainage, the soil is not recommended for commercial woodland. Most woodland management problems would be severe.

This soil has severe limitations for urban uses. The high water table, ponding, excess humus, low soil strength, and potential seepage are major limitations that are hard to overcome. Good drainage and water control systems require a major network of canals and ditches. Keeping the areas adequately drained will be a continuing problem. When drained, organic layers subside considerably. Because of the drainage limitation and unstable conditions, the organic layer needs to be removed and replaced with suitable fill material before any development begins.

Potential of this soil as habitat for wetland wildlife is good. The areas contain shallow water areas which are desirable for this type of wildlife. Potential as habitat for openland and woodland wildlife is poor. The areas are too wet for these types of wildlife.

This Terra Ceia soil has severe limitations for recreational uses. The excessive wetness and excess humus are the major limitations. A good drainage system that adequately removes the water is expensive to establish and maintain. When the soil is drained, the exposed, dry surface layer becomes dusty. This condition, along with the unstable condition of the soil, causes severe problems in trafficability.

This Terra Ceia soil is in capability subclass IIIw. It is not assigned a woodland ordination symbol.

64—Okeechobee muck. This nearly level, very poorly drained organic soil is in large freshwater marshes in the southeastern and eastern parts of the county. Slopes are nearly smooth to slightly concave and are less than 1 percent. Areas are irregular or elongated in shape and range from 50 to 250 acres.

Typically, the organic material extends to a depth of 80 inches. The upper 7 inches is black muck; the next 14 inches is dark brown muck; the next 14 inches is dark reddish brown peaty muck; the next 13 inches is black muck; and the lower 32 inches is very dark brown muck.

Included with this soil in mapping are small areas of Samsula, Shenks, and Terra Ceia soils. Total included areas are less than 15 percent.

This Okeechobee soil has a water table that is at or on the surface during most of the year. The available water capacity of the soil is very high. Permeability is rapid. Natural fertility is high. Organic matter content is very high.

The natural vegetation is a mixture of wetland grasses, herbs, and shrubs. It includes maidencane, cattail, cordgrass, bullrush, buttonbush, elderberry, water hyacinth, arrowhead, pennywort, and dollarwort. Most areas are still in native vegetation.

This soil has severe limitations for cultivated crops because of the excessive wetness. The soil is not naturally suited to crops. If an adequate water control system is installed, however, it is well suited to such crops as corn, soybeans, squash, tomatoes, lettuce, celery, cabbage, eggplant, and snap beans. A well designed and properly maintained water control system is necessary. It should adequately remove the excess water when crops are on the soil and should keep the soil saturated with water at all other times to decrease subsidence as much as possible. Good management includes keeping water-tolerant cover crops on the soil when regular crops are not grown, returning all crop residue to the soil, good seedbed preparation, and proper fertilization.

This soil is not naturally suited to pasture. Water is at the surface or standing on it for much of the year. An extensive system of dikes and canals, along with good outlets, is necessary for adequate drainage. In areas where a good water control system can be reasonably installed, the soil is well suited to improved pasture. Both deep rooted and shallow rooted plants can be grown. A good water control system is one that not only removes the excess water from the soil but maintains the water table near the surface in order to decrease subsidence as much as possible. Controlled grazing permits maximum growth of pasture.

This soil is in wet marshes. It does not normally have trees growing on it. Because of the excessive wetness and very poor drainage, it is not recommended for commercial woodland. Most woodland management problems would be severe.

This soil has severe limitations for urban uses. The excessive wetness, low strength, excess humus, and potential seepage are the major limitations. Good drainage systems are hard to establish and maintain. Even where drainage systems are installed, keeping the areas adequately drained is a continuing problem. A good water control system is one that quickly removes excess water but maintains the water table at a depth necessary for the selected use. If the soil is drained, organic layers subside considerably. The organic material needs to be removed and replaced with suitable material before urban development is begun.

Potential of this soil as habitat for wetland wildlife is good. The areas contain ponds, which are desirable for this type of wildlife. Potential for openland and woodland wildlife is poor. The soil is too wet and does not produce food and cover desirable for these types of wildlife.

This Okeechobee soil has severe limitations for recreational uses. The excessive wetness and excess humus are the major limitations. A good drainage system that adequately removes the water is expensive to establish and to maintain. When the soil is drained, the exposed, dry surface layer becomes dusty. The dusty surface, along with the unstable conditions of the soil, causes severe problems for traffic.

This Okeechobee soil is in capability subclass IIIw. It has not been assigned a woodland ordination symbol.

65—Martel sandy clay loam. This nearly level, very poorly drained soil is in wet depressional areas of the flatwoods and on grassy prairies of the uplands. Slopes are nearly smooth to slightly concave and range from 0 to 1 percent. Areas are irregular or elongated in shape and range from 5 to 300 acres.

Typically, the surface layer is sandy clay loam about 16 inches thick. The upper 13 inches is black, and the lower 3 inches is very dark gray. The subsoil is sandy clay to a depth of 54 inches. The upper 19 inches is dark gray, and the lower 19 inches is gray and has strong brown and yellowish red mottles. Between depths of 54 and 80 inches, the underlying material is gray sandy clay.

Included with this soil in mapping are small areas of Bivans, Blichton, Lynne, Shenks, and Terra Ceia soils. Total included areas are less than 15 percent.

This Martel soil has a water table that is within 10 inches of the surface for 6 to 12 months during most years. Most areas are covered with water for 6 months or more. Runoff is slow. The available water capacity is high in the surface layer and medium to high in the subsoil. Permeability is moderate in the sandy clay loam surface layer and very slow in the subsoil. Natural fertility and organic matter content of this soil are moderate to high.

Natural vegetation is chiefly water-tolerant grasses and other plants, which include bulrush, maidencane, cordgrass, cattails, and buttonbush. A few areas have scattered cypress, pond pine, and gum.

This soil is not suited to cultivated crops. The excessive wetness, very poor drainage and water control, and slow internal drainage are the major limitations. Water stands on the surface during much of the year. This soil is in areas where good outlets for artificial drainage systems are not normally available. If outlets are available, an extensive system of canals and ditches is required to remove the excess water and keep the water table low enough to establish an adequate rooting system for plants. The slow movement of water through the clayey subsoil requires an extensive network of lateral ditches for adequate internal drainage. Even where good water control systems can be established, water continues to puddle on the surface after heavy rains. The ponding is caused by the slow rate of infiltration and slow internal drainage of the soil. The texture of the surface layer also causes problems in workability.

If this soil remains undrained, it is not suited to pasture because of the ponding. The lack of good drainage outlets severely restricts the use of this soil for pasture. If good drainage and water control systems can be developed and maintained and good management practices are used, good quality grass or grass-clover pasture can be grown.

Undrained areas of this soil are not suited to slash, loblolly, or longleaf pines because of the excessive wetness caused by ponding. Use of woodland equipment is severely restricted. Seedling mortality is severe. Plant competition is moderate.

The soil has severe limitations for most urban uses. The ponding and slow internal movement of water through the clayey subsoil are severe hazards for absorption fields of septic tanks. Ponding and the high water table can cause pollution if the soil is used for trench sanitary landfills or for sewage lagoons. Some form of good water control and protection from ponding are needed to prevent this hazard. The sticky, plastic, clayey subsoil is poor cover material for landfills. Ponding, the high shrink-swell potential, and the low strength of the clayey subsoil severely restrict the soil as sites for dwellings, small commercial buildings, and for local roads and streets. Even if site conditions could be improved sufficiently to overcome most of these problems, keeping the areas adequately drained would be a continuing problem.

The potential of this soil as habitat for openland wildlife and woodland wildlife is poor. The potential as habitat for wetland wildlife is good. Shallow water areas, which are needed for this type of wildlife, either are natural or can be developed in mapped areas of this soil.

This Martel soil has severe limitations for recreational areas. Ponding and the slow internal movement of water through the clayey subsoil are the major limitations. Before the soil can be developed for recreation, water control and protection from ponding are necessary. The addition of good fill material can raise the surface sufficiently to prevent continuing wetness.

This Martel soil is in capability subclass Vw. It is not assigned a woodland ordination symbol.

66—Lynne sand. This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth to slightly convex and range from 0 to 2 percent. Areas are irregular and elongated in shape and are about 10 to 100 acres.

Typically, the surface layer is black sand about 5 inches thick. The subsurface layer is light brownish gray to gray sand to a depth of about 20 inches. The upper part of the subsoil is 3 inches of black sand and 6 inches of dark reddish brown sand. Below this is 3 inches of brown sand. The lower part of the subsoil is loamy to clayey and extends to a depth of 80 inches or more. The upper 5 inches is light brownish gray sandy clay loam, and the lower 43 inches is gray, mottled sandy clay.

Included with this soil in mapping are areas of Bivans, Blichton, Martel, and Pomona soils. Total included areas are less than 15 percent.

This Lynne soil has a water table that is at a depth of less than 10 inches for 1 to 3 months, at a depth of 10 to 40 inches for 3 to 6 months, and at a depth of more than 40 inches during drier seasons. Surface runoff is low. The available water capacity is low to a depth of about 20 inches, medium from 20 to 29 inches, low from 29 to 32 inches, and medium to high below a depth of 32 inches. Permeability is rapid in the upper 20 inches, moderate from 20 to 29 inches, rapid from 20 to 32 inches, and moderately slow below a depth of 32 inches. Natural fertility is low to a depth of about 32 inches and medium below this depth. Organic matter content is low to moderately low.

Natural vegetation of this soil is longleaf and slash pines. The understory is mostly sawpalmetto, waxmyrtle, gallberry, and native grasses. Most areas are still in natural vegetation. A few areas are cleared and are in improved pasture.

This soil has severe limitations for cultivated crops because of wetness. The number of adapted crops is very limited unless good water control measures are used. If a good water control system and good management practices are used, the soil is well suited to a number of crops, including squash, beans, eggplant, pepper, cabbage, soybeans, and corn. A good water control system is one that removes excess water during wet seasons but provides subsurface irrigation during dry seasons. Management practices are rotating row crops with close growing, soil improving crops; leaving all crop residue on the soil; and proper applications of fertilizer and lime according to the need of the crop being grown.

If a water control system and good management practices are used, the soil is well suited to improved grass and grass-clover pasture. Water control measures are needed to remove excess water after heavy rains and to furnish needed water during droughty periods, especially where white clover or other adapted, shallow rooted pasture plants are grown. Good management includes proper fertilization, liming, and controlled grazing.

Potential productivity of this soil for commercial woodland production of slash and longleaf pines is moderately high. Slash pine is the recommended species for planting. Use of equipment is moderately restricted during wet seasons. The slightly droughty conditions of the sandy surface and subsurface layers during periods of low rainfall and the low natural fertility are limitations that cause moderate seedling mortality. Competition of other plants with young pine seedlings is also moderate.

This soil has severe limitations for urban uses, including absorption fields for septic tanks, dwellings, small commercial buildings, sewage lagoons, trench landfills, and roads and streets. Wetness is the major problem. A good drainage system is needed to remove the excess water during wet periods and to adequately control the water table. If the soil is used for sewage lagoons, contamination of ground water by seepage is a potential hazard. The pits need to be lined and sealed.

Potential of this soil for use as habitat for openland, woodland, and wetland wildlife is fair.

The Lynne soil has severe limitations as sites for recreational areas. The high water table, which is at or near the surface during wet periods, is a major problem. Some form of good water control system is needed. Trafficability and wind erosion are also problems, especially during drier periods, because of the sandy surface layer. Maintaining good vegetative cover or some other form of surface stabilization can overcome this problem.

This Lynne soil is in capability subclass IIIw and has a woodland ordination symbol of 3w.

67C—Wacahoota loamy sand, 5 to 8 percent slopes. This sloping, poorly drained soil is in small and large areas on wet slopes in uplands. The areas are irregular or elongated in shape and range from 5 to 50 acres.

Typically, the surface layer is very dark grayish brown loamy sand about 7 inches thick. It is about 6 percent nodules of ironstone and fragments of phosphatic limestone. The subsurface layer is sand to a depth of 32 inches. The upper 5 inches is gray and is about 8 percent nodules of ironstone and fragments of phosphatic limestone. The next 12 inches is grayish brown and is about 12 percent nodules of ironstone and fragments of phosphatic limestone. The lower 8 inches is light brownish gray and is about 12 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 80 inches or more. The upper 10 inches is light brownish gray sandy clay loam and is about 14 percent nodules of ironstone and fragments of phosphatic limestone; the next 21 inches is gray sandy clay loam that has light gray and brown mottles. It is about 6 percent nodules of phosphatic limestone. The lower 17 inches is dark gray sandy clay loam that has olive gray and brownish yellow mottles.

Included with this soil in mapping are small areas of Bivans, Blichton, Boardman, and Lochloosa soils. Small areas of soils that are similar to Wacahoota soils but have sandy surface and subsurface layers more than 40 inches thick over a sandy clay subsoil are included. Also, small areas of Wacahoota soils that have slopes of 2 to 5 percent are included. Total included areas are less than 20 percent.

This Wacahoota soil has a water table that is less than 10 inches below the surface for 1 to 4 months during most years. Surface runoff is moderate. The available water capacity is low to medium in the loamy sand surface layer and low in the subsurface layer. It is low to medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers, and it is moderate in the loamy subsoil. Natural fertility is low to medium. Organic matter content is moderate in the surface layer.

Natural vegetation is hickory, water oak, sweetgum, and slash, loblolly, and longleaf pines. The understory is waxmyrtle, briers, and other native grasses and shrubs. Most areas are still woodland.

This soil has severe limitations for cultivated crops because of wetness and a severe hazard of erosion. These are severe problems during wet seasons and are difficult to control. The number of adapted crops is limited. This soil is only moderately suited to such crops as corn, peanuts, and certain vegetable crops, if good management practices are used. Management practices include intensive erosion control measures and water control measures that intercept and remove the surface water slowly. Other management practices are planting row crops on the contour, rotating row crops and cover crops, keeping cover crops on the soil at least two-thirds of the time, leaving all crop residue on the soil, and good seedbed preparation. Fertilization and liming are also needed to obtain good yields.

This soil is well suited to improved pasture and produces good quality grazing if the pasture is well managed. This includes adequate fertilization, liming, and controlled grazing. Erosion is a severe hazard when the surface is left unprotected. During initial growth, a good ground cover established immediately, and maintained, minimizes erosion.

Potential productivity of the soil to pine trees is high. Moderate limitations for normal woodland equipment use during harvesting are slope and wetness. The hazard of erosion and plant competition are also moderate.

This soil has severe limitations for most urban uses, including use as sites for dwellings, small commercial buildings, absorption fields for septic tanks, trench landfills, sewage lagoons, and local roads and streets.

Wetness caused by hillside seepage is the major limitation. Some form of water control, such as subsurface drainage, is needed to remove the excess water during wet periods. Ground water can be contaminated by seepage of effluent through the sandy sidewalls if the soil is used for sewage lagoons or landfills. The moderate shrink-swell potential is an additional limitation for construction of building foundations and walls or of roads and streets if corrective measures are not taken.

Potential of this soil as habitat for openland wildlife and woodland wildlife is fair. Potential as habitat for wetland wildlife is very poor because the areas do not have the ponds desired by this type of wildlife.

This Wacahoota soil has severe limitations for such recreational uses as athletic fields, playgrounds, campsites, and picnic areas because of wetness and slope. Some system of water control, such as subsurface drainage, is needed to remove excess water and control hillside seepage during rainy periods. Land shaping is necessary before the soil can be used for playgrounds. It will expose and intermix some areas of the subsoil, which could cause additional problems in trafficability during rainy periods. The addition of suitable topsoil or some other form of surface improvement is needed.

This Wacahoota soil is in capability subclass IVw and has a woodland ordination symbol of 2w.

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland may now be cropland, pasture, woodland, or other land, but not urban and built-up land or water areas. It must either be used for producing food or fiber or be available for these uses.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation. It also has favorable temperature and growing seasons and acceptable acidity or alkalinity. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the growing season. The slope ranges mainly from 0 to 8 percent. For more detailed information on the criteria for prime farmland, consult the local staff of the Soil Conservation Service.

About 7,800 acres, or about 1.3 percent, of Alachua County meets the soil requirements for prime farmland. These soils occur mainly in map unit 3 of the general soil map. This land is used predominantly for corn, soybeans, and tobacco.

A recent trend in land use, in some parts of the county, has been the loss of some prime farmland to community development. The loss of prime farmland to other uses puts pressure on marginal land, which generally is more erodible, droughty, and difficult to cultivate and usually is less productive.

Soil map units that make up prime farmland in Alachua County are listed in this section. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps in the back of the publication. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Soils that have limitations—a high water table or flooding—may qualify for prime farmland if these limitations are overcome by such measures as drainage, flood control, or irrigation. In the following list these limitations, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to see if these limitations have been overcome by corrective measures.

The map units that meet the soil requirements for prime farmland are:

33B Norfolk loamy fine sand, 2 to 5 percent slopes
33C Norfolk loamy fine sand, 5 to 8 percent slopes
57B Micanopy loamy fine sand, 2 to 5 percent slopes (where drained for cultivated crops)

Use and Management of the Soils

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

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

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

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

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

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

Crops and Pasture

John D. Lawrence, conservation agronomist, Soil Conservation Service, assisted in preparing this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed in table 5.

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

Approximately 200,000 acres in Alachua County is used for crops and pasture according to the 1978 Census of Agriculture, the Alachua County Extension Service estimates, and the Florida Agricultural Statistics, Florida Crop and Livestock Reporting Service. Of this total, 85,000 acres is used for pasture; 100,000 acres for field crops, mainly corn, peanuts, tobacco, and increasingly soybeans; and 15,000 acres for special crops, mainly vegetables, such as watermelons, snap beans, sweet corn, peppers, and cucumbers. Smaller acreages are planted in squash, eggplant, field peas, sod, nursery plants, citrus, blueberries, grapes, blackberries, and pecans.

The potential of the soils in Alachua County for increased food production is good. About 100,000 acres of potentially good cropland is currently used as woodland, and about 50,000 acres is in pasture. Other land that is now used as woodland and pasture could be used as cropland if intensive conservation measures are used to control wind erosion. In addition to the reserve capacity represented by this land, food production could be increased considerably by extending the latest agricultural technology to all cropland in the county.

Acreage in crops, pasture, and woodland has gradually been decreasing as more and more land is used for urban development. In 1967, an estimated 20,000 acres of urban and built-up land was in the county (*6*). This acreage has been increasing about 10 percent per year for the past 10 years according to estimates by the North Central Florida Regional Planning Council. The use of this soil survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "General Soil Map Units."

Soil erosion is a problem on about one-fourth of the cropland and pastureland in Alachua County. Erosion is a hazard if the slope is more than 2 percent on the well drained and moderately well drained Bonneau, Jonesville, Kendrick, and Norfolk soils, the somewhat poorly drained Lochloosa and Micanopy soils, and the poorly drained Bivans and Blichton soils.

Loss of the surface layer by erosion is damaging for two reasons. First, productivity is reduced as the surface is lost and part of the subsoil is incorporated into the plow layer. Second, soil erosion on farmland results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many fields, preparing a good seedbed and tilling is difficult because limestone boulders are on the Jonesville and Pedro soils and in some areas of Arredondo, Bonneau, and Norfolk soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that do not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce soil loss on erodible slopes and provide nitrogen and improve tilth for the crop that follows.

Minimizing tillage and leaving crop residue on the surface help increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the survey area. Conservation tillage of corn and soybeans is effective in reducing erosion on slopes. This practice can be adapted to most soils in the survey area.

Soils in the survey area are too sandy and slopes are too short and irregular for contour tillage or terracing. Stripcropping and diversions reduce the length of slope and reduce runoff and erosion. They are more practical on deep, well drained soils that have regular slopes. On many fields, diversions and grassed waterways reduce runoff and erosion and can be adapted to most soils in the survey area.

Wind erosion is a major hazard on the sandy and organic soils. Wind can damage soils and tender crops in a few hours in open, unprotected areas if they are strong and the soil is dry and bare of vegetation or surface mulch. Maintaining vegetative cover and surface mulch minimizes wind erosion.

Wind erosion is damaging for several reasons. It reduces soil fertility by removing finer soil particles and organic matter; damages or destroys crops by sandblasting; spreads diseases, insects, and weed seeds; and creates health hazards and cleaning problems. Control of wind erosion minimizes duststorms and improves quality of air for more healthful living conditions.

Field windbreaks of adapted trees and shrubs, such as Carolina cherry laurel, slash pine, southern redcedar, and Japanese privet, and strips of small grain are effective in reducing wind erosion and crop damage. Field windbreaks and strip crops are planted at right angles to the prevailing wind and at specific intervals across the field. The intervals depend on the erodibility of the soil and the susceptibility of the crop to damage from sandblasting.

Information for the design of erosion control practices for each kind of soil is contained in the "Water and Wind Erosion Control Handbook—Florida," which is available in local offices of the Soil Conservation Service.

Soil drainage is a major management need on about 10 percent of the acreage used for crops and pasture in the soil survey area. Some soils are naturally so wet that the production of crops common to the area is generally not practical. They are the poorly drained Emeralda, Mulat, Myakka, Pelham, Plummer, Pomona, Pompano, Pottsburg, Wauberg, and Wauchula soils and the very poorly drained Ledwith, Monteocha, Okeechobee, Placid, Shenks, Surrency, and Terra Ceia soils. These soils make up about 193,000 acres.

Unless artificially drained, crop damage is caused on some of the somewhat poorly drained soils by the wet rooting zone during the rainy season of most years. Included in this category are Chipley, Newnan, Sparr, and Zolfo soils, which make up about 62,000 acres. Unless artificially drained, some of the poorly drained soils are wet enough to cause some damage to pasture plants during the wet seasons. These poorly drained soils are mainly the Mulat, Myakka, Pelham, Plummer, Pomona, Pompano, and Wauchula soils. They also have low water holding capacity and are droughty during dry periods. Subsurface irrigation is usually necessary for top quality pasture production.

The very poorly drained soils are very wet during the rainy periods. Water stands on the surface in most areas. The production of good quality pasture is not possible without artificial drainage. Some very poorly drained soils are the Ledwith, Monteocha, Okeechobee, Placid, Shenks, Surrency, and Terra Ceia soils.

The design of both surface drainage and subsurface irrigation systems varies with the kind of soil and the pasture grown. A combination of surface drainage and subsurface irrigation systems is needed on these soils for intensive pasture production. Information on drainage and irrigation for each kind of soil is available in the local offices of the Soil Conservation Service.

Soil fertility is naturally low in most soils in the survey area. Most of the soils have a sandy surface layer and are light colored. The Jonesville and Pedro soils have an acid surface layer and are underlain by calcareous limestone, which is neutral to moderately alkaline. Many of the soils have a loamy subsoil. In this category are the Apopka, Arredondo, Blichton, Bonneau, Jonesville, Kanapaha, Kendrick, Lochloosa, Millhopper, Monteocha, Mulat, Norfolk, Pelham, Pedro, Plummer, Sparr, and Surrency soils. The Candler, Chipley, Fort Meade, Gainesville, Lake, Myakka, Placid, Pompano, Pottsburg, Tavares, and Zolfo soils have sandy material to a depth of 80 inches or more. The Lynne, Monteocha, Myakka, Newnan, Pomona, Pottsburg, Wauchula, and Zolfo soils have an organically stained layer within the sandy subsurface layer. Most soils are strongly acid to very strongly acid at the surface. If they have never been limed, they require applications of ground limestone to raise the pH level sufficiently for crops. Nitrogen, potash, and available phosphorus levels are naturally low in most of these soils. Additions of lime and fertilizer are based on the results of soil tests, the needs of the crops, and the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

All the soils in the survey area have a sandy surface layer that is light in color and low to moderate in organic matter content, except the Emeralda, Floridana, Fort Meade, Ledwith, Martel, Monteocha, Okeechobee, Oleno, Placid, Samsula, Shenks, Surrency, and Terra Ceia soils. The Oleno soils have a clayey surface layer. The Emeralda, Floridana, Fort Meade, Martel, Monteocha, Placid, and Surrency soils have a dark surface layer and high organic matter content. The Ledwith, Okeechobee, Samsula, Shenks, and Terra Ceia are organic soils or have an organic surface tier.

Generally, the structure of the surface layer of most soils in the survey area is weak. After intense rainfall, colloidal matter cements and forms a slight crust in dry soils that are low in organic matter content. The crust is slightly hard when it is dry and slightly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material can help improve soil structure and reduce crust formation.

Fall plowing is generally not a good practice in the county. About one-fourth of the cropland is on slopes that are subject to damaging erosion if they are plowed at this time. Also, about three-fourths of the county's crops are grown on soils that are sandy and are subject to wind erosion.

Field crops grown in the survey area include corn, soybeans, peanuts, and tobacco. Grain sorghum, sunflowers, potatoes, and sugarcane could be increased if economic conditions are favorable.

Rye is the common close-growing crop. Wheat, oats, and triticale could also be grown.

Special crops grown commercially in the survey area are watermelons, snap beans, cucumbers, pepper, and a small acreage of squash, eggplant, citrus, blueberries, grapes, blackberries, pecans, nursery stock, and sod. If economic conditions are favorable, blueberries, grapes, blackberries, nursery stock, sod, cabbage, cauliflower, turnips, and mustard could be increased.

Deep soils that have good natural drainage are especially well suited to many vegetables and small fruits. They are the Bonneau, Kendrick, and Norfolk soils that have slopes of less than 8 percent. These deep soils total about 39,000 acres. If irrigated, the total acreage of these soils is about 140,000. The Arredondo, Fort Meade, Gainesville, Jonesville, Lochloosa, Micanopy, Millhopper, and Pedro soils that have slopes of less than 8 percent are very well suited to vegetables and small fruit. The total extent of these soils is about 140,000 acres. In addition, if adequately drained, about 159,000 acres of Blichton, Chipley, Kanapaha, Ledwith, Mulat, Newnan, Okeechobee, Pomona, Riviera, Samsula, Shenks, Sparr, Terra Ceia, Wauchula, and Zolfo soils is very well suited to vegetables and small fruit.

Most of the well drained and moderately well drained soils in the survey area are suitable for orchards and nursery plants. Some of these soils are in low areas that have poor air drainage and frequent frost pockets and are generally poorly suited to early vegetables, small fruits, and orchards.

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

Pastures are used to produce forage for beef and dairy cattle. Cow-calf operations for beef are the major cattle business. Bahiagrass and Coastal bermudagrass are the major pasture plants grown. Grass seed could be harvested from these grasses for improved pasture as well as for commercial purposes. Many cattlemen seed small grain on cropland and overseed ryegrass on pastures in the fall for winter and spring grazing. Excess grass from Coastal bermudagrass harvested during the summer months and peanuts harvested during fall can be used as hay during the winter months.

The well drained and moderately well drained Apopka, Arredondo, Bonneau, Fort Meade, Gainesville, Jonesville, Kendrick, Millhopper, Norfolk, Pedro, and Tavares soils are well suited to bahiagrass and improved bermudagrass (fig. 16). Under good management hairy indigo and Alyce clover can be grown in summer and fall.

The somewhat poorly drained Chipley, Lochloosa, Micanopy, Newnan, Sparr, and Zolfo soils are well suited to bahiagrass and improved bermudagrass. These grasses can be grown with such legumes as sweet clover if the soils are adequately limed and fertilized.

In many parts of the county, pasture is greatly depleted by continuous, excessive grazing. Applying lime and fertilizer, growing legumes, irrigating, and other management practices increase yields.

Differences in the amount and kind of pasture yields are related closely to the kind of soil. Management of pasture is based on the relationship among soil, pasture plants, lime, fertilizer, and moisture.

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

Hay and pasture yields are predicted for grasses and legumes suited to the soil under a high level of management in table 5. The yields are in animal unit

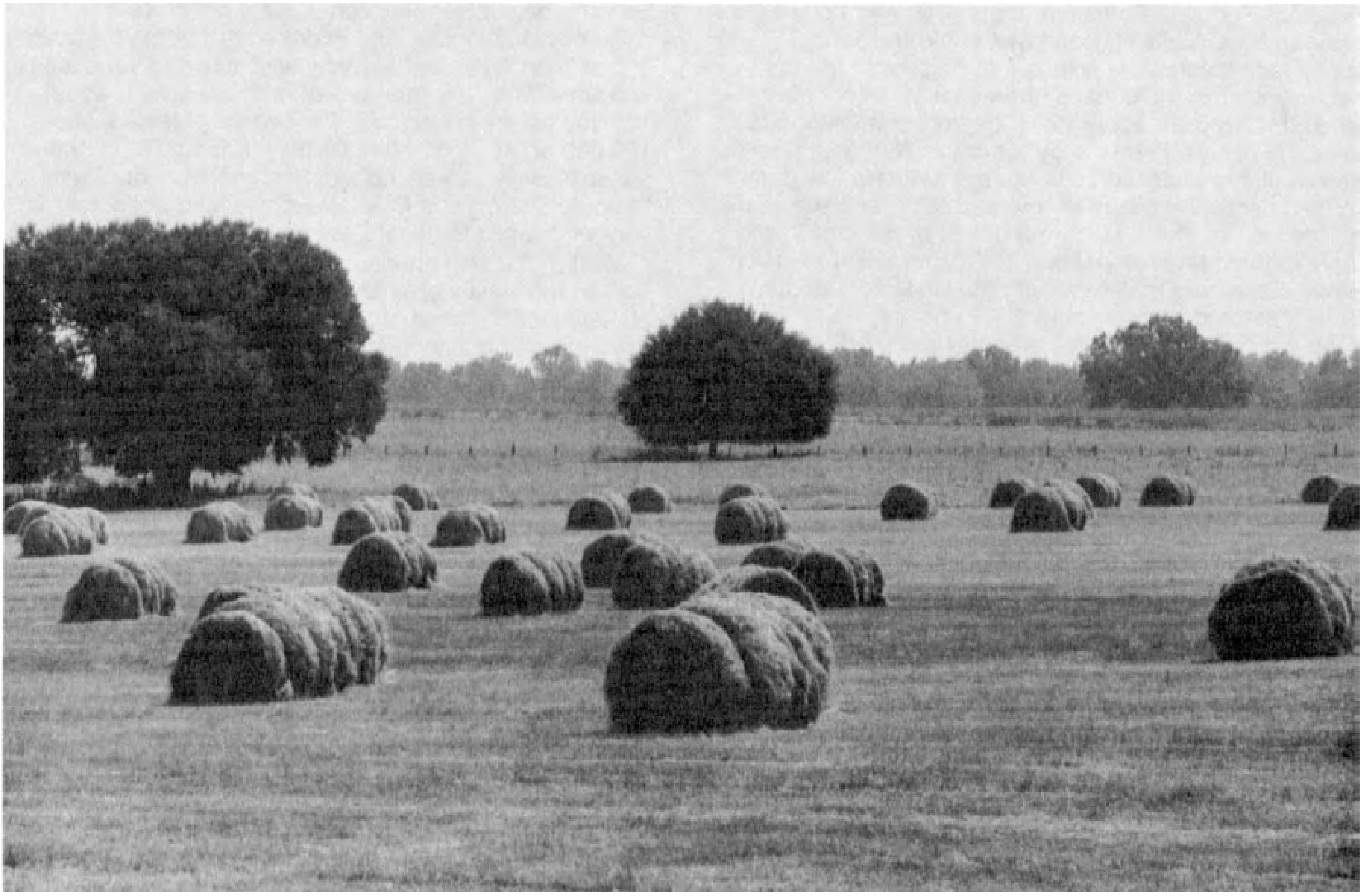


Figure 16.—Good quality hay from Coastal bermudagrass on Arredondo fine sand, 0 to 5 percent slopes.

months (AUM). An animal unit is the amount of forage needed for one cow and her calf.

Yields Per Acre

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

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

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

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

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the

Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

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

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

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

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

Woodland Management and Productivity

Hal Brockman, forester, Soil Conservation Service, and Bob Mikell, county forester, Florida Division of Forestry, helped prepare this section.

Alachua County currently has 309,353 acres, or 52 percent of the total county, in woodland. This area is in three distinct ownership classes: state and local government, large corporate ownership, and small privately owned tracts. Commercial woodland has been steadily decreasing in Alachua County. In the past 10 years, 2,000 acres have been taken out of wood production.

The soils and climate are very good for growing trees. The majority of the woodland is on Pomona, Wauchula, Myakka, Chipley, Newnan, Pelham, and Plummer soils. All of these soils are in the flatwoods. Pomona soils are the most extensive.

The majority of the woodland management is for needle-leaved trees. About 50 percent of the woodland is in pine trees, primarily longleaf and slash pines, as well as some loblolly pine. The rest is of two forest types: upland oak-hickory and wetland oak-gum-cypress. Common oak trees include water, laurel, live, and turkey oaks. Sweetgum and blackgum are the common gum trees. Associated trees in the wetland areas include sweetbay, redbay, and loblolly bay.

Woodland grazing is not extensive. The grass understory is used on a small scale, primarily on individual farms and by one timber company.

Corporately owned and managed woodland dominates the eastern side of the county. Some corporate land is scattered throughout the west side of the county. It is used primarily for intensive pulpwood production. Slash pine is the principal tree grown. Management consists of short rotations of pulpwood followed by clearcutting, intensive site preparation, and tree planting.

Small, privately owned areas of woodland are dominant in the west side of the county. Some privately owned woodland is scattered throughout the east side of the county. Much of this is plantation timber that is grown for the pulpwood and sawlog markets. Slash pine has been the dominant tree. Natural pine stands may be dominated by slash, longleaf, or loblolly pines.

An excellent market exists for wood in Alachua County. The major market is for pulpwood. The demand for trees large enough for the clipping-saw, sawlog, and plywood markets is increasing. Several mills are located in Alachua County. Wood processing plants in wide variety are within 80 miles of Gainesville. These include pulpwood, lumber, plywood, and wood treatment mills. Because of the favorable soil and climatic conditions and marketing potentials, the opportunity to expand timber growing in Alachua County is very good.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

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

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

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

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

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. Site index was determined at age 50 years for all species. The site index applies to fully stocked, even-aged, unmanaged stands.

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

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, hold snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To insure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from a nursery.

Recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

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

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

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

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

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

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

Wildlife Habitat

John F. Vance, Jr., biologist, Soil Conservation Service, helped prepare this section.

The soils in Alachua County support a wide diversity of vegetation which is habitat for a variety of wildlife species.

Game species include white-tailed deer, wild turkey, quail, squirrels, doves, and several species of ducks. Nongame species include raccoon, opossum, armadillo, gray fox, bobcat, otter, mink, skunks, and a variety of songbirds, woodpeckers, predatory birds, wading birds, reptiles, and amphibians. Good wildlife habitat is available in most areas of the county, except where urban development has taken its toll. Countywide, the turkey population is considered excellent, and the deer population is good. The highest number of both species is in the eastern half of the county. Quail and dove populations are good. They are most numerous in the more intensively farmed northwest section. Although wood ducks nest in the swamps and Florida ducks nest in some of the large marshes, most hunting is for wintering waterfowl, such as the ring-necked duck, scaup, teal, pintail, and widgeon.

Areas of important wildlife habitat include the 28,500-acre Lochloosa Wildlife Management Area, the 5,473-acre San Felasco Hammock, the 18,075-acre Paynes Prairie (fig. 17), and areas along the Santa Fe River. The large lakes, Santa Fe, Newnan, Lochloosa, and Orange, provide excellent fishing for largemouth bass, bream, speckled perch, and catfish. Their swamp and marsh fringes also provide valuable habitat for land species. As an example, Alachua County has one of the highest nesting concentrations of bald eagles and ospreys in the eastern United States.

The primary concern is the increasing rate of urban development, which is eliminating much good wildlife habitat. A number of endangered and threatened species are in Alachua County. They range from the seldom-seen red-cockaded woodpecker to more commonly encountered species, such as the alligator and southeastern kestrel, or sparrow hawk. A more detailed list of these species with information on range and habitat needs is available from the District Conservationist at the local office of the Soil Conservation Service.

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

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management,

Figure 17.—Paynes Prairie, which is a protected state preserve, is an ideal habitat for numerous species of wildlife. It is in the Ledwith-Wauberg general soil map unit.

and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, browntop millet, and grain sorghum.

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

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

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

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

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

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

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

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

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

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

Engineering

Elwyn O. Cooper, area engineer, Soil Conservation Service, helped prepare this section.

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

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

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

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

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

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

Building Site Development

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

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

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

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

Sanitary Facilities

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

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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

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

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

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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

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

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

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

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

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

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

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

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

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

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

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium.

A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

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

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

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

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

Soil Erosion and Urban Uses

Soil erosion is a problem in disturbed areas. Water erosion can damage these soils if rains are intense and the soils are bare of vegetation and surface mulch.

Loss of the surface layer by erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and the subsoil is exposed. Second, soil erosion results in sediment entering streams. Control of erosion minimizes pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

Grading removes topsoil and may expose the subsoil of sandy clay loam or sandy clay in the Bivans, Blichton, Boardman, Bonneau, Emeralda, Jonesville, Kendrick, Lochloosa, Lynne, Micanopy, Norfolk, Pedro, Pelham, Wacahoota, Wauberg, and Wauchula soils. Ripping the exposed subsoil and covering it with less erodible topsoil help reduce erosion.

Erosion control practices provide protective cover, reduce runoff, and increase infiltration. Diversions and contouring reduce the length of slope and reduce runoff and erosion. They are most practical on soils that have uniform slopes.

Wind erosion is a major hazard on the sandy soils. It can damage soils in a few hours in open, unprotected areas if the winds are strong and the soil is dry and bare of vegetation and surface mulch. Blowing soil can cause problems for drainage ditches, roads, fences, and equipment, and can cause health problems.

Maintaining vegetative cover and surface mulch minimizes soil blowing. Windbreaks of adapted trees and shrubs and strips of small grain are effective in reducing wind erosion.

Clearing and disturbing only the minimum area necessary for construction helps to reduce runoff and wind erosion. Mulching helps reduce damage from erosion and helps improve moisture conditions for seedlings.

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

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

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

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

Engineering Index Properties

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

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

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

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

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

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

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

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

In some surveys, the estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion and the amount of soil lost. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

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

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

The four hydrologic soil groups are:

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

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

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

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

In table 16, some soils are assigned to two hydrologic soil groups. Soils that have a seasonal high water table but can be drained are assigned first to a hydrologic group that denotes the drained condition of the soil and then to a hydrologic group that denotes the undrained condition, for example, B/D. Because there are different degrees of drainage and water table control, onsite investigation is needed to determine the hydrologic group of the soil in a particular location.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

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

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

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

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

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Table 16 shows subsidence that resulted from desiccation and shrinkage and oxidation of organic material following drainage. The table shows the expected initial subsidence and total subsidence, which is initial subsidence plus the slow sinking that occurs over a period of several years as a result of oxidation.

Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

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

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

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

Physical, Chemical, and Mineralogical Analyses of Selected Soils

By Dr. V. W. Carlisle, professor of soil science, and Dr. M. E. Collins, assistant professor of soil science, Soil Science Department, University of Florida.

Parameters for physical, chemical, and mineralogical properties of representative pedons sampled in Alachua County are presented in tables 17, 18, and 19. The analyses were conducted and coordinated by the Soil Characterization Laboratory at the University of Florida. Detailed profile descriptions of soils analyzed are given in alphabetical order in the section "Classification of the Soils." Laboratory data and profile information for additional soils in Alachua County, as well as for other counties in Florida, are on file at the Soil Science Department, University of Florida.

Typical pedons were sampled from pits at carefully selected locations. Samples were air-dried, crushed, and sieved through a 2-millimeter screen. Most analytical methods used are outlined in Soil Survey Investigations Report No. 1 (*21*).

Particle-size distribution was determined by using a modified pipette method with sodium hexametaphosphate dispersion. Hydraulic conductivity and bulk density were determined on undisturbed soil cores. Water retention parameters were obtained from duplicate, undisturbed soil cores placed in tempe pressure cells. Weight percentages of water retained at 100 centimeters water (1/10 bar) and 345 centimeters water (1/3 bar) were calculated from volumetric water percentages divided by bulk density. Samples were oven-dried, and ground to pass a 2-millimeter sieve, then the 15-bar water retention was determined. Organic carbon was determined by a modification of the Walkley-Black wet combination method.

Extractable bases were obtained by leaching soils with normal ammonium acetate buffered at pH 7.0. Sodium and potassium in the extract were determined by flame emission. Calcium and magnesium were determined by atomic absorption spectrophotometry. Extractable acidity was determined by the barium chloride-triethanolamine method at pH 8.2. Cation exchange capacity was calculated by summation of extractable bases and extractable acidity. Base saturation is the ratio of extractable bases to cation exchange capacity expressed in percent. The pH measurements were made with a glass electrode using a soil-water ratio of 1:1; a 0.01 molar calcium chloride solution in a 1:2 soil-solution ratio; and normal potassium chloride solution in a 1:1 soil-solution ratio.

Electrical conductivity determinations were made with a conductivity bridge on 1:1 soil to water mixtures. Iron and aluminum extractable in sodium dithionite-citrate were determined by atomic absorption spectrophotometry. Aluminum, carbon, and iron were extracted from probable spodic horizons with 0.1 molar sodium pyrophosphate. Determination of aluminum and iron was by atomic absorption and extracted carbon by the Walkley-Black wet combustion method.

Mineralogy of the 0.002 millimeter clay fraction was ascertained by X-ray diffraction. Peak heights at 18 angstrom, 14 angstrom, 7.2 angstrom, 4.83 angstrom, and 4.31 angstrom positions represent montmorillonite, interstratified expandable vermiculite or 14-angstrom intergrades, kaolinite, gibbsite, and quartz, respectively. Peaks were measured, summed, and normalized to give the percent of soil minerals identified in the X-ray diffractograms. These percentages do not indicate absolutely determined quantities of soil minerals but do imply a relative distribution of minerals in a particular mineral suite. Absolute percentages would require additional knowledge of particle size, crystallinity, unit structure substitution, and matrix problems.

Most soils in Alachua County are inherently sandy (table 17). With exception of the Bivans, Gainesville, Ledwith, Norfolk, and Shenks pedons, all soils sampled contain at least one horizon that is more than 90 percent sand. Candler, Chipley, Lake, Pottsburg, and Tavares soils is more than 90 percent sand to a depth of 2 meters or more. Additionally, Arredondo, Cadillac, Jonesville, Millhopper, Newnan, Plummer, and Sparr soils are in excess of 90 percent sand to a depth of slightly more than 1 meter. The most fine-textured material is in the deeper horizons of Bivans, Blichton, Bonneau, Cadillac, Ledwith, Norfolk, Shenks, and Wauberg pedons. All of these soils have one or more horizons that are more than 30 percent clay. Silt content is usually in the range of 3 to 8 percent; however, it exceeds 10 percent in one or more horizons of the Blichton, Cadillac, Fort Meade, Gainesville, Ledwith, Monteocha, Mulat, Norfolk, Plummer, Shenks, Sparr, Wauberg, and Wauchula soils. Less than 1 percent silt is in all horizons of the Candler series. Fine sand dominates the sand fractions of most soils, but medium sands are dominant in the Bivans, Blichton, Lake, Pottsburg, Tavares, and Wauberg pedons. One or more horizons that are at least 50 percent fine sand are in the Arredondo, Bonneau, Cadillac, Candler, Fort Meade, Jonesville, Lake, Millhopper, Norfolk, Plummer, Sparr, and Wauchula soils. Only Blichton and Lake soils have horizons that are more than 50 percent medium sand. Coarse sand usually is minor and never exceeds 10 percent in any soil. Very coarse sand is in an extremely small amount, never exceeding 1.2 percent. A nondetectable amount is in one or more horizons of the Arredondo, Bonneau, Cadillac, Candler, Chipley, Jonesville, Kendrick, Lake, Ledwith, Lochloosa, Newnan, Norfolk, Plummer, Pomona, Shenks, Surrency, Wauberg, and Wauchula soils. Droughtiness is a common characteristic of sandy soils, particularly those that are moderately well drained, well drained, and excessively drained.

Hydraulic conductivity of less than 15 centimeters per hour was recorded throughout the entire Bivans, Bonneau, Lochloosa, Mulat, Norfolk, and Plummer pedons. Blichton, Kendrick, Ledwith, Surrency, and Wauchula soils have only one horizon that has hydraulic conductivity in excess of 15 centimeters per hour. Many of the soils sampled have one or more horizons with less than 15 centimeters per hour hydraulic conductivity. More clay is in the subsoil horizons of Arredondo, Bivans, Blichton, Bonneau, Cadillac, Jonesville, Kendrick, Ledwith, Lochloosa, Millhopper, Monteocha, Mulat, Newnan, Norfolk, Plummer, Shenks, Sparr, Surrency, Wauberg, and Wauchula soils. Hydraulic conductivity in the horizons is less than 1 centimeter per hour. It is in excess of 60 centimeters per hour throughout the entire pedon of Lake sand; however, Ledwith, Millhopper, Pomona, Shenks, Sparr, and Wauberg have at least one horizon that has hydraulic conductivity in excess of 60 centimeters per hour.

Bulk density usually ranges between 1.40 and 1.70 grams per centimeter; however, Bivans, Blichton, Bonneau, Cadillac, Kendrick, Millhopper, Newnan, Plummer, Pomona, Pottsburg, Sparr, Surrency, Tavares, Wauberg, and Wauchula soils have one or more subsoil horizons that exceed these values. Bulk density for all horizons of the Fort Meade and Shenks soils is below 1.40 grams per centimeter. Lowest bulk density, as expected, is in the organic horizons of the Ledwith and Shenks pedons. Soil bulk density may be used along with water content data to indicate available water to plants. Most soils in Alachua County have excessive amounts of sand and relatively low amounts of organic matter in the surface horizons. This results in the low retention of available water. Candler, Lake, and Tavares soils retain a very low amount of available water throughout the entire pedon. A relatively large amount of available water is retained in the surface soils of the Ledwith and Shenks pedons.

Analyses of chemical soil properties (table 18) show that most soils in Alachua County have a relatively low amount of extractable bases. The sum of extractable calcium, magnesium, sodium, and potassium exceeds 16 milliequivalents per 100 grams only in the surface tier of Ledwith muck. One or more horizons below the surface in Bivans, Cadillac, Jonesville, Ledwith, Shenks, and Wauberg soils, however, exceed this value. Contrastingly, all horizons of the Candler, Lochloosa, Monteocha, Newnan, Pottsburg, Sparr, Tavares, and Wauchula pedons have less than 1 milliequivalent per 100 grams extractable bases. Chipley, Millhopper, Plummer, Pomona, and one Lake pedon have only one horizon that exceeds 1 milliequivalent per 100 grams extractable bases. Many other soils sampled contain one or more horizons that have an extremely low amount of extractable bases. Calcium was by far the dominant base in most soils, usually followed by much lesser amounts of magnesium. Sodium was nondetectable throughout the entire pedon of the Pottsburg, Sparr, Tavares, and one of the Lake soils. In addition, Arredondo, Cadillac, Candler, Millhopper, Monteocha, Mulat, Newnan, Plummer, Pomona, Wauberg, Wauchula, and one pedon of the Lake series have one or more horizons in which amounts of sodium were not detected. Extractable potassium content is less than 1 milliequivalent per 100 grams in all horizons of all soils. Frequently, a nondetectable or barely detectable amount was recorded. Cation exchange capacity exceeds 7 milliequivalents per 100 grams in the surface horizons of all soils, except the Arredondo, Bivans, Blichton, Cadillac, Candler, Lake, Millhopper, Newnan, Plummer, Sparr, Tavares, and Wauberg pedons. Soil cation exchange capacity is almost entirely a result of the amount and kind of clay and organic matter present. Soils that have a very low cation exchange capacity, such as Candler soils, require only a small amount of lime to significantly alter both the base status and soil reaction in the surface horizons. Generally, soils that have low inherent soil fertility have low values for extractable bases and low cation exchange capacity. Fertile soils have high values for extractable bases, high cation exchange capacity, and high base saturation.

Organic carbon content is less than 2 percent throughout all pedons of the Arredondo, Bivans, Blichton, Bonneau, Cadillac, Candler, Gainesville, Jonesville, Kendrick, Lake, Millhopper, Mulat, Newnan, Norfolk, Plummer, Pomona, Pottsburg, Sparr, Tavares, and Wauberg soils. Significant increases in organic carbon content are in the Bh horizons of the Monteocha, Newnan, Pomona, Pottsburg, and Wauchula soils. Management practices that conserve and maintain organic carbon in the surface horizons are highly desirable since organic carbon content is directly related to soil nutrient and water retention characteristics.

Electrical conductivity is 0.1 millimho per centimeter or less in all horizons of the Arredondo, Bonneau, Candler, Chipley, Fort Meade, Gainesville, Kendrick, Lake, Lochloosa, Millhopper, Newnan, Plummer, Pomona, Pottsburg, Sparr, Tavares, Wauberg, and Wauchula soils. All horizons of all soils sampled have electrical conductivity of 1.25 millimohs or less. These data indicate that soluble salt content of soils in Alachua County is insufficient to detrimentally affect the growth of plants sensitive to salt.

Reaction of soil in water usually ranges between pH 4.5 and 6.0. Higher values, however, were recorded for the entire pedon of Cadillac and Jonesville soils; the surface horizons of Gainesville, Lake, and Mulat soils; and the deeper horizons in Ledwith and Shenks soils. Reaction lower than pH 4.5 was recorded in one or more horizons of Blichton, Monteocha, Plummer, Pottsburg, Sparr, Surrency, Tavares, and Wauchula soils. Reaction is generally 0.5 to 1.0 pH units lower in calcium chloride and potassium chloride solutions than in water. Maximum plant nutrient availability is usually attained when soil reaction is in the range of pH 6.5 to 7.0. For most crops growing in Florida, however, maintaining the reaction of strongly acid soils in excess of pH 6.0 is usually not economically feasible.

Sodium pyrophosphate extractable iron was 0.01 percent or less in the Bh horizons of Monteocha, Newnan, Pomona, Pottsburg, and Wauchula soils. The ratio of pyrophosphate extractable aluminum to clay in the Bh horizons of these soils was sufficient to meet the chemical criteria for spodic horizons. Iron extracted by citrate-dithionite in argillic horizons of Ultisols ranges from 0.01 percent in the Surrency soil to 5.50 percent in the Norfolk soil. Similarly, in spodic horizons it ranges from 0.01 percent in the Pomona soil to 0.04 percent in the Newnan soil. Aluminum extracted by citrate-dithionite ranges from 0.02 percent in the Pomona soil to 1.23

percent in the Norfolk soil. Soils in Alachua County contain insufficient amounts of aluminum and iron to detrimentally affect availability of phosphorus.

Mineralogy of the sand fraction, from 2 to 0.05 millimeters, was siliceous. Quartz overwhelmingly is dominant in all pedons. Small amounts of heavy minerals are in most horizons, but the greatest concentration is in the very fine sand fraction. No weatherable minerals were observed. Crystalline mineral components of the clay fraction, less than 0.002 millimeter, are reported in table 19 for selected horizons of the pedons sampled. The mineralogical suite was composed of montmorillonite, a 14-angstrom intergrade, kaolinite, gibbsite, and quartz. Montmorillonite was not detectable in many soils but is in the Bivans, Blichton, Cadillac, Ledwith, Lochloosa, Norfolk, Plummer, Pottsburg, Shenks, Surrency, and Wauberg soils. The 14-angstrom intergrade mineral is in all pedons, except Pottsburg and Shenks soils. Kaolinite is in all pedons, except the Cadillac and Pottsburg soils. Gibbsite was detected only in Candler, Newnan, Pomona, and one Lake pedon. Quartz was in all pedons sampled.

The general tendency of increased amounts of montmorillonite in the deeper horizons of soils indicates that this mineral probably was inherited. Montmorillonite is the least stable of the mineral components in the present weathering environment. Relatively large amounts of 14-angstrom intergrade minerals and the tendency for these minerals to decrease with depth suggests that they are among the most stable minerals in this weathering environment. Generally, kaolinite also tends to increase with pedon depth. This indicates that kaolinite is less stable than the 14-angstrom intergrades in the severe weathering environment near the soil surface. Inconsistent occurrence of gibbsite suggests inherited properties. Clay-sized quartz has resulted from decrements of the silt fraction. Large amounts of montmorillonite are in Bivans and Blichton soils as well as the lower horizons of Cadillac, Ledwith, Norfolk, and Shenks soils. Wauberg soils are subject to considerable swelling and shrinking with changes of moisture content. This soil property may detrimentally affect most types of construction. In other soils of Alachua County the clay mineralogy influences their use and management less frequently than the total clay content.

Engineering Index Test Data

Table 20 contains engineering test data made by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research, on some of the major soil series in the county. These tests were made to help evaluate the soils for engineering purposes. The classifications given are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits.

The mechanical analyses were made by combined sieve and hydrometer methods. In this method, the various grain-sized fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The mechanical analyses used in this method should not be used in naming textural classes of soils.

Compaction (or moisture-density) data are important in earthwork. If soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed maximum dry density. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of the soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state.

If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic state, and the liquid limit is the moisture content at which the soil material changes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in this table are based on laboratory tests of soil samples.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*22*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Albaqualfs (*Alb*, meaning white or an albic horizon, plus *aqualfs*, the suborder of the Alfisols that have an aquic moisture regime).

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

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, montmorillonitic, hyperthermic Typic Albaqualfs.

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

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*19*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*22*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

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

Apopka Series

The Apopka series consists of nearly level to sloping, well drained soils that formed in thick beds of sandy and loamy deposits. They are in broad rolling areas of the uplands. Slopes range from 0 to 8 percent. The water table is more than 72 inches below the surface. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Apopka soils are geographically associated with Arredondo, Candler, Jonesville, Millhopper, Pedro, and Tavares soils. Apopka soils have less than 5 percent fines of silt and clay in the A2 horizon, and the

Arredondo soils have 5 to 10 percent fines. Candler and Tavares soils are sandy to a depth of 80 or more inches. The Tavares soils are moderately well drained. Jonesville soils have limestone at a depth of less than 60 inches. Millhopper soils are moderately well drained. The Apopka soils have much thicker A and B horizons than the Pedro soils, which are underlain by limestone at a depth of about 20 inches or less.

Typical pedon of Apopka sand, 0 to 5 percent slopes, in an area 250 feet southwest of intersection of State Road 121 (SW 34th Street) and SW 20th Avenue, SE1/4SE1/4 sec. 11, T. 10 S., R. 19 E.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

A21—5 to 21 inches; brown (10YR 5/3) sand; single grained; loose, few fine and medium roots; many uncoated sand grains; very strongly acid; clear wavy boundary.

A22—21 to 52 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; few fine and medium roots; many uncoated sand grains; few fine distinct light gray streaks of clean sand grains; very strongly acid; clear wavy boundary.

A23—52 to 61 inches; very pale brown (10YR 7/3) sand; single grained; loose; few fine roots; many uncoated sand grains; few fine faint light gray streaks of clean sand grains; very strongly acid; clear wavy boundary

B21t—61 to 72 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium fine subangular blocky structure; friable; few fine discontinuous clay films on faces of peds; sand grains are coated and bridged with clay; very strongly acid; clear wavy boundary.

B22t—72 to 82 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; few discontinuous clay films on faces of peds; most sand grains are coated and bridged with clay; few thin light gray streaks of clean sand grains; very strongly acid.

The solum is more than 60 inches thick. Soil reaction is very strongly acid through medium acid in all horizons, except where the Ap horizon has been limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2 or value of 3 and chroma of 1. It is 4 to 7 inches thick. The A1 horizon is very dark gray (10YR 3/1), where it is only 4 or 5 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. In some pedons the A2 horizon has few to common, fine streaks of clean sand grains. This horizon has less than 5 percent fines of silt plus clay, and many of the sand grains are uncoated. The A2 horizon is 36 to 72 inches thick.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. It also has hue of 7.5YR, 5YR, or 2.5YR; value of 5 or 6; and chroma of 6 or 8. In places, the B horizon has few to many mottles. Some pedons have a few light gray or white streaks of clean sand grains. The B horizon is sandy loam or sandy clay loam.

Arents

Arents consist of well drained to moderately well drained, heterogeneous soil material. This soil material has been excavated and stockpiled adjacent to large pits, has been used as cover for sanitary landfills, or has been landshaped and used primarily for crops and improved pasture. Slopes range from 0 to 5 percent. The material has no orderly sequence of layers. The water table varies but is usually at a depth of 6 feet or more.

Arents are associated with Arredondo, Gainesville, Kendrick, Lochloosa, Millhopper, Norfolk, and Pedro soils. The Arents have been mixed by movement and have no definite horizonation. The Arredondo, Kendrick, Lochloosa, Millhopper, Pedro, and Norfolk soils have a sandy A horizon and a loamy or clayey Bt horizon. Gainesville soils are uniformly loamy sand to a depth of 80 inches or more.

Arents vary in depth. In areas where it is stockpiled adjacent to the pits, it ranges from 8 to 25 feet in thickness. In areas where the material has been used as cover for sanitary landfill, however, the layer is only about 3 to 36 inches thick. The soil material is dominantly a mixture of yellow to brown material that is loamy, sandy, and clayey. Gray or mottled gray material is in some areas. Reaction ranges from very strongly acid to medium acid.

The total soil material is about 40 to 55 percent loamy material which is dominant in most areas. It is about 25 to 45 percent sand or fine sand and 0 to about 35 percent mixed, clayey material. Soil material that is sandy loam, sandy clay loam, and sandy clay appears to be fragments of an argillic horizon. These fragments are scattered throughout the soil and are mixed with materials from other horizons. Thin, discontinuous clay films are in some fragments of the argillic horizon. The soil ranges from 0 to 15 percent by volume nodules and fragments of ironstone. These nodules and fragments are usually 2 to 100 millimeters in size. Fragments of limestone are mostly from weathered, leached limestone.

Arredondo Series

The Arredondo series consists of nearly level to sloping, well drained soils that form in thick beds of sandy and loamy marine materials. These soils are in broad rolling areas of the upland. Slopes range from 0 to 8 percent. The water table is more than 72 inches below the surface. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Arredondo soils are geographically associated with Apopka, Bonneau, Candler, Fort Meade, Gainesville, Jonesville, Kanapaha, Kendrick, Lake, Millhopper, and Norfolk soils. Apopka soils have less than 5 percent silt and clay in the A2 horizon, and many of the sand grains are uncoated. Bonneau soils are moderately well drained and have an A horizon 20 to 40 inches thick. Candler soils are sandy to a depth of 80 inches or more and have less than 5 percent silt and clay in their 10- to 40-inch control section. Fort Meade and Gainesville soils are sandy to a depth of more than 80 inches. They have 10 to 15 percent silt and clay in their 10- to 40-inch control section. Fort Meade soils also have a thick, dark colored A1 horizon. Jonesville soils have underlying limestone at a depth of less than 60 inches. Lake soils are sandy to 80 inches or more. Kanapaha soils are poorly drained, and Millhopper soils are moderately well drained. Norfolk soils have an A horizon less than 20 inches thick.

Typical pedon of Arredondo fine sand, 0 to 5 percent slopes, 0.4 mile west and 0.6 mile north of junction of State Roads 241 and 222, 0.2 mile south of a paved private road, SW1/4NW1/4 sec. 23, T. 9 S., R. 18 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; few roots; nodules of ironstone and phosphatic limestone less than 1 percent by volume and 2 to 10 millimeters in diameter; strongly acid; clear smooth boundary.

A21—8 to 31 inches; yellowish brown (10YR 5/8) fine sand; weak fine granular structure; very friable; few fine and medium roots; sand grains are coated; nodules of ironstone and phosphatic limestone 2 to 15 millimeters in diameter and less than 1 percent by volume; strongly acid; clear wavy boundary.

A22—31 to 49 inches; brownish yellow (10YR 6/8) fine sand; few medium faint yellowish brown (10YR 5/6) mottles and common fine light gray streaks of uncoated sand grains; weak fine granular structure; very friable; few fine roots; more than 50 percent of the sand grains are well coated; nodules of ironstone and phosphatic limestone 2 to 15 millimeters in diameter and less than 1 percent by volume; strongly acid; clear wavy boundary.

B1—49 to 54 inches; yellowish brown (10YR 5/6) loamy sand; moderate medium granular structure; friable; few fine roots; sand grains are well coated and bridged with clay; nodules of ironstone and phosphatic limestone 2 to 10 millimeters in diameter and less than 1 percent by volume; strongly acid; clear wavy boundary.

B21t—54 to 64 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; sand grains are well coated and bridged with clay; nodules of ironstone and phosphatic limestone about 2 to 10 millimeters in diameter and less than 1 percent by volume; strongly acid; clear wavy boundary.

B22t—64 to 72 inches; dark yellowish brown (10YR 4/4) sandy clay loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; few fine nodules of ironstone and phosphatic limestone; strongly acid; clear wavy boundary.

B23t—72 to 86 inches; dark yellowish brown (10YR 4/4) sandy clay loam, few medium distinct gray (10YR 5/1) and few fine and medium prominent yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; sand grains are well coated and bridged with clay; few fine nodules of ironstone and phosphatic limestone; very strongly acid.

The solum is more than 80 inches thick. Reaction is very strongly acid to medium acid in all horizons. The solum has a few small weathered nodules and fragments of limestone and ironstone. They are 2 to 20 millimeters in size, are in many pedons, but are less than 5 percent by volume.

In the A horizon, more than 50 percent of the sand grains are well coated with clay and silt. This horizon is 5 to 10 percent silt plus clay. The A1 or Ap horizon has hue of 10YR, value of 4, and chroma of 1 or 2 or value of 5 and chroma of 2. It is 5 to 8 inches thick. The A2 horizon has hue of 10YR, value of 6, and chroma of 4 to 8; value of 5 and chroma of 3 to 8; or hue of 7.5YR, value of 5 or 6, and chroma of 8. The A2 horizon extends to a depth of 36 to 70 inches. It is sand, fine sand, or loamy sand.

Most pedons have a B1 horizon that has hue of 10YR, value of 5 or 6, and chroma of 4 to 8; or hue of 7.5YR, value of 5, and chroma of 6 or 8. The B1 horizon is loamy sand or loamy fine sand 4 to 7 inches thick. The B2t horizon has hue of 10YR, value of 4, chroma of 4 to 6; value of 5 and chroma of 4 to 8; value of 6 and chroma of 6; or hue of 7.5YR, value of 5, and chroma of 6 or 8. The B2t horizon ranges from sandy loam to sandy clay loam.

Bivans Series

The Bivans series consists of poorly drained, slowly permeable soils formed in thick beds of clayey marine sediment. These soils are nearly level to strongly sloping. Areas of this soil are in central Florida. The perched water table is in the A horizon and saturates the upper part of the Btg horizon for 1 to 4 months during most years. Slopes range from 0 to 12 percent. They are affected by seepage during wet seasons. These soils are fine, montmorillonitic, hyperthermic Typic Albaqualfs.

Bivans soils are geographically associated with Blichton, Boardman, Kanapaha, Lochloosa, Lynne, Martel, Micanopy, Norfolk, and Wacahoota soils. Blichton and Lochloosa soils have an A horizon more than 20 inches deep to a loamy Bt horizon. The Lochloosa soils are also somewhat poorly drained. Boardman and Wacahoota soils have a loamy Bt horizon, and they are more than 5 percent nodules and fragments of ironstone and limestone. Wacahoota soils also have an A horizon more than 20 inches thick. Kanapaha soils have an A horizon 40 to 80 inches deep. Lynne soils have a Bh horizon. Martel soils are clayey and very poorly drained. Micanopy soils are somewhat poorly drained, and Norfolk soils are well drained.

Typical pedon of Bivans sand, 2 to 5 percent slopes, about 0.25 mile east of U.S. 441, 0.9 mile northwest of the Alachua-Marion County line, SE1/4NW1/4 sec. 31, T. 11 S., R. 21 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) sand; moderate fine granular structure; very friable; many fine roots; medium acid; clear wavy boundary.

A2—6 to 15 inches; gray (10YR 5/1) sand; weak fine granular structure; very friable; many fine roots; few fine and medium sized nodules of ironstone and phosphatic limestone; slightly acid; abrupt wavy boundary.

B21tg—15 to 18 inches; dark gray (10YR 4/1) sandy clay; few fine faint gray and common fine prominent brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable; common fine roots; few faint discontinuous clay films on faces of peds; few fine nodules of ironstone and phosphatic limestone; medium acid; clear wavy boundary.

B22tg—18 to 27 inches; dark gray (10YR 4/1) sandy clay; common medium faint gray (10YR 5/1) and medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; few fine and medium sized nodules of ironstone and phosphatic limestone; strongly acid; gradual wavy boundary.

B23tg—27 to 45 inches; gray (10YR 5/1) sandy clay; common fine prominent yellowish brown (10YR 5/8) and common coarse distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct clay films on faces of peds; few fine and medium sized nodules and fragments of ironstone and limestone; strongly acid; gradual wavy boundary.

B24tg—45 to 61 inches; gray (10YR 6/1) sandy clay loam; few fine faint light gray and common coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct clay films on faces of peds; few fine and medium sized fragments and nodules of limestone; very strongly acid; gradual wavy boundary.

Cg—61 to 81 inches; gray (N 5/0) sandy clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; firm; very strongly acid.

The solum is more than 50 inches thick. Reaction ranges from extremely acid to medium acid in all horizons, except where the A horizon is limed. Nodules and fragments of ironstone and limestone, less than 5 percent by volume, are in the solum.

The A1 or Ap horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 4 to 6 inches thick. The A2 horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is 3 to 14 inches thick. In a few pedons the A2 horizon has been mixed with the Ap horizon by cultivation.

The Btg horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 2 or less. Mottles are few to common and gray, yellow, brown, and red. The Btg horizon is sandy clay loam, sandy clay, or clay. The weighted average clay content of the upper 20 inches of the Btg horizon ranges from 35 to 59 percent. The Btg horizon is 40 to 65 inches deep.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It is sandy clay loam, sandy clay, or clay.

Blichton Series

The Blichton series consists of nearly level to sloping, poorly drained soils that formed in thick beds of loamy marine deposits. These nearly level and gently sloping soils are along the hillsides of uplands. Slopes range from 0 to 8 percent. The water table is less than 10 inches below the surface for 1 to 4 months during most years. During dry periods, it recedes to a depth of more than 40 inches. Soils that have slopes of more than 2 percent are saturated during wet seasons, primarily by seepage. These soils are loamy, siliceous, hyperthermic Arenic Plinthic Paleaquults.

Blichton soils are geographically associated with Bivans, Boardman, Kanapaha, Kendrick, Lochloosa, Lynne, Martel, Micanopy, and Wacahoota soils. Bivans, Martel, and Micanopy soils have a clayey Bt horizon at a depth of less than 20 inches. Martel soils are very poorly drained, and Micanopy soils are somewhat poorly drained. Boardman and Wacahoota soils have more than 5 percent gravel. Boardman soils also have a Bt horizon at a depth of less than 20 inches. Lochloosa soils are somewhat poorly drained, and Kendrick soils are well drained. Kanapaha soils have a Bt horizon at a depth of more than 40 inches. Lynne soils have a Bh horizon above the clayey Bt horizon.

Typical pedon of Blichton sand, 2 to 5 percent slopes, about 200 feet east of U.S. 441 and about 0.8 mile northwest of the Alachua-Marion County line, SW1/4NW1/4, sec. 31, T. 11 S., R. 21 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; many fine roots; about 3 percent nodules of ironstone and phosphatic limestone; very strongly acid; clear wavy boundary.

A21—6 to 13 inches; grayish brown (10YR 5/2) sand; single grained; loose; common fine and medium roots; about 2 percent nodules of ironstone and fragments of phosphatic limestone 2 to 20 millimeters in diameter; strongly acid; gradual wavy boundary.

A22—13 to 28 inches; light brownish gray (10YR 6/2) loamy sand; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

B21tg—28 to 34 inches; dark gray (10YR 4/1) sandy clay loam; few medium and coarse prominent dark reddish brown (5YR 3/4) and few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; about 4 percent nodules of ironstone and fragments of weathered phosphatic limestone 2 to 40 millimeters in diameter; very strongly acid; clear wavy boundary.

B22tg—34 to 62 inches; dark gray (N4/0) sandy clay loam, common medium and coarse prominent dark reddish brown (5YR 3/3), common medium distinct yellowish brown (10YR 5/4) and few fine prominent dusky red (10R 3/4) mottles; moderate medium angular and subangular blocky structure; friable; few distinct clay films on ped faces and along root channels; about 10 percent plinthite; about 3 percent nodules of ironstone and weathered phosphatic limestone 2 to 40 millimeters in diameter; extremely acid; gradual wavy boundary.

B3g—62 to 80 inches; gray (10YR 5/1) sandy clay loam, few medium distinct brownish yellow (10YR 6/6), few fine faint light brownish gray, and common medium prominent dark reddish brown (5YR 3/3) mottles; weak fine subangular blocky structure; friable; extremely acid.

The solum ranges from 60 to 80 inches in thickness. Reaction is extremely acid through strongly acid in all horizons, except where the Ap horizon has been limed. Nodules of ironstone and fragments and nodules of phosphatic limestone from 1 to 5 percent by volume are in the A horizon and upper part of the B horizon.

The Ap or Al horizon is neutral or has hue of 10YR, value of 3, and chroma of 1 or less or value of 4 and chroma of 2 or less. It is 4 to 10 inches thick. The A2 horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is 16 to 30 inches thick.

The B2tg horizon is neutral or has hue of 10YR, value of 4 or 5, and chroma of 1 or less or value of 6 or 7 and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, and red. The B2tg horizon is 5 to 25 percent plinthite. It is 28 to 44 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, and red. The B3g horizon is sandy loam or sandy clay loam. Some pedons have a B1g horizon. Where present, it is sandy loam or fine sandy loam and has the same color range as the B2tg horizon.

Boardman Series

The Boardman series consists of poorly drained soils that formed on sharp breaking, wet slopes and long hillsides of uplands. Slopes range from 5 to 8 percent. The subsurface layer and the upper part of the subsoil are saturated by a perched water table for 1 to 4 months during most years. These soils are fine-loamy, siliceous, hyperthermic Typic Ochraqualfs.

Boardman soils are geographically associated with Blichton, Bivans, Kanapaha, Lochloosa, Micanopy, and Wacahoota soils. All of these associated soils, except the Wacahoota soil, have less than 5 percent weathered rock fragments in the solum. Bivans soils have a clayey Btg horizon. Kanapaha and Lochloosa soils have an A horizon 20 to 40 inches thick. The Lochloosa soils are somewhat poorly drained. Micanopy soils have a clayey Btg horizon and are somewhat poorly drained. Blichton and Wacahoota soils have an A horizon 20 to 40 inches thick.

Typical pedon of Boardman loamy sand, 5 to 8 percent slopes, in an area 150 feet east of dirt road and 0.2 mile north of the Alachua-Marion County Line road, and 0.25 mile west of U.S 441, SW1/4SW1/4 sec. 31, T. 11 S., R. 21 E.

A1—0 to 6 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; loose; common fine and medium roots; about 15 percent nodules of ironstone and nodules, gravel, and fragments of weathered phosphatic limestone; very strongly acid; gradual wavy boundary.

A2—6 to 14 inches; gray (10YR 6/2) sand; weak granular structure; very friable; few fine roots; about 20 percent nodules of ironstone and nodules, gravel, and fragments of weathered phosphatic limestone; very strongly acid; clear wavy boundary.

B21tg—14 to 24 inches; gray (10YR 6/1) sandy loam; weak subangular blocky structure; friable; few fine common roots; about 20 percent nodules of ironstone and nodules, gravel, and fragments of weathered phosphatic limestone; very strongly acid; clear wavy boundary.

B22tg—24 to 38 inches; gray (10YR 6/1) sandy clay loam; few medium faint gray (10YR 5/1) and few medium distinct brown (10YR 5/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; about 15 percent nodules of ironstone and nodules, gravel, and fragments of weathered phosphatic limestone; very strongly acid; gradual wavy boundary.

B23tg—38 to 50 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brown (10YR 5/3) and yellow (10YR 7/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; 3 percent nodules of ironstone and nodules, gravel, and fragments of weathered phosphatic limestone; very strongly acid; gradual wavy boundary.

B3g—50 to 63 inches; gray (10YR 6/1) sandy clay; few medium distinct yellow (10YR 7/6) and few fine faint white mottles; weak medium subangular blocky strucure; firm; about 1 percent soft and hard nodules and gravel of limestone; very strongly acid; clear wavy boundary.

IICg—63 to 80 inches; greenish gray (5GY 6/1) clay; few medium distinct yellow (10YR 7/6) and white (10YR 8/1) mottles; massive; very firm; about 1 percent soft and hard nodules and gravel of limestone; very strongly acid.

The solum is 50 inches or more deep. Reaction is very strongly acid to strongly acid in all horizons, except where the Ap and A2 horizons have been limed. The A horizon and upper 20 to 40 inches of the Btg horizon have nodules and fragments of ironstone and weathered phosphatic limestone 2 to 76 millimeters in diameter and 5 to 25 percent by volume. In the lower part of the Btg and the B3g horizons, content of ironstone and fragments of limestone range from 1 to 10 percent. In some pedons, plinthite ranges from 2 to 5 percent in the Btg horizon.

The Ap and A1 horizons are neutral or have hue of 10YR, value 3, and chroma of 1 or less or value 4 and chroma of 2 or less. The A horizon is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5, and chroma of 1 or value of 6 or 7, and chroma of 1 or 2. It is sand or loamy sand 8 to 12 inches thick.

The B21tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less. It is loamy sand or sandy loam 6 to 10 inches thick. The B22tg horizon has the same colors as the B21tg horizon, and mottles of gray, yellow, white and brown. It is 10 to 14 inches thick. The B23tg horizon also has the same color range as the B21tg horizon. It is mottled sandy clay loam or sandy clay 10 to 16 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 1 or less. Mottles are in shades of gray, yellow, and brown. The B3g horizon is sandy clay or clay 10 to 16 inches thick.

The IICg horizon has hue of 10YR through 5GY, value of 5 to 7, and chroma of 1 or less. In places it has mottles in various shades of yellow or brown. It is sandy clay or clay.

Bonneau Series

The series consists of deep, nearly level to sloping, moderately well drained soils that formed in thick beds of loamy marine deposits. They are in broad areas of gently rolling uplands. Slopes range from 0 to 5 percent. The water table is at a depth of 40 to 60 inches for about 1 to 3 months and at a depth of 60 to 72 inches for 2 to 3 months during most years. It may be perched at a depth of about 36 to 40 inches for cumulative periods of less than 1 month during some years. These soils are loamy, siliceous, thermic Arenic Paleudults.

Bonneau soils are associated with the Arredondo, Cadillac, Jonesville, Kendrick, Lochloosa, Micanopy, and Millhopper soils. Arredondo and Cadillac soils are well drained and have an A horizon that ranges in depth from 4 to 80 inches. Jonesville soils are well drained, and underlying limestone is less than 60 inches below the surface. Kendrick soils are well drained, and Lochloosa and Micanopy soils are somewhat poorly drained. The Micanopy soils have a clayey Bt horizon less than 20 inches below the surface. Millhopper soils are moderately well drained.

Typical pedon of Bonneau fine sand, 2 to 5 percent slopes, about 625 feet east of State Road 241 and 2 miles north of junction with State Road 26, University of Florida Agronomy Farm, SW1/4NW1/4 sec. 27, T. 9 S., R. 18 E.

Ap—0 to 9 inches; dark gray (10YR 4/1) fine sand; weak medium granular structure; very friable; few fine roots; medium acid; clear smooth boundary.

A2—9 to 29 inches; brownish yellow (10YR 6/6) fine sand; few medium and large grayish brown (10YR 5/2) krotovinas and few fine distinct light gray (10YR 7/1) streaks of clean sand grains; weak medium granular structure; very friable; few fine roots; medium acid; clear smooth boundary.

B21t—29 to 38 inches; yellowish brown (10YR 5/8) fine sandy loam, few fine prominent yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine nodules of ironstone and phosphatic limestone; sand grains are well coated and bridged with clay; strongly acid; clear wavy boundary.

B22t—38 to 60 inches; gray (10YR 6/1) and brownish yellow (10YR 6/6) sandy clay loam; common fine prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; very few fine roots; few faint discontinuous clay films along faces of some peds; clay bridging between sand grains; few fine nodules of ironstone and phosphatic limestone; strongly acid; gradual wavy boundary.

B23t—60 to 75 inches, gray (N 6/0) and yellowish brown (10YR 5/6) sandy clay loam; few fine prominent yellowish red (5YR 5/16) mottles; moderate medium subangular blocky structure; friable; few faint discontinuous clay films along faces of some peds; clay bridging between sand grains; few fine nodules of ironstone and phosphatic limestone; strongly acid; clear wavy boundary.

B3g—75 to 84 inches; gray (N 6/0) sandy clay loam; few fine distinct very pale brown (10YR 7/3) and common medium distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure, breaking easily into medium granular structure; friable; sand grains well coated with clay; strongly acid.

The solum extends to a depth of more than 60 inches. Reaction ranges from very strongly acid to medium acid in the A horizon and very strongly acid to strongly acid in the B horizon. Fragments and nodules of weathered limestone 2 to 65 millimeters in diameter, but less than 5 percent in volume, are in most pedons.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The A1 or Ap horizon has a value of 3 where it is 6 inches thick or less. It ranges from 5 to 9 inches in thickness. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. It is sand or fine sand 15 to 32 inches thick. Small masses and streaks of light gray or white, uncoated sand grains are in some pedons.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8 or value of 7 and chroma of 6 to 8. In places, it has mottles in shades of yellow and brown. The B21t horizon is fine sandy loam, sandy loam, or sandy clay loam 5 to 13 inches thick. The B22t horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8 or value of 7 and chroma of 6 to 8. In places, the B22t horizon has mottles in shades of gray, yellow, and brown, or these colors are mixed. It is 14 to 24 inches thick. The B23t horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 6 or is neutral and has a value of 5 to 7. It has mottles in shades of gray, yellow, and brown, or it is mixed with these colors. The B23t horizon is sandy clay loam or sandy clay 10 to 18 inches thick. The B3g horizon has the same color range as the B23t horizon. It is sandy loam, sandy clay loam, or sandy clay.

Cadillac Series

The Cadillac series consists of nearly level to gently sloping, well drained soils that formed in thick beds of sandy and loamy marine sediment. These gently rolling soils are in the "Limestone Plains" of the uplands. Slopes range from 0 to 5 percent. The water table is more than 72 inches below the surface. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudalfs.

Cadillac soils are geographically associated with Bonneau, Jonesville, and Pedro soils. Bonneau soils are moderately well drained. Jonesville soils are underlain by limestone at a depth of 26 to 59 inches, and the Pedro soils have limestone at a depth of about 20 inches or less.

Typical pedon of Cadillac fine sand, in an area of Jonesville-Cadillac-Bonneau complex, 0 to 5 percent slopes, 0.3 mile east of Parker Road (S.W. 122nd Street) and 2.9 miles south of junction with State Road 26, 1.5 miles east of Farnsworth Road at Jonesville, SE1/4SW1/4 sec. 13, T. 10 S, R. 18 E.

Ap—0 to 7 inches; dark gray (10YR 4/1) fine sand; weak medium granular structure; very friable; common fine grass roots; neutral; clear smooth boundary.

A21—7 to 29 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; about 50 percent clean and thinly coated sand grains; common fine roots; slightly acid; clear wavy boundary.

A22—29 to 52 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; few fine roots; few thin streaks of yellowish brown loamy sand lamellae about 1/32 to 1/16 inches wide and 3 to 6 inches long in the lower 5 inches; mildly alkaline; clear irregular boundary.

B21t—52 to 59 inches; yellowish brown (10YR 5/8) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; neutral; clear wavy boundary.

B22t—59 to 76 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; neutral; clear wavy boundary.

C1—76 to 98 inches; yellowish brown (10YR 5/4) clay; common medium faint brown (10YR 5/3) and common medium distinct yellowish brown (10YR 5/8) mottles; massive; firm; neutral; clear wavy boundary.

C2—98 to 118 inches; gray (10YR 5/1) clay; common medium distinct brownish yellow (10YR 6/6) and few fine prominent strong brown (7.5YR 5/6) mottles; massive; firm; about 4 percent fragments of limestone 5 to 25 millimeters in size; moderately alkaline.

The solum is 60 inches or more thick. Soft limestone is at a depth of about 70 inches or more below the surface. The A horizon ranges from strongly acid to mildly alkaline, and the Bt and C horizons range from slightly acid to moderately alkaline. Limestone boulders are on the surface and within the solum of many pedons. They comprise about 1 to 3 percent of the mapped area.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 4 to 7 inches in thickness. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6, or value of 7 or 8 and chroma of 2 to 8. The uncoated sand grains have chroma of 2. The A2 horizon is 36 to 72 inches thick.

The Bt horizon is sandy loam, fine sandy loam, or sandy clay loam 12 to 26 inches thick. The B21t horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 8, or value of 6 and chroma of 6 to 8. The B22t has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8.

The C horizon is sandy clay loam, sandy clay, or clay. The C1 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. In places, it has mottles in various shades of yellow and brown. The C2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. It is mottled with gray, yellow, and brown, or it is a mixture of these colors. In some pedons the C horizon is absent, or the Bt horizon is underlain by limestone that can be dug with light power equipment such as a backhoe.

Candler Series

The Candler series consists of nearly level to sloping, excessively drained soils. These soils are sand or fine sand to a depth of 80 inches or more. They formed in thick beds of sandy marine deposits. In places, the landscape is quite variable. It changes from nearly smooth or slightly convex slopes to highly convex and concave slopes within short distances. Slopes range from 0 to 8 percent. The water table is more than 72 inches below the surface. These soils are hyperthermic, uncoated Typic Quartzipsamments.

Candler soils are geographically associated with Apopka, Arredondo, Chipley, Jonesville, Lake, Pedro, Pompano, and Tavares soils. Apopka and Arredondo soils have a sandy A horizon 40 to 80 inches deep to a loamy Bt horizon. Chipley soils are somewhat poorly drained. Jonesville soils have a loamy Bt horizon, and soft limestone is at a depth of 20 to 40 inches. Lake soils are 5 to 10 percent silt and clay in the control section. Pedro soils have underlying limestone at a depth of 20 inches or less. Pompano soils are poorly drained, and Tavares soils are moderately well drained.

Typical pedon of Candler sand, 0 to 5 percent slopes, about 150 feet north of limerock road, 3 miles west of U.S. 41 and 2.5 miles north of Archer, SW1/4SW1/4 sec. 35, T. 10 S., R. 17 E.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; many fine and common medium roots; many uncoated sand grains; very strongly acid; clear wavy boundary.

A21—6 to 16 inches; pale brown (10YR 6/3) fine sand; single grained; loose; many fine and common medium roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

A22—16 to 28 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; many fine and few medium roots; many clean sand grains; very strongly acid; clear wavy boundary.

A23—28 to 57 inches; yellow (10YR 7/6) fine sand; single grained; loose; many fine and few medium roots; many clean sand grains; very strongly acid; gradual wavy boundary.

A24—57 to 70 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; few fine roots; many clean sand grains; very strongly acid; clear wavy boundary.

A25&B—70 to 82 inches; very pale brown (10YR 8/4) fine sand; single grained; loose; many uncoated sand grains; few fine distinct brownish yellow (10YR 6/6) loamy sand lamellae about 1/32 to 1/16 inches thick and 1 to 6 inches long; sand grains in lamellae are well coated; very strongly acid.

The A and A&B horizons extend to a depth of 80 inches or more. Silt plus clay is less than 5 percent between depths of 10 to 40 inches. Thin streaks of lamellae 1/32 to 3/16 of an inch thick begin at a depth of 50 to 80 inches. Soil reaction is very strongly acid to medium acid in all horizons.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 3 to 7 inches in thickness. The A2 horizon has hue of 10YR, and has value of 8 and chroma of 6 or 8, value of 6 or 7 and chroma of 3 to 8, or value of 5 and chroma of 4 to 8. Few to common, fine and medium streaks in hue of 10YR, value of 7 or 8, and chroma of 1 or 2 usually are in this horizon. The color is that of the uncoated sand grains and is not indicative of wetness. The A2 horizon is sand or fine sand 47 to 72 inches thick.

The A2 part of the A25&B horizon has hue of 10YR, value of 8, and chroma of 4 to 8; value of 7 and chroma of 3 to 8; or value of 6 and chroma of 3 to 6. This part of the horizon is sand or fine sand. It is 2 to 8 inches thick between the lamellae. The B part of this horizon is lamellae that have hue of 10YR, value of 5 or 6, and chroma of 6 to 8 or hue of 7.5YR, value of 5, and chroma of 6 to 8. The lamellae are loamy sand, loamy fine sand, or sandy loam. They range from 1/32 to 1/8 inch in thickness and 1/2 inch to 10 inches in length. These lamellae are at a depth of 50 to 80 inches and extend below a depth of 80 inches. Few to common small pockets of light gray or white clean sand grains are in the A2 part of this horizon in some pedons.

Chipley Series

The Chipley series consists of nearly level, somewhat poorly drained, deep sandy soils that formed in thick beds of sandy marine sediment. These soils are in broad areas of the flatwoods and along the lower slopes of the sandy uplands. Slopes range from 0 to 2 percent. The water table is from 20 to 40 inches for 2 to 4 months during most years. These soils are thermic, coated Aquic Quartzipsamments.

Chipley soils are geographically associated with Candler, Myakka, Newnan, Placid, Pompano, Pottsburg, Tavares, and Zolfo soils. Candler soils are excessively drained and have lamellae at a depth of 50 to 80 inches. Myakka, Newnan, Pottsburg, and Zolfo soils have a Bh horizon. The Myakka and Pottsburg soils are poorly drained. Placid soils are very poorly drained and have a black or very dark gray A1 horizon 10 to 24 inches thick. Pompano and Pottsburg soils are poorly drained.

Typical pedon of Chipley sand, in an area of planted slash pine and bahiagrass at University of Florida Horticulture Experimental Forest, 1.35 miles north of State Road 232 and about 1.75 miles west of Devils Millhopper, on the University of Florida Horticulture Farm, SE1/4NW1/4 sec. 9, T. 9 S., R. 19 E.

Ap1—0 to 6 inches; very dark gray (10YR 3/1) sand; moderate medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

Ap2—6 to 12 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

C1—12 to 25 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; very strongly acid; gradual irregular boundary.

C2—25 to 49 inches; light gray (10YR 7/2) sand; few fine and medium prominent yellowish red (5YR 5/8) mottles and streaks; single grained; loose; few roots; very strongly acid; gradual irregular boundary.

C3—49 to 81 inches; light gray (10YR 7/1) sand; single grained; loose; strongly acid.

This soil is sand or fine sand to a depth of more than 80 inches. The surface is sand. Silt plus clay content ranges from 5 to 10 percent in the 10- to 40-inch control section. Reaction ranges from very strongly acid to medium acid in all horizons.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. It is 4 to 16 inches thick. The A or Ap horizon has a value of 3 or less where it is less than 9 inches thick.

Many of the sand grains in the C horizon, to a depth of 40 inches, are well coated with silt and clay. The C1 horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or 3. In places, it has grayish mottles. The C2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3. Mottles are in shades of gray, yellow, and brown. The C3 horizon has hue of 10YR, value of 6, and chroma of 2 or value of 7 and chroma of 1 or 3. It has grayish, yellowish, and brownish mottles. Some pedons have a C4 horizon that has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. In places, the C4 horizon has mottles. The C horizon is 76 inches or more thick.

Emeralda Series

The Emeralda soils are nearly level, poorly drained soils that formed in clayey marine sediment. These soils are in large areas of prairies and marshes. The water table is less than 20 inches below the surface for 4 to 6 months during most years. Slopes range from 0 to 2 percent. These soils are fine, mixed, hyperthermic Mollic Albaqualfs.

Emeralda soils are geographically associated with Ledwith, Shenks, and Wauberg soils. Ledwith soils are very poorly drained and have an 8- to 16-inch layer of muck over the A1 horizon. Shenks soils are very poorly drained and are of organic origin. Wauberg soils have a sandy A horizon 20 to 40 inches thick.

Typical pedon of Emeralda fine sandy loam, in Levy Lake, 1 mile south of the Micanopy-Wacahoota Road and about 0.75 mile east of the intersection with State Road 121, SE1/4SW1/4 sec. 14, T. 11 S., R. 19 E.

A11—0 to 5 inches; black (N 2/0) fine sandy loam; moderate medium granular structure; very friable; common fine roots; extremely acid; clear smooth boundary.

A12—5 to 10 inches; very dark gray (N 3/0) sand; moderate medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

A2—10 to 18 inches; light brownish gray (10YR 6/2) sand; single grained; loose; few fine roots; many of the sand grains are clean; strongly acid; abrupt smooth boundary.

B21tg—18 to 37 inches; gray (N 5/0) sandy clay; few fine prominent yellowish red (5YR 5/6) streaks along root channels; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

B22tg—37 to 56 inches; gray (10YR 5/1) sandy clay loam; common fine prominent strong brown (7.5YR 5/8) and few fine prominent yellowish red (5YR 5/6) mottles and streaks along root channels; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; very strongly acid; abrupt wavy boundary.

IIC1g—56 to 60 inches; light gray (10YR 7/1) fine sand; single grained; loose; discontinuous in pedon; very strongly acid; clear wavy boundary.

IIC2g—60 to 66 inches; gray (10YR 5/1) loamy fine sand; moderate medium granular structure; very friable; discontinuous in pedon; very strongly acid; clear wavy boundary.

IIC3g—66 to 80 inches; light gray (10YR 7/1) sandy clay loam; common large prominent strong brown (7.5YR 5/8) and few fine prominent yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; firm; very strongly acid.

The solum is 48 to 70 inches thick. The A horizon is extremely acid to strongly acid, the B2tg horizon is very strongly acid to slightly acid, and the underlying material is very strongly acid to neutral.

The A1 or Ap horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 6 to 10 inches thick. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is sand or loamy sand 6 to 10 inches in thickness.

The B21tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less. In places, it has mottles in shades of yellow and brown. The B21tg horizon is sandy clay or clay 14 to 20 inches thick. The B22tg horizon is neutral or has hue of 10YR, value of 5 or 6, and chroma of 1 or less and mottles in shades of yellow and brown. The B22tg horizon is sandy clay loam, sandy clay, or clay 12 to 20 inches thick. The weighted average clay content of the upper 20 inches of the Btg horizon is more than 35 percent. Some pedons have a B23tg horizon, and, where present, it has the same color and texture range as the B22tg horizon and is 9 to 12 inches thick.

The IIC horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has mottles in shades of gray, yellow, brown, and red. The IIC horizon is sandy clay loam or sandy clay, except for lenses or thin discontinuous layers of fine sand or loamy fine sand. Where present, the lenses make up about 20 to 50 percent of the pedon.

This soil is lower in reaction than the range for the Emeralda series, but this difference does not alter the usefulness and behavior of the soil.

Floridana Series

The Floridana series consists of very poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These soils are in wet depressional areas and swamps of the flatwoods. Slopes are less than 2 percent. The water table is less than 10 inches below the surface during much of the year. Water is on the surface for about 6 months during most years. These soils are loamy, siliceous, hyperthermic Arenic Argiaquolls.

Floridana soils are geographically associated with Riviera and Wauchula soils. Riviera soils are poorly drained. Wauchula soils have a spodic horizon, and they are poorly drained.

Typical pedon of Floridana sand, depressional, in an area of gum, cypress, maple, and a few scattered slash pine and water-tolerant grasses, 400 feet east of U.S. Highway 441, about 2.2 miles north of intersection with State Road 121, NE1/4NE1/4 sec. 11, T. 9 S., R. 19 E.

A1—0 to 14 inches; black (N 2/0) sand; moderate medium granular structure; very friable; many fine roots; sand grains coated with organic matter; slightly acid; clear wavy boundary.

A21—14 to 18 inches; gray (10YR 6/1) sand; few fine distinct light yellowish brown (10YR 6/4) mottles; single grained; loose; few roots; many clean sand grains; moderately alkaline; clear wavy boundary.

A22—18 to 30 inches; light gray (10YR 7/1) sand; few fine distinct pale brown (10YR 6/3) mottles; single grained; few roots; many clean sand grains; moderately alkaline; clear wavy boundary.

B2tg—30 to 42 inches; gray (10YR 5/1) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; sand grains well coated and bridged with clay; moderately alkaline; clear wavy boundary.

B3g—42 to 65 inches; gray (10YR 6/1) sandy clay loam; weak fine subangular blocky structure; friable; sand grains well coated and bridged with clay; moderately alkaline.

Cg—65 to 74 inches; light gray (10YR 7/1) sandy loam; massive; friable; moderately alkaline.

The solum is 50 to 75 inches thick. Reaction ranges from slightly acid to moderately alkaline in all horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 2 or less. It is 10 to 22 inches thick. The A2 horizon is neutral or has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. It is 9 to 18 inches thick.

The B2tg horizon has hue of 10YR, value of 4, and chroma of 1 or value of 5 to 7 and chroma of 1 or 2. It also is neutral and has value of 4 to 7. Mottles are gray, yellow, and brown. Mottles may be absent in pedons where the matrix has chroma of 1 or less. The B2tg horizon is sandy loam or sandy clay loam 8 to 14 inches thick. The B3g horizon has the same color and texture range as the B2tg horizon. Fine to medium pockets and lenses of coarser textured material are common in many pedons. It is 16 to 24 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is sandy loam, fine sandy loam, or sandy clay loam.

Fort Meade Series

The Fort Meade series consists of nearly level to gently sloping, well drained soils that have uniform sandy texture to a depth of 80 inches or more. Slopes of the gently rolling uplands are slightly convex to slightly concave. They range from 0 to 5 percent. The water table is more than 72 inches below the surface. These soils are sandy, siliceous, hyperthermic Quartzipsammentic Haplumbrepts.

Fort Meade soils are associated with Arredondo, Gainesville, Kendrick, and Millhopper soils. All of these associated soils have an ochric epipedon. Arredondo soils have a loamy Bt horizon. Kendrick soils have a loamy Bt horizon at a depth of 20 to 40 inches. Millhopper soils have a loamy Bt horizon at a depth of 40 to 80 inches, and they are moderately well drained.

Typical pedon of Fort Meade fine sand, 0 to 5 percent slopes, in an area 0.1 mile west of I-75 and 250 feet inside a pasture north of graded road at intersection of unnumbered paved country road and graded road, SE1/4SE1/4 sec. 37, T. 8 S., R. 18 E. (in the Garvin Grant.)

Ap1—0 to 10 inches; very dark brown (10YR 2/2) fine sand; moderate coarse granular structure; friable; common fine roots; sand grains are coated; medium acid; clear smooth boundary.

Ap2—10 to 14 inches; very dark grayish brown (10YR 3/2) fine sand; moderate medium and coarse granular structure; friable; common fine roots; sand grains are well coated; slightly acid; clear wavy boundary.

C1—14 to 34 inches; dark brown (10YR 4/3) fine sand; moderate medium granular structure; very friable; common fine roots; sand grains are well coated; few medium dark grayish brown (10YR 4/2) krotovinas; medium acid; gradual wavy boundary.

C2—34 to 43 inches; dark yellowish brown (10YR 4/4) fine sand; weak medium granular structure; very friable; common fine roots; sand grains are well coated; few fine firm grayish brown (10YR 4/2) krotovinas; medium acid; gradual wavy boundary.

C3—43 to 71 inches; yellowish brown (10YR 5/8) fine sand; weak medium granular structure; very friable; few fine roots; sand grains are well coated; few medium nodules of phosphatic limestone; medium acid; clear wavy boundary.

C4—71 to 85 inches; dark brown (10YR 4/3) fine sand; moderate fine granular structure; very friable; few fine roots; sand grains are well coated; few medium nodules of phosphatic limestone; medium acid.

Reaction ranges from strongly acid to neutral in the A horizon and very strongly acid to medium acid in the C horizon. Texture of the surface layer is fine sand. The underlying layer is fine sand, loamy sand, or loamy fine sand to a depth of more than 80 inches. Between depths of 10 and 40 inches is 10 to 15 percent silt plus clay. A few weathered nodules of phosphatic limestone and ironstone, 4 to 20 millimeters in diameter, are in many pedons.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. It ranges from 11 to 24 inches in thickness.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 8 or value of 6 and chroma of 6 to 8, or it has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 8. The C horizon is 70 inches or more thick.

Gainesville Series

The Gainesville series consists of nearly level to sloping, well drained soils which have a uniform sandy texture to a depth of 80 inches or more. These soils were formed in thick beds of sandy marine deposits. They are in broad areas of gently rolling uplands. Slopes range from 0 to 8 percent. The water table is more than 72 inches below the surface. These soils are hyperthermic, coated Typic Quartzipsamments.

Gainesville soils are associated with Arredondo, Fort Meade, Kendrick, Lake, and Millhopper soils. Arredondo soils have a loamy Bt horizon at a depth of 40 to 80 inches. Fort Meade soils have an umbric epipedon. Kendrick soils have a loamy Bt horizon at a depth of 20 to 40 inches. Lake soils are 5 to 10 percent fines, silt plus clay, in the 10- to 40-inch control section. Millhopper soils are moderately well drained and have a loamy Bt horizon at a depth of 40 to 80 inches.

Typical pedon of Gainesville sand, 0 to 5 percent slopes, in an area 200 feet north of U.S. 441 and 0.75 mile east of I-75, immediately west of Alachua, NE1/4NE1/4 sec. 15, T. 8 S., R. 18 E.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) sand; moderate medium granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.

C1—7 to 13 inches; yellowish brown (10YR 5/4) sand; moderate medium granular structure; very friable; common fine grass roots; few fine and medium grayish brown (10YR 5/2) krotovinas; slightly acid; clear wavy boundary.

C2—13 to 29 inches; yellowish brown (10YR 5/8) sand; moderate medium granular structure; very friable; few fine grass roots; few fine and medium grayish brown (10YR 5/2) krotovinas; slightly acid; clear wavy boundary.

C3—29 to 54 inches; strong brown (7.5YR 5/8) loamy sand; moderate medium granular structure; very friable; few fine roots; few phosphatic limestone and ironstone nodules 6 to 15 millimeters in size but less than 1 percent in volume; medium acid; gradual wavy boundary.

C4—54 to 82 inches; strong brown (7.5YR 5/8) loamy sand; moderate medium granular structure; very friable; few fine roots; medium acid.

All horizons are very strongly acid to slightly acid in reaction. Silt plus clay content ranges from 10 to 15 percent in the 10- to 40-inch control section. Nodules of weathered phosphatic limestone and ironstone, 4 to 20 millimeters in diameter, are throughout the pedon and make up 1 to 3 percent by volume.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2 or hue of 7.5YR, value of 4, and chroma of 2. It is 5 to 10 inches thick.

The C horizon has hue of 10YR, value of 4, and chroma of 3 or 4 or value of 5 and chroma of 4 through 8. It also has hue of 7.5YR, value of 4, and chroma of 4 or value of 5 and chroma of 4 through 8, or it has hue of 5YR, value of 5 or 6, and chroma of 6 through 8. The C horizon is sand, fine sand, loamy sand, or loamy fine sand to a depth of more than 80 inches. It extends to a depth of 75 inches or more.

Jonesville Series

The Jonesville series consists of nearly level to gently sloping, well drained soils that formed in moderately thick beds of sandy and loamy marine sediment. This sediment is over limestone. These soils are the highly complex "limestone plain" of the gently rolling uplands. Slopes range from 0 to 5 percent. The water table is more than 72 inches below the surface. These soils are loamy, siliceous, hyperthermic Arenic Hapludalfs.

Jonesville soils are geographically associated with Apopka, Arredondo, Bonneau, Cadillac, Lake, Oleno, and Pedro soils. The Apopka, Bonneau, Cadillac, and Candler soils do not have limestone within a depth of 60 inches. Apopka, Arredondo, and Cadillac soils have a sandy A horizon that ranges to a depth of 40 to 80 inches. Bonneau soils are moderately well drained. Lake soils are sandy to a depth of 80 inches or more. Oleno soils are subject to flooding, are poorly drained, and formed from clayey fluvial sediment. Pedro soils have limestone at a depth of about 20 inches or less.

Typical pedon of Jonesville sand, in a wooded area of mixed hardwoods and pines, about 200 feet east of Parker Road (SW 122nd Street) and 3.6 miles south of junction with State Road 26, 1.5 miles east of intersection of State Road 241 at Jonesville, NW1/4SW1/4 sec. 24, T. 10 S., R. 18 E.

A1—0 to 7 inches; dark gray (10YR 4/1) sand; weak fine granular structure; very friable; common fine and medium roots; medium acid; clear wavy boundary.

A21—7 to 17 inches; pale brown (10YR 6/3) fine sand; single grained; loose; common fine and medium roots; neutral; gradual wavy boundary.

A22—17 to 29 inches; very pale brown (10YR 7/3) fine sand; single grained; loose; few fine and medium roots; neutral; clear wavy boundary.

B2t—29 to 33 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; sand grains are well coated and bridged with clay; neutral; abrupt wavy boundary.

IIR—33 to 80 inches; white (10YR 8/2) limestone that can be dug with light power equipment such as a backhoe; moderately alkaline; the pedon had a 14 by 33 inch deep solution hole extending into the limestone, which contained strong brown (7.5YR 5/6) sandy clay loam between depths of 33 and 52 inches and sandy clay between depths of 52 and 66 inches; moderate medium subangular blocky structure; friable and firm; few distinct clay films on faces of peds; few fine nodules and fragments of limestone; neutral.

The solum is less than 60 inches thick. Limestone is at a depth of 26 to 40 inches in about 60 to 65 percent of the pedon and at a depth of 40 to 59 inches in about 30 to 35 percent of the pedon. Within the pedon, in solution holes, the solum may extend to a depth of more than 60 inches. Reaction of the A horizon ranges from strongly acid to neutral. Reaction of the Bt horizon ranges from slightly acid to moderately alkaline. Limestone boulders are on the surface of many pedons. They make up about 1 to 3 percent of the surface area.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is 4 to 7 inches thick. The A2 horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. In many pedons it has few to common streaks of sand grains without any clay coatings. The A horizon is sand or fine sand 16 to 32 inches thick.

The Bt horizon has hue of 7.5YR or 10YR, value of 5, chroma of 4 to 8 or value of 6, and chroma of 6 to 8. In places, it has mottles of higher value or chroma. The Bt horizon is sandy loam, fine sandy loam, or sandy clay loam. In some pedons, the lower 3 to 6 inches of the Bt horizon is about 3 to 10 percent limestone fragments 5 to 15 millimeters in size. The Bt horizon ranges from 3 to 20 inches in thickness. Fine to medium nodules of soft limestone are usually in the Bt horizon in the solution holes. Normally, they make up less than 20 percent by volume.

The IIR is white limestone soft enough to be dug with light power equipment. The limestone extends to a depth of more than 72 inches below the soil surface. Some pedons have a IICr horizon of soft limestone above boulder limestone. Hard limestone fragments and boulders occur randomly throughout the horizon and range from few to many. Solution holes, which comprise about 1 to 15 percent of this horizon, are filled with sandy loam or sandy clay loam in the upper part and sandy clay loam or sandy clay in the lower part.

Kanapaha Series

The Kanapaha series consists of nearly level to sloping, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These soils are on nearly level to gentle slopes of uplands. Slopes range from 0 to 5 percent. The water table is at a depth of less than 10 inches for 1 to 3 months and at a depth of 10 to 40 inches for 3 to 4 months during most years. These soils are loamy, siliceous, hyperthermic Grossarenic Paleaquults.

Kanapaha soils are geographically associated with Arredondo, Bivans, Blichton, Boardman, Lochloosa, Millhopper, and Wacahoota soils. Arredondo soils are well drained. Bivans soils have a clayey Btg horizon within 20 inches of the surface. Blichton soils have a Btg horizon between 20 and 40 inches. Boardman soils have a Btg horizon within 20 inches of the surface and are more than 5 percent nodules and fragments of ironstone and limestone. Lochloosa soils are somewhat poorly drained and have a Bt horizon 20 to 40 inches below the surface. Millhopper soils are moderately well drained. Wacahoota soils have a Btg horizon 20 to 40 inches below the surface and are more than 5 percent nodules and fragments of ironstone and limestone.

Typical pedon of Kanapaha fine sand, 2 to 5 percent slopes, about 400 feet west of State Road 225 and 0.9 mile north of Alachua-Marion County line, north of Evinston, SE1/4SW1/4, sec. 32, T. 11 S., R. 21 E.

Ap—0 to 8 inches; dark gray (10YR 4/1) sand; weak fine granular structure; very friable; many fine and common roots; strongly acid; gradual wavy boundary.

A21—8 to 13 inches; light brownish gray (10YR 6/2) sand; few common, distinct light yellowish brown (10YR 6/4) mottles; single grained; loose; many fine and common roots; strongly acid; clear wavy boundary.

A22—13 to 44 inches; light gray (10YR 7/1) sand; few fine distinct light yellowish brown (10YR 6/4) mottles; single grained; loose; few fine roots; few medium nodules of phosphatic limestone and ironstone; medium acid; gradual wavy boundary.

B21tg—44 to 50 inches; light brownish gray (10YR 6/2) sandy clay loam; few medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; very friable; few medium nodules of phosphatic limestone and ironstone; medium acid; clear wavy boundary.

B22tg—50 to 62 inches; gray (10YR 6/1) sandy clay loam; few fine distinct yellowish brown (10YR 5/6) and moderate medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few clay films on faces of peds; strongly acid; gradual wavy boundary.

B3g—62 to 80 inches; gray (10YR 6/1) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) and moderate medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium pockets of sandy loam and sandy clay; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to medium acid in all horizons. Nodules and fragments of ironstone and weathered limestone range from 0 to 5 percent in the A horizon and upper part of the B horizon.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or value of 5 and chroma of 1 or 2. It is 4 to 8 inches thick. The A2 horizon has hue of 10YR, value of 5, and chroma of 1, or value of 6 or 7 and chroma of 1 or 2. In places, it has mottles in various shades of gray, yellow, and brown. The A2 horizon ranges from 36 to 64 inches in thickness.

The B2tg horizon has hue of 10YR, value of 5, and chroma of 1, or value of 6 or 7 and chroma of 1 or 2. It also is neutral and has value of 5 or 6. Mottles are in various shades of yellow, brown, and red. The B21tg horizon is sandy loam or sandy clay loam, and it ranges from 5 to 8 inches in thickness. The B22tg horizon is sandy loam, sandy clay loam, or sandy clay 10 to 18 inches thick. The weighted average clay content of the upper 20 inches of the Btg horizon is 18 to 35 percent. The B3g horizon has the same color and texture range as the B21tg horizon. It ranges from 6 to 20 inches in thickness.

Kendrick Series

The Kendrick series consists of deep, nearly level to sloping, well drained soils that formed in thick beds of loamy marine sediment. These soils are on gentle slopes and along the steep hillsides of uplands. Slopes range from 0 to 8 percent. The water table is more than 72 inches below the surface. These soils are loamy, siliceous, hyperthermic Arenic Paleudults.

Kendrick soils are geographically associated with Arredondo, Blichton, Bonneau, Fort Meade, Gainesville, Lochloosa, and Norfolk soils. Arredondo soils have an A horizon 40 to 80 inches thick. Blichton soils are poorly drained, and Bonneau soils are moderately well drained. Fort Meade and Gainesville soils are sandy to a depth of 80 inches or more. Lochloosa soils are somewhat poorly drained. Norfolk soils have an A horizon less than 20 inches thick.

Typical pedon of Kendrick sand, 2 to 5 percent slopes, in an area 0.4 mile west and 0.8 mile north of junction of State Roads 222 and 241, 690 feet south of paved private road, NW1/4NW1/4 sec. 23, T. 9 S., R. 18 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; common fine roots; medium acid; clear smooth boundary.

A3—9 to 26 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; very friable; few fine roots; sand grains are well coated; medium acid; clear wavy boundary.

B21t—26 to 31 inches; yellowish brown (10YR 5/8) fine sandy loam; weak fine subangular blocky structure which breaks down easily into weak medium granular structure; friable; few fine and medium roots; few fine ironstone and phosphatic limestone nodules; sand grains are well coated and bridged with clay; medium acid; clear wavy boundary.

B22t—31 to 51 inches; dark yellowish brown (10YR 4/4) sandy clay loam; few fine prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine nodules of ironstone and phosphatic limestone; sand grains are well coated and bridged with clay; strongly acid; gradual wavy boundary.

B23t—51 to 73 inches; dark yellowish brown (10YR 4/4) sandy clay loam; few fine prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine nodules of ironstone and phosphatic limestone; few thin clay films along faces of peds; strongly acid; clear wavy boundary.

B24t—73 to 83 inches; yellowish brown (10YR 5/6) fine sandy loam; few fine prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; few fine nodules of ironstone and phosphatic limestone; strongly acid; clear wavy boundary.

B3—83 to 90 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct gray (10YR 6/1) and few fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; strongly acid.

The solum is 60 inches or more thick. Reaction is very strongly acid to medium acid in all horizons. Nodules of ironstone and fragments and nodules of weathered phosphatic limestone 2 to 50 millimeters in diameter. They are 0 to 5 percent by volume of the solum.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 4 to 9 inches thick. The A1 or Ap horizon has value of 3 where it is less than 6 inches thick. The A3 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 8. It is sand or loamy sand 16 to 31 inches thick.

The B21t horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 8 or value of 6 and chroma of 6 to 8. It also has hue of 7.5YR, value of 5, and chroma of 6 to 8. In places, the B21t horizon has mottles in various shades of yellow, brown, and red. It is sandy loam, fine sandy loam, or sandy clay loam 4 to 8 inches thick. The B22t through B24t horizons have the same color range as the B21t horizon. The B24t horizon has gray mottles in some pedons. It is fine sandy loam, sandy clay loam, or sandy clay. The B22t horizon is 10 to 20 inches thick, the B23t horizon is 14 to 22 inches thick, and the B24t horizon is 6 to 12 inches thick. The B3 horizon has the same color range as the B24t horizon, and mottles in shades of gray, yellow, and brown. In some pedons this horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. The B3 horizon is sandy clay loam or sandy clay.

Lake Series

The Lake series consists of nearly level to gently sloping, excessively drained soils that are sand or fine sand to a depth of more than 80 inches. These soils formed in thick beds of sandy marine deposits. They are on nearly smooth to convex slopes of broad, gently rolling uplands. Slopes range from 0 to 5 percent. The water table is more than 72 inches below the surface. These soils are hyperthermic, coated Typic Quartzipsamments.

Lake soils are geographically associated with Arredondo, Candler, Gainesville, Jonesville, and Tavares soils. Arredondo soils have a loamy Bt horizon between depths of 40 and 80 inches. Candler soils have less than 5 percent fines of silt and clay in the 10- to 40-inch control section. Gainesville soils have 10 to 15 percent silt plus clay in the 10- to 40-inch control section. Jonesville soils have a loamy Bt horizon. Limestone is at a depth of less than 60 inches. Tavares soils are moderately well drained and have less than 5 percent silt plus clay in the control section.

Typical pedon of Lake sand, 0 to 5 percent slopes, about 350 feet south of gate at entrance to Department of Natural Resources Paynes Prairie property, 0.25 mile east of southeast corner of Kincaid Road, NW1/4NW1/4 sec. 23, T 10 S., R. 20 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sand, weak medium granular structure; very friable; many fine grass roots; medium acid; clear smooth boundary.

C1—8 to 41 inches; yellowish brown (10YR 5/6) sand; single grained; loose; common fine grass roots; many of the sand grains are thinly coated to well coated; strongly acid; gradual wavy boundary.

C2—41 to 69 inches; strong brown (7.5YR 5/8) sand; weak medium granular structure; very friable; few fine grass roots; strongly acid; gradual wavy boundary.

C3—69 to 82 inches; yellowish brown (10YR 5/6) sand; single grained; loose; few fine grass roots; few fine and medium distinct streaks of light gray (10YR 7/2) clean sand grains; strongly acid.

The soil is sand or fine sand to a depth of more than 80 inches. Silt plus clay content ranges from 5 to 10 percent in the 10- to 40-inch control section. Reaction ranges from very strongly acid to strongly acid in all horizons, except where the A horizon is limed. A few nodules of weathered phosphatic limestone and ironstone, 2 to 25 millimeters in diameter, are in some pedons.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 4 to 8 inches thick.

The C horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 8 or hue of 7YR, value of 5, and chroma of 6 to 8. In some pedons, below 60 inches, the C horizon has a few thin streaks of lamellae about 1/16 to 1/32 inch thick and 1 inch to 2 1/2 inches long. The lamellae have hue of 7.5YR or 10YR, value of 5, and chroma of 6 or 8. The thin streaks are loamy sand or sandy loam. The C horizon extends to a depth of more than 72 inches.

Ledwith Series

The Ledwith series consists of nearly level, very poorly drained, slowly permeable soils that formed in beds of clayey marine sediment. These soils are in fresh water marshes and swamps and on prairies. Slopes are less than 2 percent. The water table is within 10 inches of the surface for about 6 months or more during most years. Water stands on the surface for much of the time. These soils are fine, montmorillonitic, hyperthermic Mollic Albaqualfs.

Ledwith soils are geographically associated with Bivans, Emeralda, Shenks, Terra Ceia, and Wauberg soils. Bivans and Emeralda soils are poorly drained. Shenks and Terra Ceia soils are of organic origin. Wauberg soils have a loamy Btg horizon and are poorly drained.

Typical pedon of Ledwith muck, in Levy Lake, 0.6 mile south of the Micanopy-Wacahoota Road and 2 miles east of the intersection with State Road 121, SW1/4NE1/4 sec. 13, T. 11 S., R. 19 E.

O2—0 to 9 inches; dark brown (10YR 3/3) muck; about 40 percent fiber unrubbed, less than 10 percent rubbed; structureless; friable; sodium pyrophosphate extract is light yellowish brown (10YR 6/4); extremely acid (pH 4.4 in 0.01 molar calcium chloride); abrupt smooth boundary.

A1—9 to 15 inches; black (10YR 2/1) sandy loam; moderate medium granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

A2—15 to 17 inches; gray (10YR 5/1) loamy sand; single grained; loose; common fine and medium roots; strongly acid; clear wavy boundary.

B21tg—17 to 25 inches; very dark gray (N 3/0) sandy clay; weak medium subangular blocky structure; firm; sticky and plastic; common fine roots; few distinct clay films on faces of peds and along root channels; neutral; clear wavy boundary.

B22tg—25 to 44 inches; dark gray (N 4/0) sandy clay; moderate medium subangular blocky structure; firm; sticky and plastic; few fine roots; few distinct clay films on faces of peds and along root channels; slickensides; neutral; clear wavy boundary.

B23tg—44 to 62 inches; gray (N 5/0) sandy clay; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; sticky and plastic; few fine roots; few faint discontinuous clay films along faces of peds; slickensides; mildly alkaline; clear wavy boundary.

Cg—62 to 93 inches; gray (N 6/0) sandy clay; few medium distinct yellowish brown (10YR 5/4) mottles; massive; firm; sticky and plastic; few fine roots; slickensides; moderately alkaline.

The solum ranges from 48 to 70 inches in thickness. Reaction of the O2 horizon is less than 4.5 in 0.01 molar calcium chloride. Reaction is very strongly acid to strongly acid in the A horizon. It is very strongly acid to neutral in the upper part of the Btg horizon and slightly acid to moderately alkaline in the lower part. Base saturation of the argillic horizon is 35 percent or more.

The O2 horizon has hue of 5YR, value of 2 or 3, and chroma of 1 or 2; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2 or 3, and chroma of 1 to 3. It is also neutral or has value of 2 or 3. Fiber content ranges from about 25 to 45 percent before rubbing but is less than 15 percent after rubbing. Organic matter content is more than 30 percent. It is 8 to 16 inches thick.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 2 or less. It ranges from 5 to 10 inches in thickness. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is loamy sand or sand 1 to 4 inches thick. After being mixed to a depth of 7 inches or more, the A horizon has moist color value of 3 or less.

The B21tg horizon is neutral or has hue of 10YR, value of 3 to 5, and chroma of 1 or less. The B22tg and B23tg horizons are neutral or have hue of 10YR, value of 4 to 6, and chroma of 1 or less. In places, the B2tg horizon has mottles in various shades of yellow, brown, and red. It is sandy clay or clay. The B2tg horizon ranges from 37 to 56 inches in thickness. Some pedons have a B3g horizon. Where present, it has the same color and texture as the B23tg horizon.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. In places it has yellowish, brownish, or reddish mottles. The Cg horizon is sandy clay or clay.

Lochloosa Series

The Lochloosa series consists of nearly level to sloping, somewhat poorly drained soils that formed in thick beds of loamy marine deposits. These soils are in broad areas of the gently rolling uplands and in slightly convex areas of the flatwoods. Slopes range from 0 to 8 percent. The water table is about 30 to 40 inches below the surface for about 1 to 4 months during most years. It rises to 15 to 30 inches for about 1 to 4 weeks during most years. During most of the remainder of the year it is at a depth of more than 40 inches. These soils are loamy, siliceous, hyperthermic Aquic Arenic Paleudults.

Lochloosa soils are geographically associated with Blichton, Bivans, Boardman, Bonneau, Kanapaha, Kendrick, Micanopy, Millhopper, Sparr, and Wacahoota soils. Blichton, Bivans, Boardman, Kanapaha, and Wacahoota soils are all poorly drained. Blichton soils are more than 5 percent plinthite. In addition, the Bivans soils have a clayey Btg horizon within 20 inches of the surface. Boardman soils have a Btg horizon within 20 inches of the surface and contain more than 5 percent nodules and fragments of limestone. Kanapaha soils have an A horizon 40 to 80 inches thick. Wacahoota soils are more than 5 percent nodules and fragments of limestone. Kendrick soils are well drained. Micanopy soils have a clayey Bt horizon within 20 inches of the surface. Millhopper soils are moderately well drained and have an A horizon 40 to 80 inches thick. Sparr soils have a sandy A horizon 40 to 80 inches thick.

Typical pedon of Lochloosa fine sand, 0 to 2 percent slopes, about 1.6 miles of east of Orange Heights, 0.2 mile north of State Road 26, and 100 feet east of large borrow pit, SE1/4SW1/4 sec. 9, T. 9 S., R. 22 E.

A1—0 to 7 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine and medium, and few coarse roots; very strongly acid; clear smooth boundary.

A21—7 to 14 inches; brown (10YR 5/3) fine sand; single grained; loose; many fine and medium roots; strongly acid; gradual wavy boundary.

A22—14 to 30 inches; very pale brown (10YR 7/3) fine sand; few fine distinct gray (10YR 6/1) and few fine faint light yellowish brown (10YR 6/4) mottles; single grained; loose; many fine and medium roots; strongly acid; clear smooth boundary.

A23—30 to 34 inches; very pale brown (10YR 7/4) fine sand; few medium distinct light brownish gray (10YR 6/2), common medium faint brownish yellow (10YR 6/6) and common medium distinct brownish yellow (10YR 6/8) mottles; weak medium granular structure; very friable; few fine and medium roots; strongly acid; clear wavy boundary.

B21t—34 to 44 inches; pale brown (10YR 6/3) very fine sandy loam; common medium distinct gray (10YR 6/1), few medium distinct yellowish brown (10YR 5/8) and few fine faint light yellowish brown mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

B22tg—44 to 57 inches; light brownish gray (10YR 6/2) very fine sandy loam; common medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; about 1 percent nodules of plinthite; very strongly acid; gradual wavy boundary.

B3g—57 to 80 inches; gray (10YR 6/1) sandy clay loam; many medium prominent yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; about 1 percent nodules of plinthite; very strongly acid.

The solum is 60 inches or more thick. Reaction is very strongly acid to strongly acid in all horizons, except in the A horizon where limed. Fragments and nodules of weathered limestone and ironstone, 2 to 60 millimeters in size, make up from 0 to 5 percent by volume of the solum.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2, or it is neutral and has value of 4 or 5. It is 5 to 8 inches thick. The A1 or Ap horizon is very dark gray where it is only 5 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4 and mottles in shades of yellow, brown, or gray. The A2 horizon texture is sand, fine sand, or loamy sand 16 to 32 inches thick.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6 or value of 7, and chroma of 3 or 4. Mottles are in shades of gray, yellow, or brown. The B21t horizon is very fine sandy loam, fine sandy loam, or sandy loam 0 to 10 inches thick. The B22tg horizon has the same color range as the B21t horizon and in addition has hue of 10YR, value of 4, and chroma of 1 or value of 5 or 6 and chroma of 1 or 2. The B22tg horizon is very fine sandy loam, sandy loam, or sandy clay loam 3 to 19 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 5 or 6, and chroma of 2 or less, and mottles in shades of yellow, brown, or red. It is sandy clay loam or sandy clay.

Lynne Series

The Lynne series consists of nearly level, poorly drained soils that formed in thick deposits of sandy and clayey marine sediment. These soils are in broad areas of flatwoods. Slopes range from 0 to 2 percent. During most years, the water table is at a depth of less than 10 inches for 1 to 3 months, at a depth of 10 to 40 inches for 3 to 6 months, and below a depth of 40 inches during drier seasons. These soils are sandy over clayey, siliceous, hyperthermic Ultic Haplaquods.

Lynne soils are geographically associated with Bivans, Blichton, Martel, and Pomona soils. Bivans soils have a Bt horizon within 20 inches of the surface. Blichton soils have a loamy Bt horizon. Martel soils are very poorly drained and have a Bt horizon at a depth of less than 20 inches. Pomona soils have a loamy B't horizon at a depth of 40 to 80 inches.

Typical pedon of Lynne sand, about 1/8 mile north of the Marion County line and 2 7/8 miles east of State Road 121, SW1/4SW1/4 sec. 36, T. 11 S., R. 19 E.

A1—0 to 5 inches; black (10YR 2/1) sand; weak fine granular structure; very friable; many fine and medium roots; common clean sand grains; very strongly acid; clear wavy boundary.

A21—5 to 13 inches; light brownish gray (10YR 6/2) sand; single grained; loose; many fine, medium and large roots; many clean sand grains; very strongly acid; gradual wavy boundary.

A22—13 to 20 inches; gray (10YR 5/1) sand; single grained; loose; many fine, medium and large roots; many clean sand grains; very strongly acid; abrupt wavy boundary.

B21h—20 to 23 inches; black (N 2/0) sand; weak fine subangular blocky structure parting to moderate medium granular structure; weakly cemented in places; common fine and medium roots; many sand grains coated with organic matter; very strongly acid; clear wavy boundary.

B22h—23 to 29 inches; dark reddish brown (5YR 3/2) sand; weak fine subangular blocky structure parting to moderate medium granular structure; weakly cemented in places; few fine roots; many sand grains well coated with organic matter; very strongly acid; clear wavy boundary.

A'2—29 to 32 inches; brown (10YR 5/3) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

B'21tg—32 to 37 inches; light brownish gray (10YR 6/2) sandy clay loam; common fine and medium prominent reddish yellow (5YR 6/8) mottles; weak fine subangular blocky structure; friable; few faint discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B'22tg—37 to 80 inches; gray (10YR 5/1) sandy clay; common medium prominent brown (7.5YR 5/4) mottles; moderate medium subangular blocky structure; slightly sticky; few discontinuous clay films on ped faces; very strongly acid.

The solum is 50 inches or more thick. Reaction ranges from extremely acid through strongly acid in all horizons.

The Ap or A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5, and chroma of 1, or value of 6 or 7, and chroma of 1 or 2. The A2 horizon is 8 to 16 inches thick.

The Bh horizon is neutral or has hue of 10YR, value of 2, and chroma of 2 or less; hue of 5YR, value of 2, and chroma of 1 or value of 3 and chroma of 1 to 3; and hue of 7.5YR, value of 3, and chroma of 2. The Bh horizon is sand or fine sand from 8 to 16 inches thick.

The A'2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 3, or it has hue of 2.5Y, value of 6 or 7, and chroma of 2. The A'2 horizon is sand or fine sand 2 to 4 inches thick.

The B'21tg horizon is neutral or has hue of 10YR, value of 5, and chroma of 6 or 7, or chroma of 2 or less. It also has hue of 2.5Y, value of 6 or 7, and chroma of 2. Mottles are in shades of yellow, brown, or red. The B'21tg horizon is sandy clay loam or sandy clay. It ranges from 4 to 9 inches in thickness. The B'22tg horizon has the same color range as the B'21tg. It is sandy clay. The weighted average clay content of the upper 20 inches in the B'2tg horizon is 35 percent or more.

Martel Series

The Martel series consists of very poorly drained soils that formed in thick beds of clayey marine sediment. These soils are in wet depressions and in areas of wet prairie. Slopes are 0 to 1 percent. The water table is less than 10 inches below the surface for 6 to 12 months during most years. Most areas are ponded for periods of 6 months or more. These soils are fine, montmorillonitic, hyperthermic Typic Umbraqualfs.

Martel soils are geographically associated with Bivans, Blichton, Lynne, Shenks, and Terra Ceia soils. Bivans and Blichton soils are poorly drained, and the Blichton soils have a loamy Bt horizon at a depth of 20 to 40 inches. Lynne soils have a Bh horizon. Shenks soils have 16 to 50 inches of organic material. Terra Ceia soils have organic material to a depth of 51 inches or more.

Typical pedon of Martel sandy clay loam, about 0.50 mile north of the Marion County line and 2.75 miles east of State Road 121, NE1/4SW1/4 sec. 36, T. 11 S., R. 19 E.

A11—0 to 13 inches; black (N 2/0) sandy clay loam; moderate medium granular structure; very friable; few roots; organic matter content about 5 to 6 percent; strongly acid; clear wavy boundary.

A12—13 to 16 inches; very dark gray (N 3/0) sandy clay loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium granular structure; very friable; few roots; strongly acid; clear wavy boundary.

B21tg—16 to 35 inches; dark gray (N 4/0) sandy clay; few fine prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very firm, sticky, plastic; few thin discontinuous clay films on ped faces; strongly acid; gradual wavy boundary.

B22tg—35 to 54 inches; gray (10YR 6/1) sandy clay; few medium prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; very firm, sticky, plastic; few thin clay films on ped faces; strongly acid; gradual wavy boundary.

Cg—54 to 80 inches; gray (10YR 6/1) sandy clay that has thin lenses of sandy clay loam and sandy loam; massive; very firm, sticky; plastic; strongly acid.

The solum is 48 to 65 inches in thickness. Reaction is very strongly acid through strongly acid. Base saturation ranges from 35 to 60 percent at a depth of 50 inches in the Btg horizon.

The A horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. The A horizon is 12 to 20 inches thick.

The B2tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less and has brown, red, or yellow mottles. It is sandy clay or clay 32 to 46 inches thick. A B3g horizon is in some pedons. Where present, it has the same color and textural range as the Btg and is 4 to 8 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 or 6, and chroma of 1 or less or hue of 10YR, value of 7, and chroma of 1 or 2. The Cg horizon is sandy clay or clay and has thin pockets of coarser textured material in most pedons.

Micanopy Series

The Micanopy series consists of gently sloping, somewhat poorly drained soils that formed in thick beds of loamy and clayey marine sediment. These soils are on gentle slopes and hillsides of uplands. Slopes range from 2 to 5 percent. The water table is 18 to 30 inches below the surface for 1 to 3 months during most years. These soils are fine, mixed, hyperthermic Aquic Paleudalfs.

Micanopy soils are geographically associated with Bivans, Blichton, Boardman, Bonneau, Lochloosa, and Norfolk soils. Bivans, Blichton, and Boardman soils are poorly drained. Blichton soils also have a loamy Bt horizon between depths of 20 to 40 inches. Boardman soils are more than 5 percent nodules and fragments of limestone. Bonneau and Lochloosa soils have a sandy A horizon 20 to 40 inches thick. Bonneau soils are moderately well drained, and Norfolk soils are well drained.

Typical pedon of Micanopy loamy fine sand, 2 to 5 percent slopes, about 100 feet south of State Road 26 and 4 miles east of intersection with U.S. Highways 27 and 41, NE1/4NE1/4 sec. 6, T. 10 S., R. 18 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loamy fine sand; moderate medium granular structure; friable; common fine roots; strongly acid; clear wavy boundary.

B21t—6 to 12 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t—12 to 18 inches; yellowish brown (10YR 5/4) and gray (10YR 6/1) sandy clay; few medium prominent yellowish red (5YR 5/8) and few medium prominent strong brown (7.5YR 5/8) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B23tg—18 to 38 inches; gray (N 5/0) sandy clay; common medium and coarse prominent strong brown (7.5YR 5/8) and few coarse prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; very few fine roots; few distinct clay films on faces of peds; extremely acid; gradual wavy boundary.

B24tg—38 to 55 inches; gray (N 5/0) sandy clay; common medium distinct brownish yellow (10YR 6/6), few medium prominent dark red (10YR 3/6) and few medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; very few fine roots; few clay films; few light gray (10YR 7/2) sandy loam and yellowish brown (10YR 5/8) sandy clay loam masses 1/4 to 1/2 inch in diameter; very strongly acid; gradual wavy boundary.

B3g—55 to 77 inches; gray (N 5/0) sandy clay loam; few medium and coarse prominent red (2.5YR 4/8), few medium prominent red (2.5YR 5/8) mottles; weak medium subangular blocky structure; firm; no visible clay films; few medium and coarse masses of yellowish brown (10YR 5/6) sandy clay loam and gray (10YR 5/1) sandy loam; few fine soft nodules of white (10YR 8/1) phosphatic limestone; very strongly acid; gradual wavy boundary.

C—77 to 85 inches; intermixed gray (N 6/0) sandy clay loam and light greenish gray (5GY 7/1) and greenish gray (5GY 6/1) clay; few medium prominent strong brown (7.5YR 5/8) mottles; massive; firm; some slickensides; very strongly acid.

The solum is 60 inches or more thick. Reaction ranges from extremely acid to medium acid in all horizons. Small fragments of weathered limestone and nodules of limestone and ironstone, 2 to 50 millimeters, are in many pedons. They comprise less than 5 percent of the volume.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 4 to 8 inches in thickness. The Ap or A1 horizon is very dark gray where it is only 4 to 5 inches thick. In some pedons the A2 horizon has been mixed with the Ap horizon by cultivating. Where this has happened, hue is 10YR, value is 4 or 5, and chroma is 3 or value is 6 and chroma is 3 or 4. It is 5 to 8 inches thick.

The B21t horizon has hue of 10YR, value of 5, and chroma of 3 to 6 or value of 6 and chroma of 3 or 4. It is sandy clay loam or sandy clay and ranges from 5 to 8 inches in thickness. The B22t horizon has hue of 10YR, value of 5, and chroma of 3 to 6 or value of 6 and chroma of 3 or 4. It has mottles in shades of gray, yellow, brown, and red, or it is mixed with these colors. It is 4 to 8 inches thick. The B23tg and B24tg horizons are neutral or have hue of 10YR, value of 5 or 6, and chroma of 1 or less and mottles in shades of yellow, brown, and red. They are sandy clay or clay. The B23tg horizon is 18 to 24 inches thick, and the B24tg horizon is 8 to 10 inches thick. Some pedons have a 2- to 4-inch sandy loam B1 horizon. Where present, the B1 horizon has the same color range as the B21t horizon. The B3g horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. Mottles are in shades of yellow, brown, and red. The B3g horizon is sandy clay, clay, or sandy clay loam that is more than 32 percent clay. Some pedons have thin streaks and pockets of coarser and finer textured material. The B3g horizon ranges from 10 to 23 inches in thickness.

The C horizon has hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 1 or less or hue of 5Y, value of 5 to 7, and chroma of 1. In places, it has mottles. The C horizon is sandy clay, clay, or sandy clay loam that is 33 percent or more clay content.

The base saturation is below the defined range for the Micanopy series. This does not change the usefulness and behavior of the soil, however.

Millhopper Series

The Millhopper series consists of nearly level to sloping, moderately well drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are in broad areas of the gently rolling uplands and in slightly convex areas of the flatwoods. Slopes range from 0 to 8 percent. The water table is 40 to 60 inches below the surface for 1 to 4 months. It is at a depth of 60 to 72 inches for 2 to 4 months during most years. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Millhopper soils are geographically associated with Apopka, Arredondo, Bonneau, Fort Meade, Gainesville, Kanapaha, Lochloosa, Oleno, Sparr, and Tavares series. Apopka, Arredondo, Fort Meade, and Gainesville soils are well drained. The Fort Meade and Gainesville soils also are sandy to a depth of 80 inches or more. Bonneau soils are moderately well drained and have a sandy A horizon 20 to 40 inches thick. Kanapaha soils are poorly drained. Lochloosa soils are somewhat poorly drained and have a sandy A horizon 20 to 40 inches thick. Oleno soils are subject to flooding, are poorly drained, and they formed in clayey fluvial sediment. Sparr soils are somewhat poorly drained. Tavares soils are moderately well drained and are sandy to a depth of 80 inches or more.

Typical pedon of Millhopper sand, 0 to 5 percent slopes, 200 feet north of graded road, 0.8 mile west of State Road 121 and about 1 mile east of Devil's Millhopper, NE1/4NE1/4 sec. 23, T. 9 S., R. 19 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; many fine and medium roots; medium acid; clear wavy boundary.

A21—9 to 21 inches; yellowish brown (10YR 5/6) sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear wavy boundary.

A22—21 to 26 inches; yellowish brown (10YR 5/4) sand; few fine faint brownish yellow mottles; single grained; loose; few fine roots; slightly acid; clear wavy boundary.

A23—26 to 48 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint pale brown mottles; single grained; loose; few fine roots; slightly acid; clear wavy boundary.

A24—48 to 58 inches; very pale brown (10YR 7/3) sand; few fine and medium prominent strong brown (7.5YR 5/6) and few fine distinct yellowish brown (10YR 5/8) mottles; single grained; loose; few fine roots; moisture content much greater than in horizon above; medium acid; clear wavy boundary.

B21t—58 to 64 inches; yellowish brown (10YR 5/6) loamy sand; common medium distinct light gray (10YR 7/1) and few fine distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable; sand grains are coated and bridged with clay; medium acid; clear wavy boundary.

B22tg—64 to 86 inches; light gray (10YR 7/1) sandy clay loam; common medium distinct very pale brown (10YR 7/3) and few fine prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

B3g—86 to 89 inches; light gray (N 7/0) sandy loam; few medium faint light brownish gray (10YR 6/2) and few fine distinct very pale brown (10YR 7/4) mottles; weak fine subangular blocky structure; friable; sand grains are well coated with clay; strongly acid.

The solum is 80 inches or more thick. Reaction ranges from very strongly acid to slightly acid in the A horizon and very strongly acid to medium acid in the Bt horizon. A few nodules of ironstone and phosphatic limestone about 1 to 15 millimeters in size are in many pedons but are less than 5 percent by volume.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 4 to 9 inches thick. The A1 or Ap horizon has value of 3 where it is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8 in the upper part and value of 6 to 8 and chroma of 2 to 4 in the lower part. Mottles of brown and yellow range from none to common. Small masses and streaks of light gray or white, uncoated sand grains are throughout some pedons. Gray and red or strong brown mottles indicative of wetness usually are below a depth of 40 inches. The A2 horizon is sand or fine sand. It is 36 to 70 inches thick.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6 or value of 7 and chroma of 4 to 6. In places, it has gray, yellow, and brown mottles. The B21t horizon is loamy sand, loamy fine sand, or sandy loam and ranges from 0 to 8 inches in thickness. Some pedons have a B1 horizon that is loamy sand or loamy fine sand. The B1 horizon does not have argillic properties. The B22t horizon has hue of 10YR, value of 5 through 7, and chroma of 1 through 4. Mottles are in shades of gray, yellow, and brown or are a mixture of these colors. In places, this horizon has matrix colors of gray. The gray is usually at a depth of more than 55 inches. The B22t horizon is sandy loam or sandy clay loam 18 to 26 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 5 through 7, and chroma of 2 or less. It is generally mottled in various shades of gray, yellow, and brown. The B3g horizon is sandy loam or sandy clay loam.

Monteocha Series

The Monteocha series consists of very poorly drained soils that formed in thick deposits of sandy and loamy sediment of marine origin. These soils are in ponds and shallow depressional areas in the flatwoods. Slopes are less than 2 percent. The water table is within 10 inches of the surface for 6 months or more. Water stands on the surface for about 4 months or more during most years. These soils are sandy, siliceous, hyperthermic Ultic Haplaquods.

Monteocha soils are geographically associated with Mulat, Plummer, Pomona, Samsula, Surrency, Terra Ceia, and Wauchula soils. Mulat and Plummer soils are poorly drained, have a thinner A1 horizon, and do not have a spodic horizon. Pomona soils are poorly drained and have a thinner A1 horizon. Samsula and Terra Ceia soils are of organic origin. Surrency soils have a loamy Btg horizon 20 to 40 inches below the surface and do not have a spodic horizon. Wauchula soils have a thinner A horizon and are poorly drained.

Typical pedon of Monteocha sand, in a cypress pond 0.4 mile northeast of intersection of State Road 121 and U.S. Highway 441, 200 feet east of trail road, NE1/4NW1/4 sec. 18, T. 9 S., R. 20 E.

A1—0 to 12 inches; black (N 2/0) loamy sand; moderate medium granular structure; many fine and medium roots, few large roots; extremely acid; clear smooth boundary.

A2—12 to 18 inches; light brownish gray (10YR 6/2) sand; common fine and medium faint light gray (10YR 7/1) mottles; weak fine granular structure; very friable; common fine and few medium roots; extremely acid; abrupt wavy boundary.

B2h—18 to 27 inches; dark brown (7.5YR 3/2) sand; moderate medium granular structure; friable; common fine and few medium roots; sand grains are well coated with organic matter; extremely acid; clear wavy boundary.

B3—27 to 34 inches; brown (10YR 4/3) sand; common medium faint dark brown (10YR 3/3) and (7.5YR 3/2) mottles; weak medium granular structure; very friable; few fine and medium roots; very strongly acid; clear wavy boundary.

A'2—34 to 48 inches; brown (10YR 5/3) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

B'21tg—48 to 59 inches; grayish brown (10YR 5/2) fine sandy loam; few fine faint dark brown streaks along root channels; weak fine subangular blocky parting to moderate medium granular structure; friable; few fine roots; sand grains are well coated and bridged with clay; very strongly acid; clear wavy boundary.

B'22tg—59 to 85 inches; light brownish gray (10YR 6/2) sandy loam; weak fine subangular blocky parting to moderate medium granular structure; friable; sand grains are well coated and bridged with clay; very strongly acid; clear wavy boundary.

Cg—85 to 94 inches; light gray (10YR 7/2) sand; massive; nonsticky; sand grains are coated; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid in all horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 10 to 24 inches thick. Organic matter content of the A1 horizon ranges from about 5 to 16 percent. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sand or fine sand. The A2 horizon is 6 to 18 inches thick. The A horizon ranges from 17 to 30 inches in thickness.

The B2h horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2. It also has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The B2h horizon is sand or fine sand 6 to 15 inches thick. The Bh horizon is usually saturated with water but has little or no cementation. When this horizon is dry, a weak cementation is evident in most pedons. The B3 horizon has hue of 10YR, value of 4, and chroma of 2 or 3 or value of 5, and chroma of 3. In places, it has dark brownish mottles. The B3 horizon is sand or fine sand 0 to 7 inches thick.

The A'2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 3. In some pedons, this horizon has few to common gray, yellow, or brown mottles. It is sand or fine sand 8 to 15 inches thick.

The B'2tg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less or value of 4 and chroma of 1 or less. In places, it has yellow and brown mottles. The B'2tg horizon is fine sandy loam, sandy loam, or sandy clay loam. The B'21tg horizon is 8 to 16 inches thick, and the B'22tg horizon is 10 to 26 inches thick. In some pedons this horizon has a few fine streaks and masses of coarser textured material. Some pedons have a B'3g horizon that is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. Where present, the B'3g horizon ranges from loamy sand to sandy loam.

The Cg horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. It is sand, loamy sand, or sandy loam.

Mulat Series

The Mulat series consists of nearly level, poorly drained soils that formed in thick beds of loamy marine sediment. They are nearly level and in the broad areas of the flatwoods. Slopes are 0 to 2 percent. The water table is at a depth of less than 10 inches for 2 to 4 months and at a depth of 10 to 30 inches for about 2 to 4 months during most years. These soils are loamy, siliceous, thermic Arenic Ochraquults.

Mulat soils are geographically associated with Monteocha, Newnan, Pelham, Plummer, Pomona, and Wauchula soils. Monteocha and Newnan soils have an A horizon more than 40 inches thick and have a spodic horizon. Monteocha soils are also very poorly drained.

Pelham soils do not have a 20 percent decrease in clay content in the Btg horizon within 60 inches of the surface. Plummer soils have an A horizon 40 to 80 inches thick. Pomona and Wauchula soils have a spodic horizon, and the Pomona soils have a B'tg horizon 40 to 80 inches below the surface.

Typical pedon of Mulat sand, 200 feet south of graded road and 0.8 mile west of U.S. Highway 441, NE1/4NW1/4 sec. 3, T. 9 S., R. 19 E.

Ap1—0 to 5 inches; very dark gray (10YR 3/1) sand; weak medium granular structure; very friable; few fine roots; slightly acid; clear smooth boundary.

Ap2—5 to 8 inches; dark gray (10YR 4/1) sand; few fine faint grayish brown mottles; weak medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

A21—8 to 12 inches; grayish brown (10YR 5/2) sand; few fine faint light brownish gray mottles; weak medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

A22—12 to 21 inches; light brownish gray (10YR 6/2) sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A23—21 to 26 inches; light gray (10YR 7/2) sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B1g—26 to 30 inches; gray (10YR 6/1) loamy sand; moderate medium granular structure; very friable; very strongly acid; clear smooth boundary.

B2tg—30 to 47 inches; gray (10YR 6/1) and light brownish gray (10YR 6/2) fine sandy loam; few medium prominent strong brown (7.5YR 5/6) and many medium prominent yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; sand grains are well coated and bridged with clay; very strongly acid; clear irregular boundary.

B3g—47 to 54 inches; gray (10YR 6/1) loamy sand; few medium distinct brown (10YR 5/3) mottles; moderate medium granular structure; very friable; very strongly acid; clear wavy boundary.

Cg—54 to 80 inches; light gray (10YR 7/1) loamy sand; massive; slightly cemented, compact; medium acid.

The solum is 48 to 65 inches thick. The clay content decreases by 20 percent or more of its maximum in the Btg horizon within a depth of 60 inches. Reaction is very strongly acid to medium acid in all horizons, except where limed.

The A1 or Ap horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 4 to 8 inches thick. The A1 or Ap horizon has value of 2 or 3 where it is only 4 or 5 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has mottles in shades of gray, yellow, and brown. The A2 horizon ranges from 16 to 32 inches in thickness.

Where present, the B1g horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less. In places, it has mottles in various shades of yellow, brown, and red. It ranges from 0 to 6 inches thick. The B2tg horizon has hue of 10YR, value of 4 or 5, and chroma of 1, or value of 6 or 7 and chroma of 1 or 2. It also is neutral and has value of 4 to 6 or has hue of 5Y, value of 4 to 6, and chroma of 1 or 2. Most pedons have few to common mottles in shades of yellow, brown, and red. The B2tg horizon is sandy loam, fine sandy loam, or sandy clay loam. Clay content is centered on about 14 to 22 percent. The B2tg horizon ranges from 12 to 20 inches in thickness. The B3g horizon has the same color range as the B2tg horizon. It is usually loamy sand or loamy fine sand, but the range includes sandy loam. This horizon is 0 to 12 inches thick.

The Cg horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1 or 2. It also is neutral and has value of 5 or 6. In places it has mottles in shades of yellow. The Cg horizon is loamy sand, sand, or fine sand.

Myakka Series

The Myakka series consists of nearly level, poorly drained soils that formed in thick beds of sandy marine deposits. These soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. The water table is at a depth of less than 10 inches for 1 to 4 months during most years and recedes to a depth of more than 40 inches during dry seasons. These soils are sandy, siliceous, hyperthermic Aeric Haplaquods.

Myakka soils are geographically associated with Chipley, Newnan, Placid, Pomona, Pompano, Pottsburg, Sparr, and Tavares soils. Chipley soils are somewhat poorly drained and lack a spodic horizon. Newnan soils are somewhat poorly drained and have a B't horizon at a depth of 40 to 80 inches. Placid soils are very poorly drained and do not have a spodic horizon. Pomona soils have a B'tg horizon. Pompano soils do not have a spodic horizon. Pottsburg soils have a spodic horizon at a depth of more than 50 inches. The Sparr soils are somewhat poorly drained, have a Bt horizon, and do not have a spodic horizon. Tavares soils are moderately well drained and do not have a spodic horizon.

Typical pedon of Myakka sand, about 1 mile east of State Road 225, and 2 1/2 miles north of a junction with State Road 20, on the University of Florida's Beef Research Center, SW1/4SW1/4 sec. 36, T. 8 S., R. 20 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; common grass roots; neutral; clear smooth boundary.

A2—8 to 24 inches; light gray (10YR 7/1) sand; single grained; loose; few grass roots; medium acid; abrupt wavy boundary.

B2h—24 to 30 inches; very dark brown (10YR 2/2) sand; common medium faint dark brown (10YR 3/3) mottles; moderate medium granular structure; friable; few grass roots; sand grains are well coated with organic matter; strongly acid; clear wavy boundary.

B3—30 to 35 inches; dark brown (10YR 4/3) sand; few medium faint very dark grayish brown (10YR 3/2) vertical streaks which follow along root channels; weak fine granular structure; very friable; few roots; very strongly acid; clear irregular boundary.

C1—35 to 53 inches; very pale brown (10YR 7/3) sand; common medium faint pale brown (10YR 6/3), common fine faint light gray, and few fine distinct dark grayish brown (10YR 4/2) mottles; single grained; loose; very few roots; strongly acid; clear wavy boundary.

C2—53 to 82 inches; light brownish gray (10YR 6/2) fine sand; few medium and coarse distinct dark gray (10YR 4/1) mottles; single grained; loose; medium acid.

Reaction ranges from extremely acid to slightly acid, except in areas where lime has been added.

The A1 or Ap horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less or value of 4 and chroma of 2 or less. It is 4 to 8 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1. It also is neutral and has value of 6 or 7. It is 12 to 25 inches thick.

The B2h horizon has hue of 10YR, value of 2, and chroma of 1 or 2, or value of 3 and chroma of 3. It also is neutral and has value of 2; hue of 7.5YR, value of 3, and chroma of 2; or hue of 5YR, value of 2, and chroma of 1 or 2 or value of 3 and chroma of 2 or 3. The sand grains are well coated with organic matter. The consistence of this horizon is friable to firm. The sand grains in this horizon are noncemented or weakly cemented. The B2h horizon ranges from 6 to 18 inches in thickness. It is sand or fine sand. The B2h horizon is black where it is less than 12 inches thick. The B3 horizon has hue of 10YR, value of 3, and chroma of 3 or value of 4 to 5 and chroma of 3 or hue of 7.5YR, value of 4, and chroma of 4. It is sand or fine sand 5 to 14 inches thick.

The C horizon has value of 5 and chroma of 1 to 3; value of 6 and chroma of 2, or value of 7 and chroma of 3 or 4. In places, it has mottles in shades of yellow, brown, and gray. It is sand or fine sand. The C horizon is more than 15 inches thick.

The spodic horizon is too thin and the organic carbon content is too low to place these soils in the Myakka series. This difference, however, does not alter the usefulness and behavior of the soil.

Newnan Series

The Newnan series are nearly level, somewhat poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These soils are on slightly convex slopes in broad areas of the flatwoods and along the fringe between the flatwoods and uplands. Slopes range from 0 to 2 percent. The water table is at a depth of 18 to 30 inches for 1 to 2 months and at a depth of 30 to 60 inches for 2 to 5 months during most years. These soils are sandy, siliceous, hyperthermic Ultic Haplohumods.

Newnan soils are geographically associated with Chipley, Mulat, Myakka, Oleno, Pompano, Sparr, and Wauchula soils. Chipley soils are sandy to a depth of 80 inches or more. They lack a spodic horizon. Mulat soils are poorly drained, have an A horizon 20 to 40 inches thick, and do not have a spodic horizon. Myakka soils are poorly drained and are sandy to 80 inches or more. Oleno soils are poorly drained and formed from clayey fluvial sediment. Pomona soils are poorly drained. Sparr soils do not have a spodic horizon. Wauchula soils are poorly drained and have a B't horizon less than 40 inches below the surface.

Typical pedon of Newnan sand, in a wooded area, 100 feet north of graded road, 0.3 mile north and 0.5 mile east of intersection of U.S. Highway 441 and State Road 121, north of Gainesville, NW1/4NE1/4 sec. 18, T. 9 S., R. 20 E.

A1—0 to 5 inches; dark gray (10YR 4/1) sand; single grained; loose; many fine and medium roots; very strongly acid; gradual wavy boundary.

A2—5 to 12 inches; light brownish gray (10YR 6/2) sand; single grained; loose; many fine roots; strongly acid; clear wavy boundary.

B2h—12 to 16 inches; dark brown (7.5YR 3/2) sand; weak fine subangular blocky structure; friable; few fine roots; sand grains are coated; very strongly acid; clear wavy boundary.

B3—16 to 20 inches; brown (7.5YR 4/4) sand; few medium faint dark brown (7.5YR 3/2) and few fine distinct light gray (10YR 7/2) mottles; moderate medium granular structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

A'21—20 to 27 inches; light gray (10YR 7/2) sand; few fine prominent strong brown (7.5YR 5/6) mottles; weak medium granular structure; very friable; many fine roots; medium acid; gradual wavy boundary.

A'22—27 to 56 inches; white (10YR 8/2) sand; single grained; loose; few fine roots; medium acid; gradual wavy boundary.

B'1g—56 to 59 inches; light gray (10YR 7/2) loamy sand; few medium distinct brownish yellow (10YR 6/6) mottles; weak fine granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

B'21tg—59 to 75 inches; light gray (10YR 7/1) fine sandy loam; common medium distinct brownish yellow (10YR 6/6) and few fine prominent dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

B'22tg—75 to 82 inches; light gray (10YR 7/1) sandy clay loam; common medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few roots; faint discontinuous clay films along faces of peds; strongly acid.

The solum is more than 60 inches thick. Soil reaction is extremely acid to medium acid in all horizons. The A horizon is less than 30 inches thick. An argillic horizon ranges in depth from 40 to 80 inches.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is also neutral and has value of 3 to 4. It is 4 to 8 inches thick. The A1 horizon or Ap horizon has value of 3 where it is only 4 or 5 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sand or fine sand. In some pedons this horizon has a few yellow or brown mottles. It ranges from 6 to 22 inches thick.

The B2h horizon has hue of 10YR, value of 2, and chroma of 1 or 2 or value of 3 and chroma of 2 to 4; hue of 7.5YR, value of 3, and chroma of 2; or hue of 5YR, value of 2 or 3, and chroma of 2 or 3. The B2h horizon is sand or fine sand. The sand grains are well coated with organic matter. The consistence of the B2h horizon is usually friable or very friable. The B2h horizon is noncemented or only very weakly cemented. It ranges from 4 to 12 inches in thickness. The B3 horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4 or hue of 7.5YR, value of 4, and chroma of 2 to 4. In places, it has some brown or gray mottles. The B3 horizon is usually sand but range includes fine sand 0 to 6 inches thick.

The A'2 horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 4 or value of 5 and chroma of 2 or 3. In places, it has mottles in shades of gray, yellow, and brown. It is sand or fine sand 18 to 44 inches thick.

Where present, the B'1g horizon has hue of 10YR and 2.5Y, value of 5 to 7, and chroma of 1 to 3. It has mottles in shades of gray, yellow, or brown, or it is a mixture of these colors. The B'1g horizon is loamy sand or loamy fine sand 0 to 6 inches thick. The B'2tg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is mottled. It is sandy loam, fine sandy loam, or sandy clay loam.

Norfolk Series

The Norfolk series consists of gently sloping to sloping, well drained soils that formed in thick beds of medium to moderately fine textured marine sediment. These soils are on slightly convex, gentle slopes and along hillsides of uplands. Slopes range from 0 to 8 percent. The water table is at a depth of about 48 to 72 inches for 1 to 3 months during most years. These soils are fine-loamy, siliceous, thermic Typic Paleudults.

Norfolk soils are geographically associated with Arredondo, Bivans, Kendrick, and Micanopy soils. Arredondo soils have an A horizon 40 to 80 inches thick. Bivans soils are poorly drained and have a clayey Bt horizon. Kendrick soils have an A horizon 20 to 40 inches thick. Micanopy soils are somewhat poorly drained.

Typical pedon of Norfolk loamy fine sand, 2 to 5 percent slopes, 0.7 mile west of State Road 235A, 0.8 mile south of U.S. Highway 441 west of Alachua, NE1/4SW1/4 sec. 17, T. 8 S., R. 18 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand; moderate medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

B1—9 to 15 inches; yellowish brown (10YR 5/6) fine sandy loam; moderate medium granular structure; very friable; few fine roots; 1 percent fine ironstone and phosphatic limestone nodules; sand grains are well coated with clay; medium acid; clear wavy boundary.

B21t—15 to 26 inches; dark yellowish brown (10YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; about 1 percent fine ironstone and phosphatic limestone nodules; strongly acid; gradual wavy boundary.

B22t—26 to 41 inches; dark yellowish brown (10YR 3/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; 3 percent fine ironstone and phosphatic limestone nodules; strongly acid; clear wavy boundary.

B23t—41 to 55 inches; dark yellowish brown (10YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; few fine roots; distinct clay films on faces of peds; about 1 percent fine ironstone and phosphatic limestone nodules; strongly acid; clear wavy boundary.

B3—55 to 62 inches; dark yellowish brown (10YR 4/6) clay, common fine distinct light gray (10YR 7/1), few fine prominent reddish brown (5YR 4/4) and common fine and medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; firm; few thin clay films on faces of peds; about 1 percent fine ironstone and phosphatic limestone nodules; very strongly acid; clear wavy boundary.

C—62 to 80 inches; light gray (5Y 7/1) clay, common large prominent yellowish red (5YR 4/6) and common fine distinct brownish yellow (10YR 6/6) mottles; massive; firm; about 1 percent fine ironstone and phosphatic limestone nodules; few slickensides; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to strongly acid in all horizons except where limed. Nodules of ironstone and fragments and nodules of weathered phosphatic limestone, 2 to 76 millimeters in diameter, are in most pedons. They are less than 5 percent by volume.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is 6 to 10 inches thick. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is 4 to 10 inches thick. In some pedons the A2 horizon has been mixed with the Ap horizon by cultivating.

The B1 horizon has hue of 10YR, value of 4, and chroma of 3 or 4 or value of 5 or 6 and chroma of 4 to 8. It is sandy loam or fine sandy loam 2 to 5 inches thick. The B21t horizon has hue of 10YR, value of 4 to 6 or and chroma of 4 to 8. In places, it has a few fine mottles in shades of yellow and brown. The B21t horizon is 10 to 24 inches thick. The B22t horizon has hue of 10YR, value of 3, and chroma of 4 or value of 4 to 6 and chroma of 4 to 8. In places, it has a few fine mottles in shades of yellow and brown. It ranges from 14 to 24 inches in thickness. The B23t horizon has the same color range as the B22t horizon. Some pedons also contain gray mottles. The B23t horizon is sandy clay loam or sandy clay 10 to 16 inches thick. The B3 horizon has hue of 10YR, value of 4, and chroma of 4 to 6 or value of 5 or 6 and chroma of 1 to 6. Mottles are yellowish, brownish, and grayish. The B3 horizon is sandy clay loam, sandy clay, or clay 7 to 12 inches thick.

The C horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1 or 2. Mottles are yellow, brown, or red. The C horizon is sandy clay or clay. Some pedons contain lenses and pockets of coarser textured material.

Okeechobee Series

The Okeechobee soils are nearly level, very poorly drained organic soils that formed mostly from nonwoody hydrophytic plant remains mixed with some woody material. These soils are in large fresh water marshes. Slopes range from 0 to 1 percent. The water table is at the surface, or the soil is ponded during most of the year. These soils are euic, hyperthermic Hemic Medisaprists.

Okeechobee soils are geographically associated with Samsula, Shenks, and Terra Ceia soils. Samsula soils have sandy materials below a depth of 40 inches. Shenks soils have clay material below the organic material. Terra Ceia soils have a lower fiber content throughout the upper 52 inches of the organic material.

Typical pedon of Okeechobee muck, in an area adjacent to Orange Lake, about 1 mile east of U.S. 301 and 0.8 mile south of Orange Creek, SW1/4SE1/4NE1/4 sec. 22, T. 12 S., R. 22 E.

Oa1—0 to 7 inches; black (10YR 2/1) muck; about 30 percent fiber unrubbed and 5 percent fiber rubbed; moderate medium granular structure; very friable; sodium pyrophosphate extract is very pale brown (10YR 7/4); medium acid; clear wavy boundary.

Oa2—7 to 21 inches; dark brown (10YR 3/3) muck; about 40 percent fiber unrubbed and 5 percent fiber rubbed; massive; friable; sodium pyrophosphate extract is very pale brown (10YR 0a4); medium acid; gradual wavy boundary.

Oe—21 to 35 inches; dark reddish brown (5YR 3/4) peaty muck; 70 percent fiber unrubbed and 30 percent fiber rubbed; massive; friable; sodium pyrophosphate extract is very pale brown (10YR 8/3); medium acid (pH 5.0 in 0.01 molar calcium chloride); clear wavy boundary.

Oa3—35 to 48 inches; black (10YR 2/1) muck; about 40 percent fiber unrubbed and less than 10 percent fiber rubbed; massive; friable; sodium pyrophosphate extract is light yellowish brown (10YR 6/4); medium acid (pH 5.0 in 0.01 molar calcium chloride); gradual wavy boundary.

Oa4—48 to 80 inches; very dark brown (10YR 2/2) muck; 40 percent fiber unrubbed and about 10 to 15 percent fiber rubbed; massive; friable; sodium pyrophosphate extract is very pale brown (10YR 7/4); slightly acid (pH 5.5 in 0.01 molar calcium chloride).

Reaction is more than 4.5 in the 0.01 molar calcium chloride solution and 5.6 to 7.0 by the Hellige-Truog method throughout the profile. The organic material extends to a depth of more than 51 inches.

The Oa horizons have hue of 5YR, value of 2, and chroma of 1 or 2, or value of 3 and chroma of 2 to 4; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2, and chroma of 1 or 2, or value of 3 and chroma of 3. The fiber content ranges from 10 to 45 percent before rubbing and 2 to 16 percent after rubbing. Sodium pyrophosphate extract has hue of 10YR, value of 3 to 6, and chroma of 3 or 4 or value of 7 and chroma of 4. The Oap is 6 to 12 inches thick. The Oa2 ranges from 12 to 25 inches in thickness.

The Oe horizon has hue of 5YR, value of 2, and chroma of 1 or 2, or value of 3 and chroma of 2 to 4 or hue of 7.5YR, value of 3, and chroma of 2. It also has hue of 10YR, value of 2, and chroma of 1 or 2, or value of 3 and chroma of 3 or 4 or value of 4 and chroma of 3 or 4. The fiber content is 35 to 70 percent unrubbed and 16 to 35 percent when rubbed. This horizon commonly is between 20 and 40 inches below the surface. This layer ranges from 12 to 25 inches in thickness. Sodium pyrophosphate extract has hue of 10YR, value of 5, and chroma of 1 or value of 6 and chroma of 1 or 2 or value of 7 and chroma of 3 or value of 8 and chroma of 4 to 8.

Oleno Series

The Oleno series consists of nearly level, poorly drained soils that formed in clayey fluvial sediment over sandy and loamy marine sediment. These soils are along the flood plains of creeks and rivers. Slopes are less than 2 percent. These soils are occasionally flooded for periods of about 1 month or less. The water table is at a depth of 6 to 18 inches for 6 to 8 months during most years. These soils are clayey over loamy, montmorillonitic, acid, thermic Vertic Haplaquepts.

Oleno soils are geographically associated with Jonesville, Millhopper, and Newnan soils. None of these associated soils are normally subject to flooding. Jonesville soils are well drained and are underlain with limestone at a depth of about 26 to 59 inches. Millhopper soils are moderately well drained. Newnan soils are somewhat poorly drained and have a Bh horizon at a depth of less than 30 inches.

Typical pedon of Oleno clay, occasionally flooded, on the flood plains of the Santa Fe River, about 3.5 miles northeast of U.S. Highway, and about 500 feet east of the Alachua-Columbia County line, SW1/4SW1/4 sec. 11, T. 7 S., R. 17 E.

A1—0 to 6 inches; dark gray (10YR 4/1) clay; common fine faint black (10YR 2/1) and few fine distinct yellowish brown (10YR 5/4) mottles; massive; very firm, sticky and plastic when wet; common fine and medium roots; very strongly acid; clear wavy boundary.

B1—6 to 18 inches; gray (10YR 5/1) clay; moderate fine subangular blocky structure; firm, sticky and plastic when wet; common fine and medium roots; extremely acid; clear wavy boundary.

B2—18 to 24 inches; dark gray (10YR 4/1) clay; moderate medium subangular blocky structure; firm, sticky and plastic when wet; few roots; extremely acid; clear wavy boundary.

B3—24 to 32 inches; gray (10YR 5/1) clay; common medium faint dark gray (10YR 4/1) mottles; moderate medium subangular blocky structure; friable; few roots; extremely acid; clear wavy boundary.

IIA21—32 to 42 inches; grayish brown (10YR 5/2) fine sandy loam; many fine faint light gray mottles; weak fine granular structure; very friable; few roots; strongly acid; gradual wavy boundary.

IIA22—42 to 55 inches; gray (10YR 5/1) fine sandy loam; sand, loamy sand, and sandy clay loam lenses before mixing; weak medium granular structure; very friable; few roots; strongly acid; clear wavy boundary.

IIB1g—55 to 71 inches; dark gray (10YR 4/1) fine sandy loam; many medium faint gray (10YR 6/1) and light brownish gray (10YR 6/2) mottles; moderate medium granular structure; friable; few fine and medium pockets of sandy clay loam; medium acid; clear wavy boundary.

IIB2g—71 to 77 inches; gray (5Y 6/1) sandy clay loam; common medium prominent brownish yellow (10YR 6/6), common large faint light gray (10YR 7/1) and few medium distinct greenish gray (5GY 6/1) mottles; moderate medium subangular blocky structure; firm; slightly acid; clear wavy boundary.

IICg—77 to 82 inches; greenish gray (5BG 6/1) clay; massive; very firm, sticky and plastic; few fine and medium light gray nodules and fragments of limestone; neutral.

The solum is 66 inches or more thick. Reaction ranges from extremely acid to medium acid in the A horizon and from extremely acid to slightly acid in the B horizon. Reaction of the IIA2 horizon is very strongly acid to neutral. It is strongly acid to mildly alkaline in the IIBg and medium acid to mildly alkaline in the IICg horizon. Limestone is at a depth of 70 inches or more.

The A horizon is neutral or has hue of 10YR, value of 2 to 5, and chroma of 1 or less. It is 4 to 10 inches thick. The A horizon has value of 2 or 3 where it is only 4 to 7 inches thick.

The B horizon is neutral or has hue of 10YR, value of 2 to 6, and chroma of 1 or less. The range of gray mottles in the lower part is none to many. The B horizon is 22 to 37 inches thick.

The IIA2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has few to many mottles in shades of gray. The IIA2 horizon is fine sand, loamy sand, loamy fine sand, sandy loam, or fine sandy loam. It ranges from 18 to 30 inches in thickness. Fresh water shell deposits are in this horizon in some pedons.

The IIB1g horizon has hue of 10YR or 5Y, value of 4 to 7, and chroma of 1 or 2. Mottles are in shades of gray, yellow, or brown. The IIB1g is sandy loam, fine sandy loam, or sandy clay loam. The IIB2g horizon has the same color range as the IIB1g horizon. The IIB2g is sandy clay loam or sandy clay. Clay content ranges from 22 to 40 percent. The IIBg horizon is 18 to 25 inches thick.

The IICg horizon has hue of 5BG or 5B, value of 5 or 6, and chroma of 1 or hue of 10YR, value of 5 to 7, and chroma of 1. It is sandy clay or clay. Few to many fragments of limestone and shell are in many pedons.

Pedro Series

The Pedro series are nearly level to gently sloping, well drained soils that formed in thin beds of sandy and loamy sediment overlying limestone. These soils are within the highly complex "limestone plain" of the gently rolling uplands. Slopes range from 0 to 5 percent. The water table is more than 72 inches below the surface. These soils are fine-loamy, siliceous, hyperthermic, shallow Typic Hapludalfs.

Pedro soils are geographically associated with Apopka, Candler, and Jonesville soils. Apopka soils have a sandy A horizon 40 to 80 inches thick. Cadillac soils have a sandy textured A horizon 40 or more inches thick. Jonesville soils have a sandy A horizon 20 to 40 inches thick and have soft underlying limestone at a depth of 26 to 59 inches.

Typical pedon of Pedro fine sand, 0 to 5 percent slopes, in an area 0.1 mile south of State Road 26, 0.25 mile east of U.S. Highway 41 at Newberry, NW1/4SW1/4 sec. 3, T. 10 S., R. 17 E.

Ap—0 to 5 inches; dark gray (10YR 4/1) fine sand; moderate medium granular structure; very friable; common fine roots; medium acid; clear smooth boundary.

A2—5 to 12 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint very pale brown mottles; single grained; loose; few fine roots; medium acid; clear wavy boundary.

Bt—12 to 17 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; sand grains are well coated and bridged with clay; few fragments of limestone 2 to 15 millimeters in diameter and 2 percent by volume in the lower 2 inches; neutral; abrupt irregular boundary.

IIR—17 to 72 inches; white (10YR 8/1) limestone soft enough to be dug with light power equipment such as a backhoe; few fine and medium fragments of hard limestone; moderately alkaline.

This soil is cyclic. The thickness of the solum and the depth to limestone are 6 to 20 inches. Within the pedon, the thickness ranges to about 60 inches in solution holes. In some pedons, intrusions of hard limestone fragments are at a depth of 6 inches or less below the surface. Reaction of the A horizon ranges from strongly acid to slightly acid, and reaction of the Bt horizon ranges from slightly acid to mildly alkaline. Limestone boulders are on the surface of many pedons.

The A1 or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 1. It is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. It is normally 4 to 15 inches, but cyclic thickness is 1 to 44 inches within the pedon. Texture is fine sand or sand.

The Bt horizon has hue of 10YR, value of 5, and chroma of 6 to 8, or value of 6 and chroma of 4 to 8. It also has hue of 7.5YR, value of 5, and chroma of 6 to 8. The Bt horizon is sandy clay loam. The cyclic thickness of the B horizon is 0 to 24 inches. The B horizon is 3 to 12 inches thick and meets the requirements of an argillic horizon in about 55 to 60 percent of the pedon. In about 15 to 25 percent of each pedon, this horizon meets all the requirements for an argillic horizon except for thickness. In about 10 to 15 percent of the pedon, this Bt horizon is absent, and the sandy A horizon is on the surface of the soft, partially decomposed limestone. In some pedons, the B horizon has few or common, fine and medium fragments of soft and hard limestone. Solution holes, which may extend to a depth of about 60 inches below the surface, comprise about 3 to 10 percent of the pedon. In the deeper solution holes, the lower part of the B horizon usually contains about 15 to 45 percent fine to medium nodules of soft limestone and fragments of hard limestone.

The IIR horizon is limestone soft enough to be dug with light power equipment, such as a backhoe. It is usually white but range includes very pale brown and pale yellow. This horizon extends to a depth of more than 72 inches. The IIR horizon may occasionally have small intrusions of hard limestone fragments and boulders.

Pelham Series

The Pelham series consists of nearly level, poorly drained soils that formed in thick beds of loamy marine sediment. These soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. The water table is less than 10 inches below the surface for 1 to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches. These soils are loamy, siliceous, thermic Arenic Paleaquults.

Pelham soils are geographically associated with Mulat, Pomona, Riviera, Surrency, and Wauchula soils. Mulat soils decrease in clay content in the Btg horizon by 20 percent or more within 60 inches of the surface. Pomona soils have a Bh horizon, and the Btg horizon is below 40 inches. Riviera soils have base saturation of more than 35 percent and have tongues of the A2 leading into the Btg horizon. Surrency soils are very poorly drained and have a thick, dark A1 horizon. Wauchula soils have a Bh horizon above the Btg horizon.

Typical pedon of Pelham sand, about 0.4 mile east of U.S. Highway 441 and 0.4 mile north of Gainesville Livestock Market, NW1/4SE1/4 sec. 8, T. 19 S., R. 20 E.

A11—0 to 4 inches; very dark gray (10YR 3/1) sand; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

A12—4 to 7 inches; dark gray (10YR 4/1) sand; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

A21—7 to 14 inches; light brownish gray (10YR 6/2) sand; few fine faint gray mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

A22—14 to 29 inches; gray (10YR 6/1) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

B21tg—29 to 32 inches; gray (10YR 5/1) sandy loam; weak fine subangular blocky structure; friable; few roots; sand grains are coated and bridged with clay; very strongly acid; clear wavy boundary.

B22tg—32 to 43 inches; gray (10YR 5/1) sandy clay loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; thin discontinuous clay films on ped faces; very strongly acid; clear wavy boundary.

B23tg—43 to 69 inches; gray (10YR 6/1) sandy clay loam; few fine distinct light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; thin discontinuous clay films on ped faces; very strongly acid; clear wavy boundary.

Cg—69 to 80 inches; gray (10YR 6/1) sandy loam; few fine and medium faint light brownish gray, few fine distinct very pale brown (10YR 7/4) and yellowish brown (10YR 5/6) mottles; massive; friable; coarse lenses of coarser and finer textured material; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid through strongly acid.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. The A1 horizon is 4 to 8 inches thick. The A1 horizon is black or very dark gray when it is only 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has gray, yellow, and brown mottles. The A2 horizon is sand or fine sand 18 to 32 inches thick.

The B2tg horizon has hue of 10YR through 5Y, value of 5 to 7, and chroma of 2 or less. It is sandy loam or sandy clay loam 26 to 40 or more inches thick. Some pedons have a B3g horizon. Where present, it has hue of 10YR, value of 5 to 7, and chroma of 1. It is sandy loam or sandy clay loam. In some pedons the Btg horizon decreases in clay content by 20 percent or more of its maximum within a depth of 60 inches. In these pedons, however, clay content increases for a second time between the depths of 60 and 80 inches.

The Cg horizon has hue of 10YR, value of 5, and chroma of 1, or has value of 6 or 7 and chroma of 1 or 2. It is sandy loam, sandy clay loam, or sandy clay.

Placid Series

The Placid series consists of nearly level, very poorly drained sandy soils that formed in sandy marine sediment. These soils are in wet depressional areas and along poorly defined drainageways in the flatwoods. Slopes range from 0 to 2 percent. During most years the water table is less than 10 inches below the surface for more than 6 months. Most depressional areas are covered with water for 6 months or more annually. These soils are sandy, siliceous, hyperthermic Typic Humaquepts.

Placid soils are geographically associated with Chipley, Myakka, Pompano, Samsula, and Tavares soils. Chipley, Myakka, Pompano, and Tavares soils all have a thinner A1 horizon. Chipley soils are somewhat poorly drained, and Myakka and Pompano soils are poorly drained. Tavares soils are moderately well drained. Samsula soils are of organic origin.

Typical pedon of Placid sand, depressional, about 200 feet north of State Road 26, 0.4 mile west of junction with State Road 219A, 1.1 miles west of Melrose, SW1/4SE1/4 sec. 14, T. 9 S., R. 22 E.

A11—0 to 8 inches; black (10YR 2/1) sand; moderate medium granular structure; very friable; common fine and few medium roots; organic matter content about 15 percent; very strongly acid; clear smooth boundary.

A12—8 to 15 inches; very dark gray (10YR 3/1) sand; weak medium granular structure; very friable; few fine and medium roots; very strongly acid; clear wavy boundary.

C1—15 to 21 inches; grayish brown (10YR 5/2) sand; common fine faint light brownish gray mottles; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—21 to 47 inches; light brownish gray (10YR 6/2) sand; few fine distinct yellowish brown (10YR 5/6) mottles; single grained; very strongly acid; clear wavy boundary.

C3—47 to 82 inches; light gray (10YR 7/1) sand; few medium faint light brownish gray (10YR 6/2) mottles; single grained; loose; many uncoated sand grains; very strongly acid.

The soil is sand or fine sand to a depth of 80 inches or more. Reaction ranges from extremely acid to strongly acid in all horizons.

The A horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 2 or less. Organic matter content is less than 20 percent. The A horizon is 12 to 24 inches thick.

The C horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is mottled with various shades of red or yellow. The lower part of the C horizon has thin streaks that have value of 3 or 4 and chroma of 3 or less in some pedons. The C horizon is 70 or more inches thick.

Plummer Series

The Plummer series consists of nearly level, poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are nearly level and are in the broad areas of the flatwoods and along the fringe between the flatwoods and the gently rolling uplands. Slopes are 0 to 2 percent. The water table is at a depth of less than 10 inches for 1 to 3 months and at a depth of 10 to 40 inches for 3 to 4 months during most years. These soils are loamy, siliceous, thermic Grossarenic Paleaquults.

Plummer soils are geographically associated with Monteocha, Mulat, Pomona, Pompano, Pottsburg, and Sparr soils. Monteocha soils have a Bh horizon and are very poorly drained. Mulat soils have a Btg horizon 20 to 40 inches below the surface. Pomona soils have a Bh horizon. Pompano soils are sandy to a depth of more than 80 inches. Pottsburg soils have a Bh horizon below 50 inches. Sparr soils are somewhat poorly drained.

Typical pedon of Plummer fine sand, about 2.1 miles north of Hawthorne, 0.75 mile west of U.S. 301, and 0.50 mile south of graded road, SW1/4NE1/4 sec. 16, T. 10 S., R. 22 E.

Ap—0 to 6 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; common fine roots; extremely acid; clear wavy boundary.

A21—6 to 14 inches; light brownish gray (10YR 6/2) fine sand; few medium faint grayish brown (10YR 5/2) and few fine faint dark grayish brown mottles; single grained; loose; common fine roots; very strongly acid; gradual wavy boundary.

A22—14 to 32 inches; gray (10YR 6/1) fine sand; few fine distinct yellowish brown (10YR 5/4) mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

A23—32 to 42 inches; light gray (10YR 7/2) fine sand; few fine distinct brownish yellow (10YR 6/6) mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

B21tg—42 to 50 inches; light gray (10YR 7/1) very fine sandy loam; common medium and coarse distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; sand grains are coated and bridged with clay; extremely acid; clear wavy boundary.

B22tg—50 to 64 inches; light gray (10YR 7/1) sandy clay loam; many medium and coarse distinct light yellowish brown (10YR 6/4) and few common and coarse prominent red (2.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; sand grains are well coated and bridged with clay; extremely acid; clear wavy boundary.

B3g—64 to 81 inches; light gray (10YR 7/1) sandy clay loam; common medium faint light gray (10YR 7/2), common medium prominent red (2.5YR 5/6), and few fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; strongly acid.

The solum is more than 72 inches thick. Reaction is extremely acid to strongly acid in all horizons.

The Ap or A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1, or value of 4 and chroma of 1 or 2. It also is neutral and has value of 3 to 4. It is 4 to 10 inches thick. The Ap or A1 horizon has value of 3 or less where it is only 4 to 6 inches. The A21 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has mottles in shades of yellow and brown. The A22 and A23 horizons have hue of 10YR, value of 6 or 7, and chroma of 1 or 2. Mottles are in various shades of yellow and brown. The A2 horizon is 36 to 68 inches thick.

The B2tg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It has mottles in various shades of yellow, brown, and red. This horizon is sandy loam, very fine sandy loam, or sandy clay loam 20 to 35 inches thick. Some pedons have a B1g horizon. Where present, the B1g horizon has the same color range as the B2tg horizon. It is loamy sand 4 to 7 inches thick. The B3g horizon has the same color and texture range as the B2tg horizon.

Pomona Series

The Pomona series consists of nearly level, poorly drained soils that formed in beds of sandy and loamy marine deposits. These soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. The water table is at a depth of less than 10 inches for 1 to 3 months and is at a depth of 10 to 40 inches for about 6 months during most years. Depressional areas have water standing on the surface for about 4 months or more. These soils are sandy, siliceous, hyperthermic Ultic Haplaquods.

Pomona soils are geographically associated with Lynne, Monteocha, Mulat, Myakka, Newnan, Pelham, Plummer, Pompano, Pottsburg, Riviera, Samsula, Sparr, Surrency, and Wauchula soils. Mulat, Pelham, Plummer, Pompano, Riviera, Samsula, Sparr, and Surrency soils do not have a Bh horizon. The Mulat and Pelham soils have a Bt horizon 20 to 40 inches below the soil surface. Pompano soils are sandy to a depth of 80 inches or more. Riviera soils have base saturation of more than 35 percent, and they have a Bt horizon 20 to 40 inches below the surface. Samsula soils are very poorly drained and have organic material 16 to 40 inches thick. Sparr soils are somewhat poorly drained. Surrency soils have an umbric A1 horizon and Bt horizon at a depth of 20 to 40 inches. Lynne soils have a clayey B't horizon at a depth of less than 40 inches. Monteocha soils have an umbric A1 horizon and are very poorly drained. Myakka soils are sandy to a depth of 80 inches or more. Newnan soils are somewhat poorly drained. Pottsburg soils have a Bh horizon below a depth of 50 inches and are sandy to a depth of 80 inches or more. Wauchula soils have a B't horizon at a depth of less than 40 inches.

Typical pedon of Pomona sand, in a woods of slash pine and palmetto, 100 feet east of a graded road, 0.3 mile east of U.S. Highway 441 and 0.6 mile north of Gainesville Livestock Market, NE1/4NE1/4, sec. 18, T S., R. 20 E.

A1—0 to 5 inches; very dark gray (N 3/0) sand; weak medium granular structure; very friable; numerous fine and medium roots; some of the sand grains are clean; very strongly acid; clear smooth boundary.

A21—5 to 9 inches; gray (10YR 6/1) sand; single grained; loose; common fine and medium roots; many clean sand grains; very strongly acid; clear wavy boundary.

A22—9 to 16 inches; light gray (10YR 7/2) sand; single grained; loose; few fine roots; many clean sand grains; strongly acid; clear smooth boundary.

B21h—16 to 20 inches; very dark gray (10YR 3/1) sand; moderate medium granular structure; firm; few fine roots; many sand grains coated with organic matter; very strongly acid; clear wavy boundary.

B22h—20 to 24 inches; dark reddish brown (5YR 3/2) sand; weak fine subangular blocky structure; firm; very few fine roots; sand grains are coated with organic matter; very strongly acid; clear wavy boundary.

A'21—24 to 32 inches; pale brown (10YR 6/3) sand; few fine distinct strong brown (7.5YR 5/6) mottles; single grained; loose; very few fine roots; few thin streaks of weakly cemented material that is coated with organic material; strongly acid; gradual irregular boundary.

A'22—32 to 43 inches; very pale brown (10YR 7/3) sand; single grained; loose; medium acid; clear wavy boundary.

B'21tg—43 to 47 inches; light gray (10YR 7/2) fine sandy loam; weak fine subangular blocky structure; friable; sand grains are well coated and bridged with clay; strongly acid; clear wavy boundary.

B'22tg—47 to 69 inches; gray (10YR 6/1) sandy clay loam; few fine prominent strong brown (7.5YR 5/8) and common fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few thin discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

Cg—69 to 84 inches; light gray (10YR 7/1) fine sandy loam; few fine distinct pale brown (10YR 6/3) mottles; massive; very friable; sand grains are coated with clay; strongly acid.

The solum is 60 inches or more thick. Reaction is extremely acid to strongly acid in all horizons except in the A'2 horizon. In the A'2 horizon, reaction ranges from extremely acid to medium acid. The argillic horizon ranges from 40 to 80 inches from the surface.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 and chroma of 1 or value of 6 to 8 and chroma of 1 or 2. In places, it has mottles in shades of yellow and brown. The A2 horizon is 11 to 24 inches thick.

A thin 1- to 2-inch transitional layer is between the A2 horizon and the B2h horizon in many pedons. The transitional layer has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is sand, and many of the sand grains are uncoated. The B2h horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2; hue of 7.5YR, value of 3, and chroma of 2; hue of 5YR, value of 2, and chroma of 1 or 2 or value of 3 and chroma of 2 to 4. It also is neutral and has value of 2. The B2h horizon is sand or fine sand 5 to 16 inches thick. Some pedons have a B3 horizon. Where present, it has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4 and some mottling. The B3 horizon is sand or fine sand 3 to 8 inches thick.

The A'2 horizon has hue of 10YR, value of 4, and chroma of 2, or value of 5 and chroma of 1 or 2 or value of 6 or 7 and chroma of 1 to 3. It is also mixed with these colors. This horizon is sand or fine sand 9 to 24 inches thick.

The B'tg horizon is neutral or has hue of 10YR, value of 5 or 6, and chroma of 1 or less or value of 7 and chroma of 2 or less. In places, the B'tg horizon has mottles in shades of yellow, brown, or red. It is sandy loam, fine sandy loam, or sandy clay loam 18 to 30 inches thick. Some pedons have a B'3g horizon. Where present, it has the same color and texture range as the B'tg horizon, and it is 4 to 10 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It is mottled. This horizon is sandy loam, fine sandy loam, or sandy clay loam and usually contains small streaks and pockets of coarser or finer textured material.

Pompano Series

The Pompano series consists of poorly drained, deep soils that are sandy. These soils are on broad flats and in depressions of the gently rolling uplands. Slopes range from 0 to 2 percent. The water table is at a depth of less than 10 inches for 2 to 6 months during most years. These soils are siliceous, hyperthermic Typic Psammaquents.

Pompano soils are geographically associated with Candler, Chipley, Myakka, Placid, Plummer, Pomona, Pottsburg, Tavares, and Terra Ceia soils. Candler soils are excessively drained and have lamellae below a depth of 50 inches. Chipley soils are somewhat poorly drained. Myakka soils have a Bh horizon within 30 inches of the surface. Placid soils have an A1 horizon 10 to 24 inches thick and are very poorly drained. Plummer soils have a loamy Btg horizon below a depth of 40 inches. Pomona soils have a Bh horizon above 30 inches and a Btg horizon below a depth of 40 inches. Pottsburg soils have a Bh horizon between 50 and 80 inches. Tavares soils are moderately well drained. Terra Ceia soils are organic to a depth of 51 inches or more.

Typical pedon of Pompano sand, about 0.55 mile west of State Road 121, and 1.2 miles east of Deer Haven Power Plant, NE1/4SW1/4 sec. 25, T. 8 S., R. 19 E.

A1—0 to 5 inches; very dark gray (10YR 3/1) and dark gray (10YR 4/1) sand; dark gray when mixed; weak medium granular structure; very friable; few fine and medium roots; strongly acid; clear smooth boundary.

C1—5 to 25 inches; light brownish gray (10YR 6/2) sand; few fine faint light gray and pale brown mottles; single grained; loose; few roots; many clean sand grains; strongly acid; clear wavy boundary.

C2—25 to 70 inches; gray (10YR 6/1) sand; few fine faint light gray and pale brown mottles; single grained; loose; many clean sand grains; strongly acid; clear wavy boundary.

C3—70 to 82 inches; gray (10YR 6/1) sand; single grained; loose; many clean sand grains; strongly acid.

The soil is sand or fine sand to depths of 80 inches or more. The surface is sand. The amount of silt plus clay is less than 10 percent in the 10- to 40-inch control section. Reaction ranges from very strongly acid through slightly acid.

The A horizon is neutral or has hue of 10YR, value of 2 to 5, and chroma of 1 or less. It is 5 to 8 inches thick. The A horizon has value of 2 or 3, where it is only 5 or 6 inches thick.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 3. It has mottles in shades of gray, yellow, or brown. The higher chroma is caused by thin coatings of organic matter on the sand grains. The C horizon is more than 75 inches thick.

Pottsburg Series

The Pottsburg series consists of nearly level, poorly drained soils that formed in thick beds of sandy marine deposits. These soils are in broad areas of the flatwoods. Slopes are 0 to 2 percent. The water table is less than 12 inches below the surface for 1 to 4 months and between 12 and 40 inches for 4 months or longer during most years. These soils are sandy, siliceous, thermic Grossarenic Haplaquods.

Pottsburg soils are geographically associated with Chipley, Myakka, Plummer, Pomona, Pompano, Sparr, Wauchula and Zolfo soils. Chipley, Plummer, Pompano, and Sparr soils do not have a Bh horizon. Chipley and Sparr soils are also somewhat poorly drained, and the Sparr and Plummer soils have a Bt horizon at a depth of 40 to 80 inches. Myakka soils have a Bh horizon 20 to 30 inches below the surface. Pomona soils have a B't horizon 40 to 80 inches below the surface, and Wauchula soils have a B't horizon at a depth of less than 40 inches. Zolfo soils are somewhat poorly drained.

Typical pedon of Pottsburg sand, in an area 0.25 mile east of State Road 225 and 1.3 miles North of intersection with State Road 340, NW1/4SW1/4 sec. 11, T. 8 S., R. 20 E.

Ap—0 to 8 inches; black (N 2/0) sand; moderate medium granular structure; very friable; few fine roots, very few medium roots; extremely acid; clear smooth boundary.

A21—8 to 15 inches; gray (10YR 5/1) sand; weak fine granular structure; very friable; few fine roots, very few medium roots; very strongly acid; clear wavy boundary.

A22—15 to 33 inches; light brownish gray (10YR 6/2) sand; common medium faint light gray (10YR 7/2) and common fine faint very pale brown mottles; single grained; loose; few fine roots, very few medium roots; extremely acid; clear wavy boundary.

A23—33 to 52 inches; light gray (10YR 7/2) sand; common fine distinct brownish yellow (10YR 6/6) and few fine faint white mottles; single grained; loose; few fine roots, very few medium roots; very strongly acid; abrupt wavy boundary.

B21h—52 to 72 inches; very dark grayish brown (10YR 3/2) sand; few medium faint dark gray and few coarse faint black (10YR 2/1) mottles; dark brown (7.5YR 4/2) when mixed; weak fine granular structure; very friable; few fine roots and very few medium roots; sand grains are thinly coated with organic matter; very strongly acid; gradual wavy boundary.

B22h—72 to 86 inches; very dark brown (10YR 2/2) sand; common medium faint dark grayish brown (10YR 4/2) and common fine faint very dark grayish brown mottles; moderate medium granular structure; friable; sand grains are well coated with organic matter; very strongly acid.

The soil is sand or fine sand to a depth of more than 80 inches. The surface layer is sand. Soil reaction ranges from extremely acid to slightly acid in the A horizon and extremely acid to medium acid in the Bh horizon.

The A1 or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. It also is neutral and has value of 2 to 5. It is 4 to 8 inches thick. The A21 horizon has hue of 10YR, value of 4, and chroma of 2, or value of 5 or 6 and chroma of 1 or 2, or value of 7 and chroma of 1 to 3. It ranges from 6 to 18 inches in thickness. The A22 and A23 horizons have hue of 10YR and 2.5Y, value of 6 to 8, and chroma of 1 or 2. They have mottles in various shades of gray, yellow, and brown. The A22 horizon is 10 to 24 inches thick, and the A23 horizon is 15 to 29 inches thick.

The Bh horizon has hue of 5YR, value of 2 or 3, and chroma of 1 or 2; hue of 7.5YR, value of 3 or 4, and chroma of 2 to 4; or hue of 10YR, value of 2 or 3, and chroma of 2 or 3. The sand grains are well coated with organic matter.

Riviera Series

The Riviera series consists of nearly level, poorly drained soils that formed in stratified, unconsolidated sandy and loamy materials. These soils are in the broad areas of the flatwoods. The water table is at a depth of less than 10 inches for 2 to 4 months during most years and at a depth of 10 to 40 inches for much of the remainder of the year. During dry seasons, it may recede to a depth of more than 40 inches. Slopes are less than 2 percent. These soils are loamy, siliceous, hyperthermic Arenic Glossaqualfs.

Riviera soils are geographically associated with Floridana, Pelham, Pomona, and Wauchula soils. Floridana soils have a thicker A1 horizon and are very poorly drained. Pelham soils have an acid reaction and low base saturation. Pomona and Wauchula soils have a Bh horizon.

Typical pedon of Riviera sand, about 0.3 mile east of U.S Highway 441, and 300 feet north of graded road 0.25 mile north of Gainesville Livestock Market, SE1/4SE1/4 sec. 18, T. 9 S., R. 20 E.

A1—0 to 5 inches; very dark gray (N 3/0) sand; few fine dark gray streaks; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

A21—5 to 13 inches; grayish brown (10YR 5/2) sand; common medium faint dark gray (10YR 4/1) mottles; single grained; loose; few fine roots; strongly acid; clear wavy boundary.

A22—13 to 32 inches; gray (10YR 6/1) sand; single grained; loose; few fine roots; slightly acid; clear wavy boundary.

B&A—32 to 42 inches; gray (10YR 5/1) sandy clay loam; few fine distinct very pale brown (10YR 7/3) mottles; common coarse distinct gray (10YR 6/1) tongues of A2 horizon; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; neutral; clear wavy boundary.

B2tg—42 to 53 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; mildly alkaline; clear wavy boundary.

Cg—53 to 80 inches; gray (10YR 5/1) and (10YR 6/1) mixed sandy loam, loamy sand, and sand; massive; friable; moderately alkaline.

The solum is generally 40 to 60 inches thick. The A horizon ranges from strongly acid to slightly acid. The A&B and B2tg horizons range from slightly alkaline to moderately alkaline. The C horizon is moderately alkaline. The base saturation is more than 35 percent.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 2 or less. It is 3 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 through 7, and chroma of 1 or 2. It is sand or fine sand. It is 18 to 30 inches thick.

The B&A horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is also neutral and has value of 5 or 6. The B part of this horizon is sandy loam or sandy clay loam and has tongues of sand extending into this horizon from the A2 horizon. The B&A horizon is 6 to 18 inches thick.

The B2tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 2 or less. This horizon has mottles in shades of yellow and brown. It is sandy loam or sandy clay loam 6 to 11 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is usually mixed sand, loamy sand, and sandy loam.

Samsula Series

The Samsula series consists of nearly level, very poorly drained organic soils that formed mostly from nonwoody, hydrophytic plant remains mixed with some woody material. These soils are in ponded areas and swamps in broad areas of the flatwoods. Slopes range from 0 to 1 percent. The water table is at or above the surface of the soil except during extended dry periods. These soils are sandy or sandy skeletal, siliceous, dysic, hyperthermic Terric Medisaprists.

Samsula soils are geographically associated with Monteocha, Okeechobee, Placid, Pomona, Surrency, Terra Ceia, and Wauchula soils. The Monteocha, Placid, Pomona, Surrency, and Wauchula soils are of mineral origin. Monteocha soils have a B'tg horizon at a depth of 40 to 80 inches and have a Bh horizon. Placid soils are sandy to a depth of 80 inches or more. Pomona soils are poorly drained, have a Bh horizon, and have a B'tg horizon at a depth of 40 to 80 inches. Surrency soils have a Btg horizon at a depth of 20 to 40 inches. Wauchula soils have a Bh horizon, are poorly drained, and have a B'tg horizon at a depth of less than 40 inches. In the Okeechobee and Terra Ceia soils, the organic layer is more than 51 inches deep, and it has a higher range in soil reaction. The Okeechobee soils also have a hemic layer.

Typical pedon of Samsula muck, in a ponded area about 100 feet south of State Road 232, (NE 39th Avenue) and 0.25 mile east on NE 15th Street, in northeastern section of Gainesville, NE1/4NW1/4 sec. 27, T. 9 S., R. 20 E.

Oa1—0 to 8 inches; very dark brown (10YR 2/2) well decomposed muck; 36 percent fibers, less than 10 percent rubbed; weak medium granular structure; friable; common fine and medium roots; sodium pyrophosphate extract is pale brown (10YR 6/3); very strongly acid (4.5 Hellige-Truog); gradual wavy boundary.

Oa2—8 to 35 inches; very dark gray (10YR 3/1) well decomposed muck; less than 10 percent fibers unrubbed and rubbed; weak medium granular structure; friable; common fine and medium roots; sodium pyrophosphate extract is dark grayish-brown (10YR 4/2); very strongly acid (4.5 Hellige-Truog); abrupt wavy boundary.

IIAb—35 to 42 inches; dark gray (10YR 4/1) sand; single grained; loose; few fine roots; 10 percent organic matter content; very strongly acid (4.5 Hellige-Truog); gradual wavy boundary.

IIC1b—42 to 53 inches; light brownish gray (10YR 6/2) sand; few medium faint grayish brown (10YR 5/2) mottles; single grained; loose; very strongly acid (5.0 Hellige-Truog); clear wavy boundary.

IIC2b—53 to 75 inches; light gray (10YR 7/1) sand; few medium faint grayish brown (10YR 5/2) mottles; single grained; loose; strongly acid (5.5 Hellige-Truog).

The reaction of the Oa horizon is less than 4.5 in 0.01 molar calcium chloride and less than 5 by the Hellige-Truog method. The soil reaction of the mineral horizon ranges from extremely acid through medium acid. The organic material ranges in depth from 16 to 40 inches.

The Oa1 horizon has hue of 10YR, value of 2, and chroma of 1 or 2 or hue of 5YR, value of 2, and chroma of 1. Fiber content is less than 40 percent before rubbing and less than 10 percent after rubbing. Sodium pyrophosphate extract has hue of 10YR, value of 3 to 6, and chroma of 3 or 4. This horizon is 4 to 12 inches thick. The Oa2 horizon has hue of 10YR, value of 2, and chroma of 1 or 2 or value of 3 and chroma of 1. It also has hue of 5YR, value of 2, and chroma of 2 or value of 3 and chroma of 2 or 3. Fiber content is less than 33 percent before rubbing and less than 10 percent after rubbing. This horizon has the same range of color for sodium pyrophosphate extract as that of the Oa1 horizon. The Oa2 horizon is 12 to 28 inches thick.

The IIAb horizon has hue of 10YR, value of 2 to 4, chroma of 1 or 2. It is sand or fine sand 6 to 8 inches thick.

The IICb horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is also neutral and has value of 5 or 6. It is sand or fine sand.

Shenks Series

The Shenks series are nearly level, very poorly drained soils that formed in moderately thick deposits of nonwoody plant remains over clayey marine settlement. These soils are in prairies, low flats, and marshes. Slopes are less than 2 percent. The water table is at or above the surface, except for extended dry periods. These soils are clayey, montmorillonitic, dysic, hyperthermic Terric Medisaprists.

Shenks soils are geographically associated with Emeralda, Ledwith, Martel, Okeechobee, Terra Ceia, and Wauberg soils. Emeralda, Ledwith, Martel, and Wauberg soils are of mineral origin. In addition, Emeralda soils are poorly drained and have a clayey Btg horizon within 20 inches of the surface. Ledwith soils have an 8- to 16-inch organic layer overlying the A1 horizon. Martel soils have a clayey Btg horizon, and Wauberg soils are poorly drained and have a sandy A horizon 20 to 40 inches thick. Okeechobee and Terra Ceia soils have organic layers to a depth of 51 inches or more.

Typical pedon of Shenks muck, in Levy Lake, 0.7 mile south of the Micanopy-Wacahoota Road and 2.2 miles east of the intersection with State Road 121, NW1/4SE1/4, sec. 13, T. 11 S., R. 19 E.

Oa1—0 to 18 inches; muck, dark brown (10YR 3/3) unrubbed, very dark grayish brown (10YR 3/2) rubbed; about 45 percent fiber unrubbed, 5 percent rubbed; structureless, massive; very friable; sodium pyrophosphate extract is light yellowish brown (10YR 6/4); extremely acid (pH 3.9 in 0.01 molar calcium chloride); clear wavy boundary.

Oa2—18 to 21 inches; black (N 2/0) muck; about 30 percent fiber unrubbed, less than 5 percent rubbed; moderate medium granular structure; friable; sodium pyrophosphate extract is light yellowish brown (10YR 6/4); extremely acid (pH is 4.2 in 0.01 molar calcium chloride); abrupt wavy boundary.

IIC1—21 to 28 inches; black (N 2/0) clay loam; massive; firm, sticky and plastic; common fine and few medium roots; strongly acid; clear wavy boundary.

IIC2g—28 to 40 inches; gray (N 5/0) clay; weak medium subangular blocky structure; firm, very sticky and plastic; common fine and few medium roots; few slickensides; medium acid; gradual wavy boundary.

IIC3g—40 to 51 inches; gray (N 5/0) clay; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; large distinct slickensides; neutral; clear wavy boundary.

IIC4g—51 to 61 inches; dark gray (N 4/0) clay; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; large distinct slickensides; slightly acid; clear wavy boundary.

IIC5g—61 to 73 inches; gray (N 5/0) clay; few fine distinct yellowish red (5YR 5/6) and few fine distinct strong brown (7.5YR 5/6) mottles; massive; firm; sticky and plastic; few fine roots; neutral; gradual wavy boundary.

IIC6g—73 to 82 inches; gray (N 5/0) clay; common fine distinct strong brown (7.5YR 5/6) mottles; massive; firm, sticky and plastic; few roots; neutral.

Reaction of the Oa horizon is less than 4.5 in 0.01 molar calcium chloride. The organic material ranges from 16 to 50 inches in thickness. Reaction of the upper part of the IIC horizon ranges from strongly acid to slightly acid. The lower part ranges from medium acid to mildly alkaline. The weighted average clay content of the mineral material in the control section is more than 35 percent. Base saturation of the IIC horizon is more than 35 percent.

The Oa horizon has hue of 5YR or 10YR, value of 2 or 3, and chroma of 1 to 3 or hue of 7.5YR, value of 3, and chroma of 2. It is also neutral and has value of 2 or 3. The fiber content after rubbing is 16 percent or less of the soil volume. The fibers are dominantly those of nonwoody plants. Sodium pyrophosphate extract is in hue of 10YR, value of 3 to 6, and chroma of 3 to 8 or value of 7 and chroma of 4 to 8. The Oa horizon is 16 to 50 inches thick.

The IIC1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is sandy clay loam, clay loam, or sandy clay. Clay content is more than 28 percent. The IIC1 horizon is 5 to 10 inches thick.

The IICg horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 1 or less. It is sandy clay or clay and is more than 22 inches thick.

Sparr Series

The Sparr series are nearly level to gently sloping, somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are in broad areas of the gently rolling uplands and on slightly convex areas of the flatwoods. Slopes range from 0 to 5 percent. The water table is at a depth of 20 to 40 inches for 1 to 4 months during most years. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Sparr soils are geographically associated with Blichton, Lochloosa, Millhopper, Myakka, Newnan, Plummer, Pomona, Pottsburg, Wauchula, and Zolfo soils. Blichton soils are poorly drained and have a Bt horizon at a depth of 20 to 40 inches. Lochloosa soils have a Bt horizon at a depth of 20 to 40 inches. Millhopper soils are moderately well drained. Myakka, Newnan, Pomona, Pottsburg, and Wauchula soils have a Bh horizon. Also, the Myakka and Pottsburg soils are sandy to a depth of 80 inches or more and are poorly drained. Pomona soils are poorly drained. Wauchula soils are poorly drained and have a B't horizon at a depth of less than 40 inches. Plummer soils are poorly drained. Zolfo soils have a Bh horizon and are sandy to a depth of 80 or more inches.

Typical pedon of Sparr fine sand, 150 feet east of State Road 225 in the southwest corner of the University of Florida's Beef Research Center, SE1/4SE1/4 sec. 2, T. 9 S., R. 20 E.

Ap1—0 to 4 inches; dark gray (10YR 4/1) fine sand; moderate medium granular structure; very friable; common grass roots; very strongly acid; clear smooth boundary.

Ap2—4 to 8 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; common grass roots; very strongly acid; clear smooth boundary.

A21—8 to 25 inches; pale brown (10YR 6/3) sand; weak fine granular structure; very friable; common grass roots; strongly acid; gradual wavy boundary.

A22—25 to 32 inches; very pale brown (10YR 7/3) fine sand; common medium faint light gray (10YR 7/2) and few fine faint light yellowish brown (10YR 6/4) mottles; weak fine granular structure; very friable; few grass roots; few fine distinct white streaks of clean sand grains; very strongly acid; gradual wavy boundary.

A23—32 to 48 inches; light gray (10YR 7/1) fine sand; few medium distinct yellowish brown (10YR 5/6) mottles; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B1g—48 to 56 inches; light gray (10YR 7/2) loamy sand; few fine prominent yellowish red (5YR 4/6) and common medium faint very pale brown (10YR 7/3) mottles; weak fine subangular blocky structure; friable; few fine roots; sand grains are well coated and bridged with clay; extremely acid; clear wavy boundary.

B2tg—56 to 84 inches; light gray (10YR 7/1) fine sandy loam; common fine distinct pale brown (10YR 6/3), common medium prominent strong brown (7.5YR 5/8) and few medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; extremely acid.

The solum is more than 60 inches thick. Reaction is extremely acid to medium acid in all horizons.

The A horizon is sand or fine sand. The upper part of the surface layer is fine sand. The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 6 to 10 inches thick. The A21 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. In places, it has a few fine yellow or brown mottles. It ranges from 11 to 17 inches in thickness. The A22 and A23 horizons have hue of 10YR, value of 6, and chroma of 1 to 3, or value of 7 and chroma of 1 to 4. Mottles are in shades of gray, yellow, and brown. The A22 horizon is 7 to 14 inches thick, and the A23 horizon is 15 to 39 inches thick.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3 or value of 7 and chroma of 1 to 4. It has common to many mottles in shades of gray, yellow, or brown, or it is a mixture of these colors. The B1 horizon is loamy sand or loamy fine sand. It is 0 to 9 inches thick. The B2tg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, or red. The B2tg horizon is sandy loam, fine sandy loam, or sandy clay loam. Some pedons have a B21t horizon. Where present, the B21t horizon has the same color range as the B1 horizon. It is sandy loam, fine sandy loam, or sandy clay loam 4 to 8 inches thick.

Surrency Series

The Surrency series are very poorly drained soils that formed in beds of loamy marine deposits. These soils are in ponds and depressional areas of the flatwoods and on larger prairies of the uplands. Slopes are less than 1 percent. The water table is within 10 inches of the surface for about 6 months or more. Water stands on the surface for about 4 months or more during most years. These soils are loamy, siliceous, thermic Arenic Umbric Paleaquults.

Surrency soils are geographically associated with Monteocha, Pelham, Pomona, Samsula, Wauberg, and Wauchula soils. The Monteocha soils have a Bh horizon, and the B't horizon is at a depth of more than 40 inches. The Pelham soils are poorly drained and do not have an umbric A1 horizon. The Pomona soils are poorly drained and have a B't horizon that is more than 40 inches below the surface. Samsula soils are very poorly drained and have an organic surface layer more than 16 inches thick. The Wauberg soils are poorly drained and do not have an umbric A1 horizon. Wauchula soils are poorly drained, have a Bh horizon, and do not have an umbric A1 horizon.

Typical pedon of Surrency sand, in a cypress pond 775 feet north of NE 53rd Ave. and 1.9 miles east of U.S. 441, SW1/4SE1/4 sec. 16, T. 9 S., R. 20 E.

A1—0 to 15 inches; black (N 2/0) sand; moderate medium granular structure; very friable; common fine and medium roots, few large roots; extremely acid; clear wavy boundary.

A2—15 to 28 inches; light gray (10YR 7/2) sand; single grained; loose; few fine, medium, and large roots; very strongly acid; clear wavy boundary.

B21tg—28 to 44 inches; gray (10YR 6/1) sandy clay loam; common fine prominent reddish brown (5YR 5/4) and few fine prominent strong brown (7.5YR 5/8) streaks along root channels; moderate medium subangular blocky structure; friable; slightly sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine pockets of clean white sand grains; extremely acid; clear wavy boundary.

B22tg—44 to 55 inches; gray (10YR 6/1) sandy clay loam; few fine and medium prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm, slightly sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine and medium pockets of clean white sand grains; extremely acid; gradual wavy boundary.

B23tg—55 to 80 inches; light gray (5Y 7/1) sandy clay loam; weak fine subangular blocky structure; firm; sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine and medium pockets of clean white sand grains; extremely acid.

The solum is more than 60 inches thick. Reaction is extremely acid to strongly acid in all horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 10 to 16 inches thick. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or value of 7 and chroma of 1 or 2. In places, it has mottles in shades of yellow and brown. The A2 horizon is 10 to 24 inches thick.

The B21tg horizon has hue of 10YR, value of 5 or 6, and chroma of 1. It has mottles in shades of yellow, brown, and red. It is 12 to 17 inches thick. The B22tg and B23tg horizons have hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. Mottles are in shades of yellow, brown, and red. The B22tg horizon is 11 to 18 inches thick. The Btg horizon is sandy loam or sandy clay loam. Average clay content of the upper 20 inches ranges from 15 to 23 percent.

Tavares Series

The Tavares series consists of nearly level to gently sloping, moderately well drained soils that formed in thick beds of sandy marine deposits. These soils are on slight ridges in the flatwoods and along the lower slopes of the deep sandy areas of the uplands. Slopes range from 0 to 5 percent. The water table is between 40 and 72 inches below the surface for cumulative periods of 6 months or more during most years. It recedes to more than 72 inches during droughty periods. These soils are hyperthermic, uncoated Typic Quartzipsamments.

Tavares soils are geographically associated with Apopka, Candler, Chipley, Lake, Millhopper, Myakka, Placid, Pompano, and Zolfo soils. Apopka soils are well drained and have a Bt horizon. Candler and Lake soils are excessively drained. Chipley soils are somewhat poorly drained. Millhopper soils have a Bt horizon. Myakka soils are poorly drained and have a Bh horizon. Placid soils are very poorly drained and have an A1 horizon 10 to 24 inches thick. Pompano soils are poorly drained. Zolfo soils are somewhat poorly drained and have a Bh horizon.

Typical pedon of Tavares sand, about 550 feet south of State Road 26, on the Santa Fe Correctional Institution Farm, NW1/4NE1/4 sec. 36, T. 9 S., R. 20 E.

Ap—0 to 8 inches; dark gray (10YR 4/1) sand; weak moderate granular structure; very friable; common grass roots; extremely acid; clear smooth boundary.

C1—8 to 19 inches; pale brown (10YR 6/3) sand; single grained; loose; common grass roots; extremely acid; clear wavy boundary.

C2—19 to 36 inches; very pale brown (10YR 7/3) sand; single grained; loose; common grass roots; few medium faint streaks of light gray (10YR 7/1) clean sand grains; extremely acid; clear wavy boundary.

C3—36 to 45 inches; very pale brown (10YR 7/3, 10YR 8/3) sand; common fine and medium distinct yellowish brown (10YR 5/6) mottles; single grained;

loose; few fine faint streaks of white clean sand grains; extremely acid; gradual wavy boundary.

C4—45 to 57 inches; very pale brown (10YR 8/3) sand; common medium and coarse faint very pale brown (10YR 7/4), few medium distinct yellowish brown (10YR 5/8) and common medium faint light gray (10YR 7/1) mottles; single grained; loose; few roots; few 1/4- to 1/2-inch slightly cemented spodic nodules; extremely acid; clear wavy boundary.

C5—57 to 80 inches; white (10YR 8/1) sand; common fine and medium distinct yellowish brown (10YR 5/8), few fine distinct very pale brown (10YR 7/4), and few fine distinct light brownish gray (10YR 6/2) mottles; single grained; loose; very few roots; extremely acid.

The soil is sand or fine sand to a depth of 80 inches or more. The surface layer is sand. This soil is less than 5 percent silt plus clay to a depth of 10 to 40 inches. It is extremely acid to medium acid in all horizons, except for the A horizon where limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or less or value of 5 and chroma of 1. It is 4 to 8 inches thick. The A horizon has a value of 3 where it is only 4 to 6 inches thick.

The C1 and C2 horizons have hue of 10YR, value of 6 or 7, and chroma of 3 or 4 or hue of 10YR, value of 5, and chroma of 6. The C3, C4, and C5 horizons have hue of 10YR. They have value of 6 and chroma of 3; value of 7 and chroma of 1 to 4; or value of 8 and chroma of 1 to 3. In places, they have few to common mottles in various shades of gray, yellow, brown and red. The C horizon is 76 or more inches deep. Few to common, light gray or white streaks and splotches of clean sand grains are in the C1, C2, and C3 horizons in many pedons. These light gray or white streaks are not indicative of wetness.

Terra Ceia Series

The Terra Ceia series consists of nearly level, very poorly drained organic soils that formed mostly from nonwoody, hydrophytic plant remains mixed with some woody material. These soils are in fresh water marshes and in areas of wet prairies. Slopes are less than 1 percent. The water table is at or on the surface of the soil, except during extended dry periods. These soils are euic, hyperthermic Typic Medisaprists.

Terra Ceia soils are geographically associated with Ledwith, Martel, Monteocha, Okeechobee, Pompano, Samsula, and Shenks soils. Ledwith, Martel, Monteocha, and Pompano soils are of mineral origin. Okeechobee soils have layers of hemic materials that are more than 13 inches thick. Samsula soils are underlain with sandy material, and Shenks soils are underlain with clayey material.

Typical pedon of Terra Ceia muck, in an area adjacent to Orange Creek, about 2.1 miles east of U.S. 301 and 1.3 miles south of the S.R. 325 extension, NE1/4NE1/4 sec. 23, T. 12 S., R. 22 E.

Oap—0 to 12 inches; black (10YR 2/1) muck; about 45 percent fiber unrubbed and less than 5 percent rubbed; weak fine granular structure; very friable; sodium pyrophosphate is light yellowish brown (10YR 6/4); medium acid (pH is 4.5 in 0.01 molar calcium chloride); abrupt wavy boundary.

Oa2—12 to 45 inches; dark reddish brown (5YR 3/2) sapric material; about 50 percent fiber when unrubbed, and less than 5 percent fiber when rubbed; moderate medium subangular blocky structure; friable; sodium pyrophosphate extract is very pale brown (10YR 7/4); medium acid (pH is 4.8 in 0.01 molar calcium chloride); gradual wavy boundary.

Oa3—45 to 68 inches; dark reddish brown (5YR 2/2) sapric material; about 35 percent fiber when unrubbed and less than 5 percent fiber when rubbed; moderate medium subangular blocky structure; friable; sodium pyrophosphate extract is very pale brown (10YR 8/4); medium acid (pH is 4.9 in 0.01 molar calcium chloride); abrupt wavy boundary.

IIC—68 to 75 inches; very dark gray (10YR 3/1) clay; massive; firm, sticky and plastic; neutral.

Reaction of the Oa horizon ranges from medium acid to moderately alkaline by the Truog method, or it is 4.5 to 6.5 in 0.01 molar calcium chloride. Fiber content ranges to 50 percent when unrubbed, but it is less than 17 percent after rubbing. The Oa horizon has hue of 5YR, value of 2, and chroma of 1 or 2 or value of 3 and chroma of 2. It also has hue of 10YR, value of 2, and chroma of 1 or 2 or is neutral and has value of 2. The Oa1 or Oap horizons are 4 to 12 inches thick. The Oa2 and Oa3 horizons are more than 48 inches thick.

The IIC horizon has a reaction of slightly acid to mildly alkaline. It is usually clay, but sandy and loamy materials are included. The IIC horizon has hue of 10YR, value of 3 to 6, and chroma of 1, or it is neutral and has value of 4 to 6.

Udorthents

The Udorthents consist of moderately well drained and somewhat poorly drained soils formed from heterogeneous materials which are refuse from mining operations. The Udorthents have been mixed by man and laid down across the landscape in the form of overburden material. This material was washed from the limestone and was deposited in layers and pockets across the adjacent landscape. Slope ranges from 0 to 2 percent. A perched water table is at variable depths after periods of heavy rainfall. The depth depends on the content and thickness of the clayey layers within the stratified material.

The Udorthents are associated with Arredondo, Candler, Jonesville, Kendrick, and Pedro soils. Candler soils have distinct sandy horizons to a depth of 80 inches or more. Arredondo, Jonesville, Kendrick, and Pedro soils have a sandy A horizon and a loamy B2t horizon. Jonesville and Pedro soils also are underlain by limestone at a depth of less than 40 inches.

Reference pedon of Udorthents, 0.7 mile east of Gilchrist County line and 0.8 mile north of State Road 26, 2.1 miles west of Newberry, SE1/4SE1/4 sec. 31, T. 9 S., R. 17 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) mixed sandy, loamy, and clayey material; weak fine granular structure; friable; common fine grass roots; common fine nodules of limestone material; strongly acid; clear wavy boundary.

C1—4 to 20 inches; pale yellow (5Y 7/3) clay and thin 1/16 to 3/8 inch streaks and pockets of yellow and grayish brown sandy clay loam and sandy loam; massive; very firm, sticky and plastic when wet; common fine grass roots; fine nodules of limestone; medium acid; abrupt wavy boundary.

C2—20 to 28 inches; mixed layers of light gray (10YR 7/2), white (10YR 8/1), and very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) sandy loam, and yellowish brown (10YR 5/4) sandy clay loam; massive; friable; few grass roots; thin streaks of grayish brown (10YR 5/2) sandy clay and nodules of limestone; medium acid; abrupt wavy boundary.

C3—28 to 49 inches; gray (5Y 6/1) and pale yellow (5Y 7/3) sandy clay with gray (10YR 6/1) mottles, mixed with 1/8 to 1 inch layers and pockets of very pale brown (10YR 7/3), light gray (10YR 7/2), and brown (10YR 5/2) sand; massive; firm and very firm; sticky and plastic when wet; few fine roots; small nodules of limestone; medium acid; abrupt wavy boundary.

C4—49 to 72 inches; pale yellow (5Y 7/3) and light gray (5Y 7/2) clay, pockets of gray (10YR 5/1) sandy clay, and thin streaks and pockets of light gray (10YR 6/1), yellowish brown (10YR 5/4), and very pale brown (10YR 7/3) sandy clay loam, sandy loam, and sand; massive; very firm; slightly acid; abrupt wavy boundary.

IIA1b—72 to 77 inches; grayish brown (10YR 5/2) fine sand; weak medium granular structure; very friable; strongly acid; clear wavy boundary.

IIA2b—77 to 90 inches; pale brown (10YR 6/3) fine sand; weak medium granular structure; very friable; strongly acid.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Texture is usually a mixture of sand, loamy sand, sandy clay loam, and clayey material and very fine nodules of limestone. Reaction is usually strongly acid to slightly acid. This horizon is 2 to 5 inches thick. In some areas it is missing or is very thin.

The C horizon has hue of 2.5Y, 5Y, or 10YR; value of 5; and chroma of 2 to 4. It has value of 6 or 7 and chroma of 1 to 6 or value of 8, and chroma of 1. Mottles are in shades of gray, yellow, and brown. The C horizon consists of layers and pockets of clay, sandy clay, sandy clay loam, sandy loam, and sand. Clay and sandy clay are the dominant textures. Overall, the clay and sandy clay make up about 50 to 60 percent of the C horizon, the sandy material about 20 to 30 percent, the loamy material about 10 to 25 percent, and the fine flakes and nodules of limestone are about 0 to 25 percent. Silt content in the clayey material is about 15 to 32 percent. Reaction ranges from strongly acid to neutral. This layer ranges from about 36 to 80 or more inches in thickness.

The IIA1b horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is very strongly acid to medium acid. It is 3 to 7 inches thick. The IIA2b horizon has hue of 10YR, value of 6 or 7, and chroma of 3 to 6 or value of 5 and chroma of 3. The IIA2b horizon is sand or fine sand. Reaction is very strongly acid to medium acid.

Some pedons have a IIB2tb horizon. Where it occurs, the IIB2tb horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or sandy clay loam. Reaction is very strongly acid to medium acid.

Wacahoota Series

The Wacahoota series consists of sloping, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These soils are on sharp breaking, wet slopes and hillsides of the uplands. Slopes range from 5 to 8 percent. The water table is less than 10 inches below the surface for 1 to 4 months during most years. Wetness is caused primarily by hillside seepage. These soils are loamy, siliceous, hyperthermic Arenic Paleaquults.

Wacahoota soils are geographically associated with Bivans, Blichton, Boardman, Kanapaha, Lochloosa, and Micanopy soils. Bivans, Boardman, and Micanopy soils all have a sandy A horizon less than 20 inches thick. Micanopy soils are somewhat poorly drained. Blichton and Lochloosa soils have less than 5 percent gravel by volume, and the Lochloosa soils are somewhat poorly drained. The Kanapaha soils have a sandy A horizon more than 40 inches thick. This A horizon is less than 5 percent gravel.

Typical pedon of Wacahoota loamy sand, 5 to 8 percent slopes, in an area about 0.50 mile west of State Road 329 and 0.1 mile north of the Marion County line, SW1/4SW1/4 sec. 33 T. 11 S., R. 20 E.

A1—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; about 6 percent nodules of ironstone and weathered phosphatic limestone; strongly acid; clear wavy boundary.

A21—7 to 12 inches; gray (10YR 5/1) sand; single grained; loose; common fine and medium roots; about 8 percent nodules and fragments of ironstone and weathered phosphatic limestone; strongly acid; gradual wavy boundary.

A22—12 to 24 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; about 12 percent nodules and fragments of ironstone and weathered phosphatic limestone; strongly acid; gradual wavy boundary.

A23—24 to 32 inches; light brownish gray (10YR 6/2) sand; weak medium granular structure; very friable; few fine roots; about 12 percent nodules and fragments of ironstone and weathered phosphatic limestone; very strongly acid; clear wavy boundary.

B21tg—32 to 42 inches; light brownish gray (10YR 6/2) sandy clay loam; weak medium subangular blocky structure; friable; about 14 percent nodules and fragments of ironstone and weathered phosphatic limestone; very strongly acid; gradual wavy boundary.

B22tg—42 to 63 inches; gray (N 6/0) sandy clay loam; few medium prominent strong brown (7.5YR 5/8) and few medium faint light gray (10YR 7/1) mottles; moderate medium subangular blocky structure; friable; about 3 percent plinthite; about 6 percent nodules and fragments of ironstone and weathered phosphatic limestone; very strongly acid; gradual wavy boundary.

B3g—63 to 80 inches; gray (N 6/0) sandy clay loam; common medium distinct light olive gray (5Y 6/2) mottles; weak fine subangular blocky structure; firm; few nodules of soft phosphatic limestone; very strongly acid.

The solum ranges from 60 to 80 or more inches in thickness. Reaction is very strongly acid to medium acid, except where the Ap horizon has been limed. The content of nodules of ironstone and fragments and nodules of weathered phosphatic limestone ranges from 5 to about 25 percent in the A2 horizon and upper part of the Btg horizon. A few cobbles are in some pedons. Plinthite is in the Btg horizon in some pedons but is less than 5 percent by volume.

The A1 or Ap horizon is neutral or has hue of 10YR, value of 3 to 5, and chroma of 2 or less. It is 4 to 7 inches thick. The A2 horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is 16 to 32 inches thick.

The Btg horizon is neutral and has hue of 10YR, value of 4 or 5, and chroma of 1 or less or hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 2 or less. It has mottles in shades of yellow, brown, and red. The B21tg horizon is 9 to 12 inches thick, and the B22tg horizon is 14 to 25 inches thick. The Btg horizon is sandy clay loam or gravelly sandy clay loam. The B3g horizon is neutral or has hue of 10YR, value of 4 or 5, and chroma of 1 or less or value of 6 or 7 and chroma of 2 or less. Mottles are in shades of brown, yellow, and gray.

Wauberg Series

The Wauberg series consists of nearly level, poorly drained soils that formed in thick beds of loamy marine sediment. These soils generally are in wet areas of prairies of the rolling uplands. Slopes range from 0 to 2 percent. The water table is less than 10 inches below the surface for 3 to 5 months during most years. These soils are loamy, siliceous, hyperthermic Arenic Albaqualfs.

Wauberg soils are geographically associated with Emeralda, Ledwith, Shenks, and Surrency soils. All of these soils are in similar topographic positions. Emeralda soils have an A horizon less than 20 inches thick and a clayey B2tg horizon. Ledwith, Shenks, and Surrency soils are very poorly drained. Ledwith soils have a clayey B2tg horizon at a depth of less than 20 inches, and Shenks soils are of organic origin.

Typical pedon of Wauberg sand, in Paynes Prairie about 0.2 mile south of the Recreation and Parks District 3 Office and 2.4 miles east of U. S. Highway 441, NW1/4SW1/4 sec. 22, T. 10 S., R. 20 E.

Ap1—0 to 5 inches; black (10YR 2/1) sand; moderate medium granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

Ap2—5 to 9 inches; very dark gray (10YR 3/1) sand; moderate medium granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

A21—9 to 19 inches; grayish brown (10YR 5/2) sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear wavy boundary.

A22—19 to 24 inches; light brownish gray (2.5Y 6/2) sand; common medium faint light brownish gray (10YR 6/2), few fine distinct dark gray (10YR 4/1), and few medium distinct grayish brown (10YR 5/2) mottles, color is light brownish gray (10YR 6/2) when mixed; weak fine granular structure; very friable; very few fine roots; medium acid; abrupt wavy boundary.

B21t—24 to 40 inches; dark gray (N 4/0) sandy clay loam; moderate medium subangular blocky structure; firm; very few fine roots; few fine and medium nodules of phosphatic limestone; weak discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—40 to 50 inches; dark gray (N 4/0) sandy clay loam; few fine prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; firm; very few fine roots; few fine nodules of phosphatic limestone; moderate medium pockets and streaks of gray (10YR 5/1) sandy loam; strongly acid; clear wavy boundary.

B3—50 to 63 inches; gray (N 5/0) sandy clay loam; common medium faint dark gray (N 4/0), common medium faint gray (10YR 5/1), and common fine prominent yellowish red (5YR 5/8) mottles; massive; firm; strongly acid; clear wavy boundary.

C—63 to 81 inches; gray (10YR 6/1) clay; common medium faint gray (10YR 5/1) and few medium faint light gray (10YR 7/1) mottles; massive; firm; few fine soft and firm phosphatic limestone nodules; medium acid.

The solum is 50 to 75 inches thick. Reaction is very strongly acid to slightly acid in the A horizon and strongly acid to neutral in the Btg and Cg horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 5 to 9 inches thick. In places, the A1 horizon is only 5 or 6 inches thick and is mixed with the A2 horizon to a depth of 7 to 9 inches. This transitional layer is very dark gray. The A2 horizon is neutral or has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. In places, it has mottles of yellow and brown. The A2 horizon is sand, fine sand, loamy sand, or loamy fine sand 15 to 32 inches thick.

The B21tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less. In places, it has mottles in various shades of yellow, brown, and red. It is sandy clay loam. Clay content ranges from 24 to 35 percent. The B21tg horizon ranges from 14 to 22 inches in thickness. The B22tg horizon has the same color range as the B21tg horizon. This horizon is sandy clay loam. In places, it has thin streaks and pockets of sandy clay and sandy loam material. It is 6 to 12 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It has mottles in shades of yellow, brown, and red. The B3g horizon is sandy clay loam, sandy loam, or fine sandy loam. Clay content ranges from 18 to 35 percent. Thin streaks and pockets of finer and coarser textured material are in this horizon in some pedons. This horizon is 8 to 14 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It has yellow, brown, and red mottles. The Cg horizon is sandy clay or clay and usually has thin streaks and pockets of sandy loam and sandy clay loam.

Wauchula Series

The Wauchula series consists of nearly level, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These nearly level soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. During most years the water table is at a depth of less than 10 inches for 1 to 4 months and is at a depth of 10 to 40 inches for about 6 months. During the driest seasons, the water table recedes to a depth of more than 40 inches. These soils are sandy, siliceous, hyperthermic Ultic Haplaquods.

Wauchula soils are geographically associated with Floridana, Monteocha, Mulat, Newnan, Pelham, Pomona, Pottsburg, Riviera, Samsula, Sparr, and Surrency. Monteocha soils have an A1 horizon 12 to 24 inches thick and are very poorly drained. Mulat soils do not have a Bh horizon. Newnan soils have a B't horizon 40 to 80 inches below the surface and are somewhat poorly drained. Pelham soils do not have a Bh horizon. Pomona soils have a Btg horizon below a depth of 40 inches. Pottsburg soils have a Bh horizon below a depth of 50 inches and are sandy to 80 inches or more. Riviera soils do not have a Bh horizon and are more alkaline. Samsula soils have organic material 16 to 40 inches thick. Sparr soils do not have a Bh horizon, have a Btg horizon below a depth of 40 inches, and are somewhat poorly drained. Surrency soils do not have the Bh horizon and are very poorly drained.

Typical pedon of Wauchula sand, in an area about 250 feet southwest of intersection of two trail roads, 0.4 mile north of Northwest 53rd Avenue, and 1 mile east of U.S. Highway 441, NW1/4SE1/4 sec. 17, T. 9 S., R. 20 E.

A11—0 to 5 inches; black (N 2/0) sand; weak fine granular structure; very friable; many fine and medium roots; very few clean sand grains; extremely acid; clear wavy boundary.

A12—5 to 8 inches; dark gray (10YR 4/1) sand; few fine faint black mottles; weak fine granular structure; very friable; many fine and medium roots; extremely acid; clear wavy boundary.

A2—8 to 14 inches; light brownish gray (10YR 6/2) fine sand; few fine distinct black (N 2/0) streaks along root channels; single grained; loose; common fine roots; few medium nodules of ironstone; very strongly acid; abrupt wavy boundary.

B2h—14 to 18 inches; dark reddish brown (5YR 2/2) loamy sand; few medium faint dark reddish brown (5YR 3/2) mottles; moderate medium granular structure; friable; common fine roots; many sand grains coated with organic matter; extremely acid; gradual wavy boundary.

B3—18 to 23 inches; dark brown (10YR 4/3) sand; few medium distinct dark brown (7.5YR 3/2) mottles; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A'2—23 to 28 inches; pale brown (10YR 6/3) fine sand; few medium faint dark brown (10YR 4/3) mottles; single grained; loose; many clean sand grains; strongly acid; clear wavy boundary.

B'2tg—28 to 37 inches; gray (10YR 5/1) fine sandy loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

B'31g—37 to 56 inches; light brownish gray (10YR 6/2) loamy sand; common fine prominent, strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

B'32g—56 to 62 inches; light gray (10YR 7/1) fine sandy loam; few medium and coarse prominent red (10YR 4/8) mottles; many fine prominent strong brown (7.5YR 5/8) and common medium and coarse prominent brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Cg—62 to 80 inches; light gray (N 7/0) sandy clay loam; few fine prominent strong brown (7.5YR 5/8) and few fine distinct pale yellow (10YR 7/4) mottles; massive; firm; few fine roots; few fine and medium pockets of sandy loam material; very strongly acid.

The solum is more than 60 inches thick. Reaction is extremely acid through strongly acid throughout.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 5 to 9 inches thick. The A1 horizon has value of 2 or 3 where it is only 5 or 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sand or fine sand 6 to 19 inches thick.

The Bh horizon has hue of 5YR, value of 2 or 3, and chroma of 1 to 3; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2, and chroma of 1 or 2. It is sand, fine sand, or loamy sand. The sand grains are well coated with organic matter. The Bh horizon ranges from 4 to 12 inches in thickness. The B3 horizon has hue of 10YR, value of 3 or 4, and chroma of 3 or 4. It is sand or fine sand 0 to 6 inches thick.

The A'2 horizon has hue of 10YR, value of 5, and chroma of 1 or 2, or value of 6 and chroma of 1 to 3 or value of 7 and chroma of 1 to 4. In places, it has mottles in shades of gray, yellow, and brown. The A'2 horizon is sand or fine sand 2 to 6 inches thick.

The B'2tg horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, and red. The B'2tg horizon is sandy loam, fine sandy loam, or sandy clay loam 9 to 32 inches thick. The B'3g horizon has the same color range as the B'2tg horizon. It is loamy sand, loamy fine sand, or sandy loam about 9 to 28 inches thick. In some pedons this horizon is absent.

The Cg horizon has hue of 10YR, value of 5 to 7, and chroma of 1; hue of 2.5Y, value of 7, and chroma of 1; hue of 5Y, value of 6 or 7, and chroma of 1 or 2. It is also neutral and has value of 5 to 7.

Zolfo Series

The Zolfo series consists of nearly level, somewhat poorly drained soils that formed in beds of thick marine deposits. These soils are on slightly higher, convex areas of the broad flatwoods. Slopes range from 0 to 2 percent. The water table is at a depth of 24 to 40 inches for 2 to 6 months during most years. It may be at a depth of 10 to 24 inches for short durations of about two weeks during periods of high rainfall. These soils are sandy, siliceous, hyperthermic Grossarenic Entic Haplohumods.

Zolfo soils are geographically associated with Chipley, Pottsburg, Sparr, and Tavares soils. Chipley soils do not have a Bh horizon. Pottsburg soils are poorly drained. Sparr soils have a Bt horizon at a depth of 40 to 80 inches and do not have a Bh horizon. Tavares soils are moderately well drained and do not have a Bh horizon.

Typical pedon of Zolfo sand, in an area 375 feet south of a graded road, 2.2 miles west of LaCross and 1 mile east of State Road 239, NE1/4NE1/4 sec. 30, T. 7 S., R. 19E.

Ap—0 to 8 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A21—8 to 14 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

A22—14 to 34 inches; pale brown (10YR 6/3) sand; few fine distinct light gray (10YR 7/1) and few fine faint yellowish brown mottles; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

A23—34 to 60 inches; very pale brown (10YR 7/3) sand; few medium distinct gray (10YR 6/1) and few medium distinct brownish yellow (10YR 6/6) mottles; single grained; loose; few fine roots; very strongly acid; abrupt wavy boundary.

B21h—60 to 67 inches; dark brown (10YR 4/3) sand; few medium distinct dark reddish brown (5YR 3/3) mottles; moderate medium granular structure; very friable; few fine roots; many sand grains are coated with organic matter; very strongly acid; clear wavy boundary.

B22h—67 to 82 inches; dark reddish brown (5YR 3/3) sand; moderate medium granular structure; very friable; sand grains are well coated with organic matter; very strongly acid.

The soil is sand or fine sand to a depth of more than 80 inches. The surface layer is sand. Soil reaction ranges from very strongly acid to medium acid in all horizons.

The Ap or A1 horizon has hue of 10YR, value of 2 to 5, and a chroma of 1 or 2. It is 4 to 9 inches thick. The A2 horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It has mottles in various shades of gray, yellow, and brown. The A2 horizon is 46 to 68 inches thick.

The B21h horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. Sand grains are few to many and uncoated. The B21h horizon ranges from 3 to 9 inches in thickness. The B22h horizon has hue of 5YR, 7.5YR, or 10YR; value of 2 or 3; and chroma of 3 or less. Many of the sand grains are coated.

Formation of the Soils

In this section, the factors of soil formation are discussed and related to the soils in the survey area. In addition, the processes of soil formation are described.

Factors of Soil Formation

Soil is produced by forces of weathering and soil formation acting on the parent material that has been deposited or accumulated by geologic agencies. The kind of soil that forms depends on (1) the type of parent material; (2) the climate under which soil material has existed since accumulation; (3) the plant and animal life in and on the soil; (4) the relief, or lay of the land; and (5) the length of time the forces of soil formation have acted on the soil material.

The five soil-forming factors are interdependent; each modifies the effect of the others. Any one of the factors can have more influence than the others on the formation of a soil and can account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly expressed horizons. The effect of the parent material is modified greatly in some places by the effects of climate, relief, and plants and animals in and on the soil. As a soil forms, it is influenced by more than one of the five factors, but in some places all but one factor can have little effect. Modifications or variations in any of these factors result in a different soil.

Parent Material

The soils of Alachua County formed in beds of sandy and clayey materials that were transported by waters of the sea. The sea covered the area a number of times during the Pleistocene Period. When the sea was highest, the Miocene and Pliocene sediment was eroded from the land and was deposited or reworked on the shallow sea bottom to form marine terraces.

All the county is underlain, at varying depths, by the Ocala Limestone Group. In the plains area of the western part of the county, which ranges in elevation from about 50 to 80 feet above sea level, the Ocala Limestone is close to the surface. In this area the surface is a thin layer of loose sand. A thin, loamy or clayey layer is usually between the sand and limestone. This overlying material also fills the numerous solution holes that are in the limestone and masks the great irregularities of the limestone surface. In some places, the limestone is exposed.

The Alachua Formation of the southwestern part of the county consists of rolling sandhills. The materials are formed from land; possibly the sands were transported by winds from the southwest to their present site of deposition (*13*).

The Hawthorne Formation is throughout much of the central part and all of the northern and northeastern parts of Alachua County. This formation is composed of sand, clay, and limestone. It accumulated under shallow marine conditions and is middle Miocene in age. The thickness of the formation is variable. In some areas, the top of the main body of the formation is a concentration of pebbles, gravel, and grains of phosphate embedded in the various combinations of clay, sand, and carbonate (*14*). Overlying this formation in the eastern and central parts of the county is a mantle of Plio-Pleistocene sand, silt, and clay.

The Ocala Limestone is on or very near the upper surface of a number of prairies and lake bottoms in the south-central and southeastern parts of the county (fig. 18). The sediment on the surface of these areas, however, is probably, for the most part, eroded Hawthorne material transported to the low areas by rainwash and streams.

The parent materials in the county differ widely in mineral and chemical composition and in physical constitution. The main physical differences, for example the differences between sand, silt, and clay, can be observed in the field. Other differences, such as mineral and chemical composition, are important to soil formation and affect present physical and chemical characteristics of the soils. Many differences among soils in the county reflect original differences among the parent materials.

Climate

Precipitation, temperature, humidity, and wind are the climatic forces that act on the parent material of soils. These forces also cause some variation in the plant and animal life on and in the soils and thus influence changes in the parent material and in soil formation.

Alachua County has a warm, humid climate. The Atlantic Ocean and the Gulf of Mexico, together with inland lakes, have a moderating effect on summer and winter temperatures. Summer temperatures are fairly

Figure 18.—Outcrop of underlying limestone along a drainage canal in Paynes Prairie. In many places the Ocala limestone is at or near the surface of this and other prairies in the south-central part of the county.

uniform from year to year and vary little from day to day. Winter temperatures, however, vary considerably from day to day. Rainfall averages about 53 inches per year.

Because the climate is warm and the rainfall abundant, chemical and biological activity is rapid. The rainfall leaches the soils of many plant nutrients. It also results in a strongly acid reaction in many soils. The translocation of such soluble material as bases and such less soluble material as colloidal matter results in reduced fertility and a more sandy surface layer.

Plants and Animals

Plants have been the principal biological factor in the formation of soils in the survey area, but animals, insects, bacteria, and fungi also have been important. Plant and animal life furnish organic matter and bring plant nutrients from the lower to the upper horizons. Differences in the amount of organic matter, nitrogen, and plant nutrients in the soils and differences in soil structure and porosity are caused by plants and animals. In places, roots of trees and crayfish have penetrated loamy subsoil horizons and mixed sandy surface layers with the subsoil.

Micro-organisms, including bacteria and fungi, help to weather and break down minerals and to decompose organic matter. They are most numerous in the upper few inches of the soil. Earthworms and some other small animals live in soil material, alter its chemical composition, and mix it with other soil material. The native vegetation in the survey area has affected soil formation more than other living organisms.

Man has influenced the formation of soils by clearing the forests, cultivating the soils, draining wet areas, and introducing different kinds of plants. The complex of living organisms that affects soil formation has been drastically changed as a result of man's activities. Except for loss of organic matter and minor erosion in places, few results of man's activities are yet apparent.

Relief

Relief modifies the climate and also influences the formation of soils by its effect on drainage, erosion, temperature, and plant cover. Relief results from the entrenchment of drainageways into the land surface. In places it reduces the percolation of water through the soil.

Five general topographic areas are within Alachua County. They are the large swamps, marshes, and wet prairies of the south-central and eastern parts of the county; the flatwoods of the central and eastern parts; the rolling uplands throughout the central parts; the nearly level limestone plain of the western part; and the rolling, droughty sandhills of the extreme southwestern section.

The soils of the swamps, marshes, and prairies are wet and are usually either partly or completely covered by water for long periods. The flatwoods have a high water table and are periodically wet to the surface. The deep sandy soils of the southwestern part of the county and those of the limestone plain of the western part are not influenced by a water table. Many of the soils of the rolling uplands are influenced by ground water. These soils are also more subject to erosion than soils in other parts of the county.

Elevation above sea level varies to some extent within the major landscape. Overall, however, the limestone plain of the western part of the county is lower than the other areas. The lowest recorded elevation is 50.1 feet at High Springs and the highest is 190.9 feet at Hague (*7*).

Microrelief affects specific sites. For example, small areas of flatwoods are within the rolling uplands, and small areas of well drained soils are in the flatwoods. Internal drainage is not specifically related to elevation in the rolling uplands of the central part of the county.

Time

Time is an important factor in soil formation. The physical and chemical changes brought about by climate, living organisms, and relief are slow. The length of time needed to convert raw geological materials into soil varies according to the nature of the geologic material and the interaction of the other factors. Some basic minerals from which soils are formed weather fairly rapidly, while other minerals are chemically inert and show little change over long periods of time. The translocation of fine particles within the soil to form the various horizons is variable under different conditions, but the processes always involve relatively long periods of time.

In Alachua County, the dominant geological materials are inactive. The sands are almost pure quartz and are highly resistant to weathering. The finer textured silts and clays are the product of earlier weathering.

In terms of geological time, relatively little time has elapsed since the material in which the soils in the survey area have developed was laid down or emerged from the sea. The loamy and clayey horizons formed in place through processes of clay translocation.

Processes of Soil Formation

The processes involved in the formation of soil horizons, or horizon differentiation, are accumulation of organic matter, leaching of calcium carbonates and bases, reduction and transfer of iron, and formation and translocation of silicate clay material. In the formation of most soils in the survey area, two or more of these processes have been active.

Some organic matter has accumulated in the surface layer of all soils in the survey area. As a result, all the soils have an A1 horizon or an O horizon. In many places cultivation has mixed this horizon with material from underlying horizons. The content of organic matter ranges from low to high.

Leaching of carbonates and bases has occurred in nearly all the soils. The leaching of bases in soils generally precedes translocation of silicate clay material. Most soils in the survey area are leached to varying degrees. Leaching has contributed to the formation of horizons.

The process of chemical reduction and transfer of iron, or gleying, is evident in the soils that have a high water table. The well drained soils, however, do not show evidence of this process. Gleying is brought about by wet conditions. Gray color in the subsoil and grayish mottles in other horizons indicate the reduction and loss of iron. In some sandy soils, however, gray color is that of the sand grains and is not due to wetness. Some horizons have reddish brown mottles and concretions, which indicate the segregation of iron.

The translocation of silicate clay, colloidal organic matter, and iron oxides has contributed to horizon development in many of the soils in the survey area. Movement of clay, organic matter, or iron is evident in many of the soils; for example, a light colored, leached A2 horizon, a Bt or Bh horizon in which sand grains are bridged and coated with clay or colloidal organic matter, or a few patchy clay films on ped faces and in root channels. Compared with the other processes involved in soil formation, the translocation of silicate clays may be of minor importance; however, all the processes of soil formation have been important in the formation of horizons.

The soil-forming processes have resulted in a succession of layers, or horizons, in the soil from the surface downward. These horizons can differ from one another in one or more properties, such as color, texture, structure, consistence, and reaction. They also can be thick or thin. They can be the result of the activity of soil-forming processes at different periods.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

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

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Aquifer. A layer or a group of layers of geologic materials (consolidated or unconsolidated) that contains sufficient saturated, permeable material to conduct ground water and to yield economically significant quantities of ground water to wells and springs.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity is expressed as—

	Inches of water per inch of soil
Very low	Less than 0.05
Low	0.05 to 0.10
Moderate	0.10 to 0.15
High	0.15 to 0.20
Very high	More than 0.20

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedding. A method of partly controlling excess water around row crops by using regularly spaced, shallow ditches and beds.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds just beneath the solum, or it is exposed at the surface by erosion.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Confined aquifer. An aquifer bounded above and below by impermeable layers or layers of distinctly lower permeability than that of the aquifer.

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

Conservation tillage. A form of noninversion tillage that retains protective amounts of residue mulch on the surface throughout the year. This system includes no tillage, reduced tillage, strip tillage, stubble mulching, and other types of noninversion tillage.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Excess humus (in tables). Too much organic matter for intended use.

Fast intake (in tables). The rapid movement of water into the soil.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill. Raising the surface level of the land with suitable soil material.

Flatwoods. Broad, nearly level, low ridges of dominantly poorly drained soils characteristically vegetated with open woods of pine, sawpalmetto, and pineland threeawn.

Forb. Any herbaceous plant not a grass or a sedge.

Formation (geological). A convenient geologic unit, of considerable thickness and lateral extent, used in mapping, describing, or interpreting the geology of a region.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Habitat. The natural abode of a plant or animal. The kind of environment in which a plant or animal normally lives, as opposed to the range, or geographical distribution.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, alluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Land shaping. Rearrangement of soil materials by cutting and filling to form a more suitable site.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mounding. Filling the area of the absorption field with suitable soil material to raise it above the water table to meet state and local regulations.

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

No water (in tables). Too deep to ground water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potentiometric map. A map showing the elevation of a potentiometric surface of an aquifer by means of contour lines.

Potentiometric surface. An imaginary surface representing the static head of groundwater and defined by the level to which water rises in a well. The water table is a particular potentiometric surface. Synonyms: prezometric surface, pressure surface.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

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

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

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

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

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

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

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slough. A broad, slightly depressional, poorly defined drainageway.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil blowing. Soil easily moved and deposited by wind.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The sinking of an organic soil to a lower level after the lowering of the water table.

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

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface stabilization. Stabilize the surface by an appropriate means so that vehicles or foot traffic can traverse the area.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

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

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Too clayey. Soil slippery and sticky when wet and slow to dry.

Too sandy. Soil soft and loose; droughty and low in fertility.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unconfined aquifer. An aquifer that has a water table.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Water control. Regulate the water table according to the need of the intended use by canals, ditches, tile, pumping, or any other appropriate method.

Water table (geologic). That surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere. Syn: free-water surface; top of zone of saturation.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951 through 1980 at Gainesville, Florida]

Month	Temperature			Precipitation		
	Monthly mean	Monthly maximum mean	Monthly minimum mean	Monthly mean	Extreme high	Extreme low
	°F	°F	°F	In	In	In
January	56.1	68.3	43.8	3.27	8.87	.25
February	57.8	70.6	44.9	3.91	7.92	1.05
March	63.6	76.6	50.6	3.67	10.48	.84
April	69.9	82.9	56.9	2.94	8.43	.18
May	75.5	87.8	63.1	4.18	9.25	.46
June	79.9	90.4	68.8	6.63	15.74	2.26
July	81.3	91.4	71.1	7.09	10.86	1.44
August	81.3	91.4	71.1	7.09	14.15	2.84
September	79.3	89.1	69.5	5.60	13.04	.25
October	71.5	82.7	60.2	2.33	6.12	.11
November	63.5	85.7	51.2	2.04	7.27	Trace
December	57.8	70.1	45.5	3.19	7.62	.02
Annual mean	69.7			52.84		

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951 through 1980 at Gainesville, Florida]

Probability	Dates for given probability and temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 7	March 2	March 19
2 years in 10 later than--	January 30	February 19	March 13
5 years in 10 later than--	January 12	January 27	February 24
First freezing temperature in fall:			
1 year in 10 earlier than--	November 22	November 17	November 10
2 years in 10 earlier than--	December 17	November 25	November 17
5 years in 10 earlier than--	December 27	December 11	December 5

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP

[See text for definitions of "slight," "severe," "poor," "low," "moderate," and other terms]

Map unit and component soils	Percent of map unit[1]	Suitability for--		Potential for--	Limitations for urban uses		
		Cropland[2]	Pasture	Woodland[3]	Sanitary facilities[4]	Building sites[5]	Recreational areas[6]
1. Candler-Apopka[7] (6.2 percent)[8]:		Poor------------	Moderate--------	Moderate----------------	Slight[9]-------	Slight--------	Severe.
Candler-----------	70	Poor: droughty, low fertility.	Moderate: droughty, low fertility.	Moderate: equipment limitations, seedling mortality, plant competition.	Slight[9]-------	Slight--------	Severe: too sandy.
Apopka------------	14	Poor: droughty, low fertility.	Moderately well: droughty, low fertility.	Moderately high: equipment limitations, seedling mortality.	Slight--------	Slight--------	Severe: too sandy.
Minor soils-------	16						
2. Arredondo-Gainesville-Millhopper[7] (6.8 percent)[8]:		Moderately well-	Well suited-----	Moderately high---------	Slight--------	Slight--------	Severe.
Arredondo---------	41	Moderately well: droughty, low fertility.	Well suited: droughty, low fertility.	Moderately high: equipment limitations, plant competition.	Slight--------	Slight--------	Severe: too sandy.
Gainesville-------	19	Moderately well: droughty, low fertility.	Well suited: droughty, low fertility.	Moderately high: plant competition.	Slight--------	Slight[9]-------	Severe too sandy.
Millhopper--------	15	Moderately well: droughty, low fertility.	Well suited: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Moderate: wetness.	Slight--------	Severe: too sandy.
Minor soils-------	25						
3. Kendrick-Arredondo Bonneau[7] (4.7 percent)[8]:		Well suited-----	Well suited-----	High--------------------	Slight--------	Slight--------	Severe.
Kendrick----------	35	Well suited: erosion hazard, low fertility.	Well suited: low fertility.	High: equipment limitations, seedling mortality, plant competition.	Slight--------	Slight--------	Severe. too sandy.
Arredondo---------	30	Moderately well: droughty,	Well suited: low fertility.	Moderately high: equipment limitations, plant competition.	Slight--------	Slight--------	Severe: too sandy

See footnotes at end of table.

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP--Continued

Map unit and component soils	Percent of map unit[1]	Suitability for--		Potential for--	Limitations for urban uses		
		Cropland[2]	Pasture	Woodland[3]	Sanitary facilities[4]	Building sites[5]	Recreational areas[6]
Bonneau-----------	15	Well suited: low fertility.	Well suited: low fertility.	High: equipment limitations, seedling mortality.	Moderate: wetness, percs slowly.	Slight--------	Severe. too sandy.
Minor soils-------	20						
4. Arredondo-Jonesville-Lake[7] (8.3 percent)[8]:		Moderately well-	Well suited-----	Moderately high---------	Slight--------	Slight--------	Severe.
Arredondo---------	35	Moderately well: droughty, low fertility.	Well suited: droughty, low fertility.	Moderately high: equipment limitations, plant competition.	Slight--------	Slight--------	Severe: too sandy.
Jonesville--------	25	Moderately well: droughty, low fertility.	Well suited: droughty, low fertility	Moderately high: equipment limitations, plant competition, seedling mortality.	Severe: depth to rock.	Slight--------	Severe: too sandy.
Lake--------------	20	Moderate: droughty, low fertility.	Moderately well: droughty, low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Slight[9]-------	Slight--------	Severe: too sandy.
Minor soils-------	20						
5. Millhopper-Bonneau Arredondo[7] (8.8 percent)[8]:		Moderately well-	Well suited-----	Moderately high---------	Moderate------	Slight--------	Severe.
Millhopper--------	40	Moderately well: droughty, low fertility	Well suited: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Moderate: wetness.	Slight--------	Severe: too sandy.
Bonneau-----------	20	Well suited: low fertility	Well suited: low fertility.	High: equipment limitations, seedling mortality.	Moderate: wetness, percs slowly.	Slight--------	Severe: too sandy.
Arredondo---------	15	Moderately well: droughty, low fertility.	Well suited: droughty, low fertility.	Moderately high: equipment limitations, plant competition.	Slight--------	Slight--------	Severe: too sandy.
Minor soils-------	25						

See footnotes at end of table.

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP--Continued

Map unit and component soils	Percent of map unit[1]	Suitability for--		Potential for--	Limitations for urban uses		
		Cropland[2]	Pasture	Woodland[3]	Sanitary facilities[4]	Building sites[5]	Recreational areas[6]
6. Blichton-Lochloosa-Bivans[7] (5.4 percent)[8]:		Moderately well-	Well suited-----	High--------------------	Severe---------	Severe---------	Severe.
Blichton----------	37	Moderately well: wetness, erosion hazard.	Well suited: wetness.	High: equipment limitations, plant competition.	Severe: wetness, percs slowly.	Severe: severe.	Severe: wetness, too sandy.
Lochloosa---------	25	Moderately well: wetness, erosion hazard, low fertility.	Well: low fertility.	High--------------------	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: too sandy.
Bivans------------	14	Moderate: wetness, erosion hazard, workability.	Well suited: wetness.	High: equipment limitations, plant competition.	Severe: wetness, percs slowly.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, too sandy.
Minor soils-------	24						
7. Millhopper-Lochloosa-Sparr[7] (12.4 percent)[8]:		Moderately well-	Well suited-----	Moderately high---------	Moderate------	Slight---------	Severe.
Millhopper--------	35	Moderately well: droughty, low fertility.	Well suited: low fertility,	Moderately high: equipment limitations, plant competition.	Moderate: wetness.	Slight---------	Severe: too sandy.
Lochloosa---------	28	Moderately well: wetness, erosion hazard, low fertility.	Well suited: low fertility.	High--------------------	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: too sandy.
Sparr-------------	15	Moderate: wetness, low fertility.	Moderately well: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Minor soils-------	22						
8. Chipley-Tavares-Sparr[7] (10.6 percent)[8]:		Moderate--------	Moderately well-	High--------------------	Severe---------	Moderate------	Severe.
Chipley-----------	27	Moderate: wetness, low fertility.	Moderately well: low fertility.	High: equipment limitations, plant competition.	Severe: wetness, poor filter.	Moderate: wetness.	Severe: too sandy.

See footnotes at end of table.

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP--Continued

Map unit and component soils	Percent of map unit[1]	Suitability for-- Cropland[2]	Suitability for-- Pasture	Potential for-- Woodland[3]	Limitations for urban uses: Sanitary facilities[4]	Limitations for urban uses: Building sites[5]	Limitations for urban uses: Recreational areas[6]
Tavares	25	Moderate: droughty, low fertility.	Moderately well: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Moderate[9] wetness.	Slight	Severe: too sandy.
Sparr	16	Moderate: wetness, low fertility.	Moderately well: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Minor soils	32						
9. Pelham-Mulat[7] (2.7 percent)[8]:		Moderately well	Well suited	High	Severe	Severe	Severe.
Pelham	53	Moderately well: wetness, low fertility.	Well suited: wetness, low fertility.	High: equipment limitations, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.
Mulat	22	Moderately well: wetness, low fertility.	Well suited: wetness, low fertility.	High: equipment limitations, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.
Minor soils	25						
10. Pomona-Wauchula-Newnan[7] (23.8 percent)[8]:		Moderate	Well suited	Moderately high	Severe	Severe	Severe.
Pomona	45	Moderate: wetness, low fertility.	Well suited: wetness, low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too sandy.
Wauchula	14	Moderate: wetness, low fertility.	Well suited: wetness, low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too sandy.
Newnan	12	Moderate: wetness, low fertility.	Well suited: low fertility.	Moderately high: equipment limitations, seedling mortality, plant competition.	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Minor soils	29						

See footnotes at end of table.

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP--Continued

Map unit and component soils	Percent of map unit[1]	Suitability for--		Potential for--	Limitations for urban uses		
		Cropland[2]	Pasture	Woodland[3]	Sanitary facilities[4]	Building sites[5]	Recreational areas[6]
11. Monteocha-Surrency[7] (4.8 percent)[8]:		Unsuited--------	Poor------------	Unsuited----------------	Severe--------	Severe--------	Severe.
Monteocha---------	40	Unsuited: Ponding.	Poor: Ponding.	Unsuited:	Severe: Ponding.	Severe: Ponding.	Severe: Ponding.
Surrency----------	25	Unsuited: Ponding.	Moderate: Ponding.	Unsuited:	Severe: Ponding.	Severe: Ponding.	Severe: Ponding, too sandy.
Minor soils-------	35						
12. Ledwith-Wauberg[7] (2.2 percent)[8]		Unsuited--------	Well suited-----	Unsuited----------------	Severe--------	Severe--------	Severe.
Ledwith-----------	40	Unsuited: Ponding.	Well suited: Ponding.	Unsuited----------------	Severe: Ponding, percs slowly.	Severe: Ponding, shrink-swell, low strength.	Severe: Ponding, percs slowly, excess humus.
Wauberg-----------	35	Moderately well: wetness.	Well suited: wetness.	High: equipment limitations, seedling mortality, plant competition.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly, too sandy.
Minor soils-------	25						
13. Shenks-Terra Ceia-Okeechobee[7] (2.8 percent)[8]:		Well suited-----	Well suited-----	Unsuited----------------	Severe--------	Severe--------	Severe.
Shenks------------	35	Well suited: ponding.	Well suited: ponding.	Unsuited----------------	Severe: ponding, percs slowly.	Severe: ponding, shrink-swell, low strength.	Severe: ponding, percs slowly, excess humus.
Terra Ceia--------	24	Well suited: ponding.	Well suited: ponding.	Unsuited----------------	Severe: ponding, poor filter.	Severe: ponding, low strength.	Severe: ponding, excess humus.
Okeechobee--------	10	Well suited: ponding.	Well suited: ponding.	Unsuited----------------	Severe: ponding, poor filter.	Severe: ponding, low strength.	Severe: ponding, excess humus.
Minor soils-------	31						

See footnotes at end of table.

TABLE 3.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON GENERAL SOIL MAP--Continued

Map unit and component soils	Percent of map unit	Suitability for--		Potential for--	Limitations for urban uses		
		Cropland[2]	Pasture	Woodland[3]	Sanitary facilities[4]	Building sites[5]	Recreational areas[6]
14. Oleno-Pompano[7] (0.5 percent)[8]:		Unsuited	Moderate	High	Severe	Severe	Severe.
Oleno	60	Unsuited: floods, percs slowly, workability, wetness.	Moderate: floods, wetness.	High: equipment limitations, seedling mortality.	Severe: floods, percs slowly, wetness.	Severe: floods, shrink-swell, low strength, wetness.	Severe: floods, percs slowly, too clayey, wetness.
Pompano	10	Poor: floods, wetness, low fertility.	Moderate: floods, wetness, low fertility.	Moderate: equipment limitations, seedling mortality, plant competition.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, too sandy, wetness.
Minor soils	30						

[1]The percentages are based on measured acreage of the unit in the county.
[2]Ratings are for general farm crops, such as corn, peanuts, soybeans, and tobacco.
[3]Ratings are for slash or loblolly pine.
[4]Ratings apply to septic tank absorption fields. Ratings for trench type sanitary landfills and other sanitary facilities may have a different rating.
[5]Ratings apply to dwellings without basements, small commercial buildings, and local roads and streets. A limitation of low strength applies only to local roads and streets.
[6]Ratings apply to camp areas, picnic areas, and playgrounds.
[7]The overall rating for the general soil map unit is based on the underlined rating for the dominant soil, which makes up the greater percentage of the map unit, or soils if more than one soil has the same rating. The percentage of the map unit to which the overall rating applies can be determined from the underlined rating.
[8]The percentage in parentheses following each of the map units represents the amount of the map unit in Alachua County.
[9]A hazard of ground water contamination may be in areas where a concentration of dwellings has septic tank absorption fields because of insufficient filtration.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2B	Candler fine sand, 0 to 5 percent slopes	27,185	4.8
2C	Candler fine sand, 5 to 8 percent slopes	2,474	0.4
3B	Arredondo fine sand, 0 to 5 percent slopes	50,741	8.9
3C	Arredondo fine sand, 5 to 8 percent slopes	1,457	0.3
4B	Arredondo-Urban land complex, 0 to 5 percent slopes	3,464	0.6
5B	Fort Meade fine sand, 0 to 5 percent slopes	5,201	0.9
6B	Apopka sand, 0 to 5 percent slopes	4,362	0.8
6C	Apopka sand, 5 to 8 percent slopes	792	0.1
7B	Kanapaha sand, 0 to 5 percent slopes	5,623	1.0
8B	Millhopper sand, 0 to 5 percent slopes	50,406	8.8
8C	Millhopper sand, 5 to 8 percent slopes	2,113	0.4
9B	Millhopper-Urban land complex, 0 to 5 percent slopes	5,887	1.0
11	Riviera sand	620	0.1
13	Pelham sand	10,319	1.8
14	Pomona sand	52,926	9.3
15	Pompano sand	3,651	0.6
16	Surrency sand	9,481	1.7
17	Wauchula sand	18,040	3.2
18	Wauchula-Urban land complex	3,955	0.7
19	Monteocha loamy sand	11,138	2.0
20B	Tavares sand, 0 to 5 percent slopes	20,832	3.6
21	Newnan sand	20,838	3.7
22	Floridana sand, depressional	1,627	0.3
23	Mulat sand	3,712	0.7
25	Pomona sand, depressional	10,624	1.9
26	Samsula muck	6,487	1.1
27	Urban land	1,345	0.2
28	Chipley sand	16,707	2.9
29B	Lochloosa fine sand, 2 to 5 percent slopes	10,407	1.8
29C	Lochloosa fine sand, 5 to 8 percent slopes	2,841	0.5
30B	Kendrick sand, 2 to 5 percent slopes	16,021	2.8
30C	Kendrick sand, 5 to 8 percent slopes	2,011	0.4
31A	Blichton sand, 0 to 2 percent slopes	2,316	0.4
31B	Blichton sand, 2 to 5 percent slopes	8,302	1.5
31C	Blichton sand, 5 to 8 percent slopes	1,222	0.2
32B	Bivans sand, 2 to 5 percent slopes	2,734	0.5
32C	Bivans sand, 5 to 8 percent slopes	1,468	0.3
32D	Bivans sand, 8 to 12 percent slopes	324	0.1
33B	Norfolk loamy fine sand, 2 to 5 percent slopes	5,820	1.0
33C	Norfolk loamy fine sand, 5 to 8 percent slopes	1,280	0.2
34	Placid sand, depressional	4,188	0.7
35B	Gainesville sand, 0 to 5 percent slopes	7,108	1.2
35C	Gainesville sand, 5 to 8 percent slopes	472	0.1
36	Arents, 0 to 5 percent slopes	342	0.1
37	Zolfo sand	3,494	0.6
38	Pits and Dumps	4,092	0.7
39B	Bonneau fine sand, 2 to 5 percent slopes	14,222	2.5
41B	Pedro fine sand, 0 to 5 percent slopes	1,358	0.2
42B	Pedro-Jonesville complex, 0 to 5 percent slopes	6,546	1.1
44B	Blichton-Urban land complex, 0 to 5 percent slopes	1,065	0.2
45	Urban land-Millhopper complex, 0 to 2 percent slopes	1,651	0.3
46B	Jonesville-Cadillac-Bonneau complex, 0 to 5 percent slopes	18,621	3.3
47B	Candler-Apopka complex, 0 to 5 percent slopes	1,915	0.3
48	Myakka sand	4,201	0.7
49A	Lochloosa fine sand, 0 to 2 percent slopes	15,503	2.7
50	Sparr fine sand	21,196	3.7
51	Plummer fine sand	6,583	1.2
52	Ledwith muck	5,321	0.9
53	Shenks muck	6,080	1.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
54	Emeralda fine sandy loam	3,473	0.6
55B	Lake sand, 0 to 5 percent slopes	4,265	0.7
56	Wauberg sand	4,834	0.8
57B	Micanopy loamy fine sand, 2 to 5 percent slopes	724	0.1
58B	Lake fine sand, 0 to 5 percent slopes	12,079	2.1
59	Pottsburg sand	2,567	0.4
60	Udorthents, 0 to 2 percent slopes	546	0.1
61	Oleno clay, occasionally flooded	1,641	0.3
62C	Boardman loamy sand, 5 to 8 percent slopes	334	0.1
63	Terra Ceia muck	3,883	0.7
64	Okeechobee muck	1,605	0.3
65	Martel sandy clay loam	688	0.1
66	Lynne sand	339	0.1
67C	Wacahoota loamy sand, 5 to 8 percent slopes	278	*
	Water (bodies of water 40 acres or less in size)	2,913	0.5
	Total	570,880	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE BY CAPABILITY SUBCLASS

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only soils suitable for these crops are listed]

Map symbol and soil name	Capability subclass	Corn	Soybeans	Peanuts	Tobacco*	Watermelons	Improved bermudagrass	Bahiagrass
		Bu	Bu	Lb	Lb	Ton	AUM**	AUM**
2B-------------- Candler	IVs	35	15	1,700	1,400	8.5	5.5	5.5
2C-------------- Candler	VIs	---	---	---	---	---	5.5	5.5
3B-------------- Arredondo	IIIs	55	23	2,500	1,800	10.5	8.0	7.5
3C-------------- Arredondo	IVs	50	20	2,200	1,600	10.0	8.0	7.5
4B. Arredondo-Urban land								
5B-------------- Fort Meade	IIIs	60	25	3,000	2,300	11.0	9.0	8.5
6B-------------- Apopka	IIIs	45	20	2,100	1,500	9.5	6.5	6.5
6C-------------- Apopka	IVs	40	18	2,000	1,350	9.0	6.5	6.5
7B-------------- Kanapaha	IIIw	50	25	---	---	10.0	9.5	8.5
8B-------------- Millhopper	IIIs	60	28	2,800	2,000	10.5	9.0	8.5
8C-------------- Millhopper	IVs	50	24	2,600	1,800	10.5	9.0	8.5
9B. Millhopper-Urban land								
11-------------- Riviera	IIIw	55	25	---	---	9.5	9.0	8.5
13-------------- Pelham	IIIw	60	30	---	---	10.0	9.5	9.0
14-------------- Pomona	IVw	50	30	---	---	9.5	8.5	8.0
15-------------- Pompano	IVw	40	25	---	---	9.0	8.0	7.0
16-------------- Surrency	VIw	---	---	---	---	---	---	8.5
17-------------- Wauchula	IIIw	50	30	---	---	10.0	9.5	9.0
18. Wauchula-Urban land								
19-------------- Monteocha	VIIw	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE BY CAPABILITY SUBCLASS--Continued

Map symbol and soil name	Capability subclass	Corn	Soybeans	Peanuts	Tobacco*	Watermelons	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lb	Lb	Ton	AUM**	AUM**
20B------------- Tavares	IIIs	45	28	2,200	1,500	9.5	8.0	8.0
21-------------- Newnan	IIIs	55	25	2,000	1,300	9.0	8.5	8.5
22-------------- Floridana	VIIw	---	---	---	---	---	---	---
23-------------- Mulat	IIIw	65	32	---	---	10.0	9.0	8.5
25-------------- Pomona	VIIw	---	---	---	---	---	---	---
26-------------- Samsula	IVw	---	---	---	---	---	---	12.0
27**. Urban land								
28-------------- Chipley	IIIw	55	25	2,000	1,500	8.0	8.5	8.5
29B------------- Lochloosa	IIw	75	35	2,700	1,900	12.0	10.0	9.0
29C------------- Lochloosa	IIIe	65	28	2,600	1,800	12.0	9.5	8.5
30B------------- Kendrick	IIe	80	30	3,000	2,400	12.0	10.0	9.0
30C------------- Kendrick	IIIe	70	26	2,900	2,100	12.0	9.5	8.5
31A, 31B-------- Blichton	IIIw	50	30	2,200	---	10.0	10.0	9.5
31C------------- Blichton	IVw	45	25	2,000	---	9.0	9.5	9.0
32B------------- Bivans	IIIw	45	22	---	---	8.0	10.5	10.0
32C------------- Bivans	IVw	40	20	---	---	7.5	10.0	9.5
32D------------- Bivans	VIw	---	---	---	---	---	8.0	8.0
33B------------- Norfolk	IIe	100	40	3,700	3,000	16.0	10.5	9.5
33C------------- Norfolk	IIIe	85	30	3,400	2,700	14.0	9.5	9.0
34-------------- Placid	VIIw	---	---	---	---	---	---	---
35B------------- Gainesville	IIIs	60	25	2,800	2,200	10.5	8.5	8.0
35C------------- Gainesville	IVs	55	22	2,500	2,000	9.5	8.5	8.0
36***. Arents								

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE BY CAPABILITY SUBCLASS--Continued

Map symbol and soil name	Capability subclass	Corn	Soybeans	Peanuts	Tobacco*	Watermelons	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lb	Lb	Ton	AUM**	AUM**
37--------------- Zolfo	IIIw	55	25	2,000	1,500	8.0	8.5	8.5
38***. Pits and Dumps								
39B-------------- Bonneau	IIs	85	30	2,900	2,400	12.0	10.0	9.0
41B-------------- Pedro	IVs	50	20	2,900	1,700	10.0	9.0	8.0
42B-------------- Pedro-Jonesville	IVs	52	21	2,900	1,800	10.0	9.0	8.0
44B. Blichton-Urban land								
45. Urban land-Millhopper								
46B-------------- Jonesville-Cadillac-Bonneau	IIIs	55	23	2,900	2,000	10.5	9.0	8.0
47B-------------- Candler-Apopka	IVs	40	19	1,800	1,400	9.5	6.5	6.5
48--------------- Myakka	IVw	45	25	---	---	9.0	8.0	7.5
49A-------------- Lochloosa	IIw	70	30	2,500	1,700	11.0	10.5	9.0
50--------------- Sparr	IIIw	55	25	2,000	1,700	10.0	9.0	9.0
51--------------- Plummer	IVw	50	25	---	---	9.0	8.5	7.5
52--------------- Ledwith	IIIw	---	---	---	---	---	---	11.0
53--------------- Shenks	IIIw	85	35	---	---	---	---	12.0
54--------------- Emeralda	VIw	---	---	---	---	---	8.5	7.0
55B-------------- Lake	IVs	40	18	2,000	1,500	8.5	6.5	6.5
56--------------- Wauberg	IIIw	55	25	---	---	---	10.0	9.0
57B-------------- Micanopy	IIw	85	35	2,800	1,900	12.0	10.5	10.0
58B-------------- Lake	IVs	45	20	2,000	1,600	9.0	6.5	6.5
59--------------- Pottsburg	IVw	40	20	---	---	8.5	8.0	7.5

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE BY CAPABILITY SUBCLASS--Continued

Map symbol and soil name	Capability subclass	Corn	Soybeans	Peanuts	Tobacco*	Watermelons	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lb	Lb	Ton	AUM**	AUM**
60--------------- Udorthents	VIs	---	---	---	---	---	9.0	9.0
61--------------- Oleno	Vw	---	---	---	---	---	9.5	9.5
62C-------------- Boardman	IVw	50	25	1,900	---	9.5	10.0	9.5
63--------------- Terra Ceia	IIIw	105	40	---	---	---	---	13.0
64--------------- Okeechobee	IIIw	105	40	---	---	---	---	13.0
65--------------- Martel	Vw	---	---	---	---	---	---	9.0
66--------------- Lynne	IIIw	50	30	---	---	10.0	9.5	9.0
67C-------------- Wacahoota	IVw	45	25	2,000	---	9.0	10.0	9.5

* Irrigation is considered a normal part of high level management for tobacco.

** Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

*** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	67,166	21,841	26,634	18,691	---
III	308,513	6,132	118,440	183,941	---
IV	134,575	---	79,717	54,858	---
V	2,329	---	2,329	---	---
VI	16,298	---	13,278	3,020	---
VII	25,950	---	25,950	---	---
VIII	---	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity		Trees to plant
		Equipment limita- tion	Seedling mortality	Plant competi- tion	Common trees	Site index	
2B, 2C------------- Candler	4s	Moderate	Moderate	Moderate	Slash pine---------- Longleaf pine------- Sand pine----------- Turkey oak----------	70 60 75 ---	Sand pine, slash pine.
3B, 3C------------- Arredondo	3s	Moderate	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Turkey oak---------- Magnolia------------	80 80 70 --- ---	Slash pine, loblolly pine.
5B----------------- Fort Meade	3s	Slight	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Redosier dogwood---- Southern magnolia--- Laurel oak---------- Live oak------------ Post oak------------ Turkey oak---------- Hickory------------- Cabbage palm--------	80 80 70 --- --- --- --- --- --- --- ---	Slash pine, loblolly pine.
6B, 6C------------- Apopka	3s	Moderate	Moderate	Slight	Slash pine---------- Loblolly pine------- Longleaf pine-------	80 80 70	Slash pine, loblolly pine.
7B----------------- Kanapaha	3w	Moderate	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Sweetgum------------ Maple--------------- Live oak------------ Water oak----------- Magnolia------------ Hickory-------------	80 80 70 --- --- --- --- --- ---	Slash pine, loblolly pine.
8B, 8C------------- Millhopper	3s	Moderate	Moderate	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine-------	80 80 65	Slash pine, loblolly pine.
11----------------- Riviera	3w	Moderate	Moderate	Moderate	Slash pine---------- Longleaf pine-------	80 70	Slash pine.
13----------------- Pelham	2w	Severe	Severe	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Sweetgum------------ Blackgum------------ Water oak-----------	90 90 80 80 80 80	Slash pine, loblolly pine, longleaf pine.
14----------------- Pomona	3w	Moderate	Moderate	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine-------	80 80 70	Slash pine, loblolly pine.
15----------------- Pompano	4w	Severe	Severe	Moderate	Slash pine----------	70	Slash pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
17: Wauchula	3w	Moderate	Moderate	Moderate	Slash pine	80	Slash pine.
					Longleaf pine	65	
20B: Tavares	3s	Moderate	Moderate	Moderate	Slash pine	80	Slash pine.
					Longleaf pine	70	
					Turkey oak	---	
					Bluejack oak	---	
21: Newnan	3w	Moderate	Moderate	Moderate	Slash pine	80	Slash pine, loblolly pine.
					Longleaf pine	65	
					Loblolly pine	80	
23: Mulat	2w	Severe	Severe	Moderate	Slash pine	90	Slash pine.
					Longleaf pine	75	
28: Chipley	2s	Moderate	Slight	Moderate	Slash pine	90	Slash pine, loblolly pine.
					Loblolly pine	90	
					Longleaf pine	80	
29B, 29C: Lochloosa	2o	Slight	Slight	Slight	Slash pine	90	Slash pine, loblolly pine.
					Loblolly pine	90	
					Dogwood	---	
					Hickory	---	
					Live oak	---	
					Laurel oak	---	
					Water oak	---	
					Magnolia	---	
					Sweetgum	---	
					Red maple	---	
30B, 30C: Kendrick	2s	Moderate	Moderate	Moderate	Slash pine	90	Slash pine, loblolly pine, longleaf pine.
					Loblolly pine	90	
					Longleaf pine	75	
					Turkey oak	---	
					Hickory	---	
					Magnolia	---	
					Dogwood	---	
					Laurel oak	---	
					Live oak	---	
					Water oak	---	
31A, 31B, 31C: Blichton	2w	Moderate	Slight	Moderate	Slash pine	90	Slash pine, loblolly pine, longleaf pine.
					Loblolly pine	90	
					Longleaf pine	80	
					Flowering dogwood	---	
					Red maple	---	
					Sweetgum	---	
					Magnolia	---	
					Hickory	---	
					Live oak	---	
					Laurel oak	---	
32B, 32C, 32D: Bivans	2w	Moderate	Slight	Moderate	Slash pine	90	Slash pine, loblolly pine, longleaf pine.
					Loblolly pine	90	
					Longleaf pine	80	
					Sweetgum	---	
					Maple	---	
					Hickory	---	
					Magnolia	---	
					Water oak	---	
					Live oak	---	
					Laurel oak	---	
					American holly	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi-nation symbol	Management concerns			Potential productivity		Trees to plant
		Equipment limita-tion	Seedling mortality	Plant competi-tion	Common trees	Site index	
33B, 33C------------ Norfolk	2o	Slight	Slight	Moderate	Loblolly pine-------	86	Slash pine, loblolly pine.
					Longleaf pine-------	68	
					Slash pine----------	86	
35B, 35C------------ Gainesville	3s	Slight	Slight	Moderate	Slash pine----------	80	Slash pine, loblolly pine.
					Loblolly pine-------	80	
					Longleaf pine-------	70	
					Magnolia------------	---	
					Maple---------------	---	
					Dogwood-------------	---	
					Live oak------------	---	
					Water oak-----------	---	
					Laurel oak----------	---	
37------------------ Zolfo	3w	Moderate	Moderate	Moderate	Slash pine----------	80	Slash pine.
					Longleaf pine-------	65	
39B----------------- Bonneau	2s	Moderate	Moderate	Moderate	Loblolly pine-------	95	Loblolly pine, longleaf pine.
					Longleaf pine-------	75	
41B----------------- Pedro	3s	Moderate	Moderate	Slight	Slash pine----------	80	Slash pine, loblolly pine.
					Loblolly pine-------	80	
					Longleaf pine-------	70	
					Live oak------------	---	
					Post oak------------	---	
					Turkey oak----------	---	
42B*:							
Pedro---------------	3s	Moderate	Moderate	Slight	Slash pine----------	80	Slash pine, loblolly pine.
					Loblolly pine-------	80	
					Longleaf pine-------	70	
					Live oak------------	---	
					Post oak------------	---	
					Turkey oak----------	---	
Jonesville----------	3s	Moderate	Moderate	Moderate	Slash pine----------	80	Slash pine.
					Longleaf pine-------	65	
					Post oak------------	---	
					Laurel oak----------	---	
					Live oak------------	---	
					Southern red oak----	---	
					Hickory-------------	---	
46B*:							
Jonesville----------	3s	Moderate	Moderate	Moderate	Slash pine----------	80	Slash pine.
					Longleaf pine-------	65	
					Post oak------------	---	
					Laurel oak----------	---	
					Live oak------------	---	
					Southern red oak----	---	
					Hickory-------------	---	
Cadillac------------	3s	Moderate	Slight	Moderate	Slash pine----------	80	Slash pine.
					Longleaf pine-------	65	
Bonneau-------------	2s	Moderate	Moderate	Moderate	Loblolly pine-------	95	Loblolly pine, longleaf pine.
					Longleaf pine-------	75	
47B*:							
Candler-------------	4s	Moderate	Moderate	Moderate	Slash pine----------	70	Sand pine, slash pine.
					Longleaf pine-------	60	
					Sand pine-----------	75	
					Turkey oak----------	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi-nation symbol	Management concerns			Potential productivity		Trees to plant
		Equipment limita-tion	Seedling mortality	Plant competi-tion	Common trees	Site index	
47B*:							
Apopka	3s	Moderate	Moderate	Slight	Slash pine	80	Slash pine, loblolly pine.
					Loblolly pine	80	
					Longleaf pine	70	
48 Myakka	4w	Moderate	Moderate	Moderate	Slash pine	70	Slash pine.
					Longleaf pine	60	
49A Lochloosa	2o	Slight	Slight	Slight	Slash pine	90	Slash pine, loblolly pine.
					Loblolly pine	90	
					Dogwood	---	
					Hickory	---	
					Live oak	---	
					Laurel oak	---	
					Water oak	---	
					Magnolia	---	
					Sweetgum	---	
					Red maple	---	
50 Sparr	3w	Moderate	Moderate	Moderate	Slash pine	80	Slash pine, loblolly pine.
					Loblolly pine	80	
					Longleaf pine	70	
					Laurel oak	---	
					Water oak	---	
					Live oak	---	
					Dogwood	---	
					Magnolia	---	
					Hickory	---	
51 Plummer	2w	Severe	Severe	Moderate	Slash pine	88	Loblolly pine, slash pine.
					Loblolly pine	91	
					Longleaf pine	70	
55B Lake	3s	Moderate	Moderate	Moderate	Slash pine	80	Slash pine.
					Longleaf pine	65	
56 Wauberg	2w	Moderate	Moderate	Moderate	Slash pine	90	Slash pine, longleaf pine.
					Longleaf pine	80	
					Sweetgum	---	
					Red maple	---	
57B Micanopy	2o	Slight	Slight	Slight	Slash pine	90	Slash pine, longleaf pine.
					Loblolly pine	90	
					Longleaf pine	75	
					Magnolia	---	
					Hickory	---	
					Dogwood	---	
					Laurel oak	---	
					Live oak	---	
					Water oak	---	
58B* Lake	3s	Moderate	Moderate	Moderate	Slash pine	85	Slash pine.
					Longleaf pine	70	
59 Pottsburg	4w	Moderate	Moderate	Moderate	Slash pine	70	Slash pine.
					Longleaf pine	60	
60 Udorthents	3c	Moderate	Moderate	Moderate	Slash pine	80	Slash pine, loblolly pine.
					Loblolly pine	80	
61 Oleno	2w	Severe	Severe	Moderate	Slash pine	90	Slash pine, loblolly pine.
					Loblolly pine	90	
					Sweetgum	---	
					Water oak	---	
					Eastern cottonwood	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
62C Boardman	2w	Moderate	Moderate	Moderate	Slash pine Loblolly pine Longleaf pine Hickory Magnolia Laurel oak Water oak Sweetgum	90 90 80 --- --- --- --- ---	Slash pine, loblolly pine, longleaf pine.
66 Lynne	3w	Moderate	Moderate	Moderate	Slash pine Loblolly pine Longleaf pine	80 80 70	Slash pine, loblolly pine.
67C Wacahoota	2w	Moderate	Slight	Moderate	Slash pine Loblolly pine Longleaf pine	90 90 80	Slash pine, loblolly pine, longleaf pine.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2B--------------------- Candler	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
2C--------------------- Candler	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
3B--------------------- Arredondo	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
3C--------------------- Arredondo	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
4B*:					
Arredondo-------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Urban land.					
5B--------------------- Fort Meade	Slight-----------	Slight-----------	Moderate: slope.	Slight-----------	Moderate: droughty.
6B--------------------- Apopka	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
6C--------------------- Apopka	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
7B--------------------- Kanapaha	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
8B--------------------- Millhopper	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
8C--------------------- Millhopper	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Moderate: droughty, too sandy.
9B*:					
Millhopper------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
Urban land.					
11--------------------- Riviera	Severe: wetness, percs slowly, too sandy.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
13--------------------- Pelham	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
14-------------------- Pomona	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
15-------------------- Pompano	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
16-------------------- Surrency	Severe: ponding, too sandy, wetness.	Severe: too sandy, ponding.	Severe: too sandy, ponding.	Severe: wetness, too sandy.	Severe: ponding.
17-------------------- Wauchula	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: wetness.
18*:					
Wauchula-------------	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: wetness.
Urban land.					
19-------------------- Monteocha	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
20B------------------- Tavares	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
21-------------------- Newnan	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, too sandy.
22-------------------- Floridana	Severe: ponding, percs slowly, too sandy.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding, percs slowly.	Severe: ponding, too sandy.	Severe: ponding.
23-------------------- Mulat	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.
25-------------------- Pomona	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
26-------------------- Samsula	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
27*. Urban land					
28-------------------- Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
29B------------------- Lochloosa	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
29C------------------- Lochloosa	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
30B------------------- Kendrick	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
30C------------------- Kendrick	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
31A------------------- Blichton	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: wetness.
31B------------------- Blichton	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
31C------------------- Blichton	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: slope, too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
32B------------------- Bivans	Severe: wetness, percs slowly, too sandy.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
32C, 32D-------------- Bivans	Severe: wetness, percs slowly, too sandy.	Severe: wetness, too sandy, percs slowly.	Severe: slope, too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
33B------------------- Norfolk	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
33C------------------- Norfolk	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
34-------------------- Placid	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
35B, 35C-------------- Gainsville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
36*. Arents					
37-------------------- Zolfo	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
38*: Pits.					
Dumps.					
39B------------------- Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
41B------------------- Pedro	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy.	Severe: droughty, thin layer.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
42B*:					
Pedro	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy.	Severe: droughty, thin layer.
Jonesville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
44B*:					
Blichton	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Urban land.					
45*:					
Urban land.					
Millhopper	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
46B*:					
Jonesville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Cadillac	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
47B*:					
Candler	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Apopka	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
48 Myakka	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
49A Lochloosa	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
50 Sparr	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty.
51 Plummer	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
52 Ledwith	Severe: ponding, percs slowly, excess humus.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus, ponding, percs slowly.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
53 Shenks	Severe: ponding, percs slowly, excess humus.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus, ponding, percs slowly.	Severe: ponding, excess humus.	Severe: ponding, excess humus.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
54-------------------- Emeralda	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
55B------------------- Lake	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
56-------------------- Wauberg	Severe: wetness, percs slowly, too sandy.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness, percs slowly.	Severe: wetness, too sandy.	Severe: wetness.
57B------------------- Micanopy	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
58B------------------- Lake	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
59-------------------- Pottsburg	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
60-------------------- Udorthents	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.
61-------------------- Oleno	Severe: flooding, too clayey, wetness.	Severe: too clayey, wetness.	Severe: too clayey, wetness.	Severe: too clayey, wetness.	Severe: wetness, too clayey.
62C------------------- Boardman	Severe: wetness.	Severe: wetness.	Severe: slope, small stones.	Severe: wetness.	Severe: wetness.
63-------------------- Terra Ceia	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
64-------------------- Okeechobee	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
65-------------------- Martel	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, erodes easily.	Severe: ponding.
66-------------------- Lynne	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
67C------------------- Wacahoota	Severe: wetness.	Severe: wetness.	Severe: slope, small stones.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2B, 2C------------- Candler	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
3B, 3C------------- Arredondo	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
4B*:										
Arredondo---------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
5B----------------- Fort Meade	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
6B, 6C------------- Apopka	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
7B----------------- Kanapaha	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Poor.
8B, 8C------------- Millhopper	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
9B*:										
Millhopper--------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
11----------------- Riviera	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair.
13----------------- Pelham	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
14----------------- Pomona	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
15----------------- Pompano	Poor	Fair	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
16----------------- Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
17----------------- Wauchula	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
18*:										
Wauchula----------	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
Urban land.										
19----------------- Monteocha	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
20B---------------- Tavares	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
21----------------- Newnan	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
22. Floridana										
23----------------- Mulat	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
25----------------- Pomona	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
26----------------- Samsula	Very poor.	Very poor.	Poor	Fair	Very poor.	Good	Good	Very poor.	Poor	Good.
27*. Urban land										
28----------------- Chipley	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
29B, 29C----------- Lochloosa	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
30B, 30C----------- Kendrick	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
31A---------------- Blichton	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
31B, 31C----------- Blichton	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
32B, 32C----------- Bivans	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
32D---------------- Bivans	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
33B---------------- Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
33C---------------- Norfolk	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
34----------------- Placid	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
35B, 35C----------- Gainesville	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
36*. Arents										
37----------------- Zolfo	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor.
38*: Pits.										
Dumps.										
39B---------------- Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
41B---------------- Pedro	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
42B*:										
Pedro	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Jonesville	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
44B*:										
Blichton	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Urban land.										
45*:										
Urban land.										
Millhopper	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
46B*:										
Jonesville	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cadillac	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
47B*:										
Candler	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Apopka	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
48 Myakka	Poor	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Poor	Poor.
49A Lochloosa	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor.
50 Sparr	Poor	Fair	Good	Fair	Fair	Poor	Fair	Fair	Fair	Poor.
51 Plummer	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
52 Ledwith	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
53 Shenks	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
54 Emeralda	Poor	Poor	Fair	Fair	Poor	Good	Good	Poor	Fair	Good.
55B Lake	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
56 Wauberg	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
57B Micanopy	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
58B: Lake	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
59: Pottsburg	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
60: Udorthents	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
61: Oleno	Poor	Fair	Fair	Fair	Poor	Fair	Good	Fair	Fair	Fair.
62C: Boardman	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
63: Terra Ceia	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
64: Okeechobee	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
65: Martel	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
66: Lynne	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
67C: Wacahoota	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
2B: Candler	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
2C: Candler	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
3B: Arredondo	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
3C: Arredondo	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
4B*:					
Arredondo	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Urban land.					
5B: Fort Meade	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
6B: Apopka	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
6C: Apopka	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
7B: Kanapaha	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
8B: Millhopper	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight.
8C: Millhopper	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
9B*:					
Millhopper	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight.
Urban land.					
11: Riviera	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
13: Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
14: Pomona	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
15: Pompano	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
16: Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
17----------------- Wauchula	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
18*:					
Wauchula----------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land.					
19----------------- Monteocha	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
20B---------------- Tavares	Severe: cutbanks cave.	Slight------------	Moderate: wetness.	Slight-------------	Slight.
21----------------- Newnan	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
22----------------- Floridana	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
23----------------- Mulat	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
25----------------- Pomona	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
26----------------- Samsula	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding.
27*. Urban land					
28----------------- Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
29B---------------- Lochloosa	Severe: cutbanks cave.	Slight------------	Moderate: wetness.	Slight-------------	Slight.
29C---------------- Lochloosa	Severe: cutbanks cave.	Slight------------	Moderate: wetness.	Moderate: slope.	Slight.
30B---------------- Kendrick	Severe: cutbanks cave.	Slight------------	Slight------------	Slight-------------	Slight.
30C---------------- Kendrick	Severe: cutbanks cave.	Slight------------	Slight------------	Moderate: slope.	Slight.
31A, 31B, 31C------ Blichton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
32B, 32C----------- Bivans	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
32D: Bivans	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: low strength, wetness, shrink-swell.
33B: Norfolk	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
33C: Norfolk	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
34: Placid	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
35B: Gainesville	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
35C: Gainesville	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
36*. Arents					
37: Zolfo	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
38*: Pits.					
Dumps.					
39B: Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
41B: Pedro	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
42B*: Pedro	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Jonesville	Severe: cutbanks cave.	Slight	Moderate: depth to rock.	Slight	Slight.
44B*: Blichton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land.					
45*: Urban land.					
Millhopper	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight.
46B*: Jonesville	Severe: cutbanks cave.	Slight	Moderate: depth to rock.	Slight	Slight.
Cadillac	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
47B*:					
Candler	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Apopka	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
48 Myakka	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
49A Lochloosa	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight.
50 Sparr	Severe: cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
51 Plummer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
52 Ledwith	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.
53 Shenks	Severe: excess humus, ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.
54 Emeralda	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: wetness, shrink-swell.
55B Lake	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
56 Wauberg	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
57B Micanopy	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.
58B Lake	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
59 Pottsburg	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
60 Udorthents	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.
61 Oleno	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, low strength.
62C Boardman	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
63----------------- Terra Ceia	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.
64----------------- Okeechobee	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding.
65----------------- Martel	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.
66----------------- Lynne	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
67C---------------- Wacahoota	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2B, 2C Candler	Slight*	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
3B, 3C Arredondo	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
4B**:					
Arredondo	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
Urban land.					
5B Fort Meade	Slight*	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
6B, 6C Apopka	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
7B Kanapaha	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
8B, 8C Millhopper	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
9B**:					
Millhopper	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
11 Riviera	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
13 Pelham	Severe: wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, too sandy.
14 Pomona	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
15 Pompano	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
16 Surrency	Severe: ponding, wetness.	Severe: seepage, ponding, wetness.	Severe: ponding, wetness, too sandy.	Severe: ponding, seepage, wetness.	Poor: too sandy, wetness.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
17------------------- Wauchula	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
18**:					
Wauchula-----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
Urban land.					
19------------------- Monteocha	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
20B------------------ Tavares	Moderate*: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
21------------------- Newnan	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
22------------------- Floridana	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding.	Severe: ponding, seepage.	Poor: ponding.
23------------------- Mulat	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
25------------------- Pomona	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
26------------------- Samsula	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
27**. Urban land					
28------------------- Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
29B, 29C------------- Lochloosa	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
30B, 30C------------- Kendrick	Slight------------	Severe: seepage.	Slight------------	Severe: seepage.	Good.
31A------------------ Blichton	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, seepage, too sandy.	Severe: seepage, wetness.	Severe: wetness, seepage, too sandy.
31B, 31C------------- Blichton	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
32B, 32C: Bivans	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: seepage, wetness.	Poor: too clayey, hard to pack, wetness.
32D: Bivans	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: seepage, wetness.	Poor: too clayey, hard to pack, wetness.
33B, 33C: Norfolk	Moderate: wetness.	Moderate: seepage.	Slight	Slight	Slight.
34: Placid	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
35B, 35C*: Gainesville	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Severe: too sandy.
36**. Arents					
37: Zolfo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
38**: Pits.					
Dumps.					
39B: Bonneau	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
41B: Pedro	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
42B**: Pedro	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
Jonesville	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
44B**: Blichton	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Urban land.					
45**: Urban land.					
Millhopper	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
46B**:					
Jonesville	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
Cadillac	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Bonneau	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
47B**:					
Candler	Slight*	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Apopka	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
48 Myakka	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
49A Lochloosa	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
50 Sparr	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
51 Plummer	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
52 Ledwith	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
53 Shenks	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, too clayey.	Severe: seepage, ponding.	Poor: too clayey, hard to pack, ponding.
54 Emeralda	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
55B Lake	Slight*	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
56 Wauberg	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
57B Micanopy	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
58B------------------ Lake	Slight*----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
59------------------- Pottsburg	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: wetness, seepage.	Poor: too sandy, wetness, seepage.
60------------------- Udorthents	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, too clayey.	Slight-----------	Poor: too clayey, hard to pack.
61------------------- Oleno	Severe: flooding, percs slowly, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding,	Severe: flooding, wetness, seepage.	Poor: wetness, too sandy.
62C------------------ Boardman	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
63------------------- Terra Ceia	Severe: ponding, poor filter.	Severe: seepage, excess humus.	Severe: ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
64------------------- Okeechobee	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
65------------------- Martel	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
66------------------- Lynne	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: hard to pack, wetness.
67C------------------ Wacahoota	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.

* A hazard of ground water contamination is possible where there are many septic tanks because of poor filtration in the soil.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
2B, 2C----------------- Candler	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
3B, 3C----------------- Arredondo	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
4B*:				
Arredondo------------	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
Urban land.				
5B--------------------- Fort Meade	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
6B, 6C----------------- Apopka	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
7B--------------------- Kanapaha	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
8B, 8C----------------- Millhopper	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
9B*:				
Millhopper-----------	Good-----------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
Urban land.				
11--------------------- Riviera	Poor: wetness.	Probable-------------	Improbable: excess fines.	Poor: too sandy, wetness.
13--------------------- Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
14--------------------- Pomona	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
15--------------------- Pompano	Poor: wetness.	Probable-------------	Improbable: too sandy.	Poor: too sandy, wetness.
16--------------------- Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
17--------------------- Wauchula	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
18*:				
Wauchula-------------	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Urban land.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
19 Monteocha	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
20B Tavares	Good	Probable	Improbable: too sandy.	Poor: too sandy.
21 Newnan	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
22 Floridana	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
23 Mulat	Poor: wetness.	Probable	Improbable: excess fines.	Poor: too sandy, wetness.
25 Pomona	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
26 Samsula	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
27*. Urban land				
28 Chipley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
29B, 29C Lochloosa	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
30B, 30C Kendrick	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
31A Blichton	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
31B, 31C Blichton	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
32B, 32C, 32D Bivans	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
33B, 33C Norfolk	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
34 Placid	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
35B, 35C Gainesville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
36*. Arents				
37 Zolfo	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
38*: Pits.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
38*: Dumps.				
39B: Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
41B: Pedro	Poor: area reclaim.	Improbable: thin layer.	Improbable: too sandy.	Poor: area reclaim, too sandy.
42B*:				
Pedro	Poor: area reclaim.	Improbable: thin layer.	Improbable: too sandy.	Poor: area reclaim, too sandy.
Jonesville	Poor: area reclaim.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
44B*:				
Blichton	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Urban land.				
45*:				
Urban land.				
Millhopper	Good	Probable	Improbable: too sandy.	Poor: too sandy.
46B*:				
Jonesville	Poor: area reclaim.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
Cadillac	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
47B*:				
Candler	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Apopka	Good	Probable	Improbable: too sandy.	Poor: too sandy.
48: Myakka	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
49A: Lochloosa	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
50: Sparr	Fair: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
51: Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
52: Ledwith	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
53 Shenks	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
54 Emeralda	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
55B Lake	Good	Probable	Improbable: too sandy.	Poor: too sandy.
56 Wauberg	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
57B Micanopy	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
58B Lake	Good	Probable	Improbable: too sandy.	Poor: too sandy.
59 Pottsburg	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
60 Udorthents	Good	Improbable	Improbable: excess fines.	Poor: too clayey.
61 Oleno	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
62C Boardman	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
63 Terra Ceia	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
64 Okeechobee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
65 Martel	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
66 Lynne	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
67C Wacahoota	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2B, 2C: Candler	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
3B, 3C: Arredondo	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
4B*:							
Arredondo	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Urban land.							
5B: Fort Meade	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
6B, 6C: Apopka	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
7B: Kanapaha	Severe: seepage.	Severe: seepage, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
8B, 8C: Millhopper	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
9B*:							
Millhopper	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Urban land.							
11: Riviera	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Wetness, percs slowly.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty, percs slowly.
13: Pelham	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Wetness	Wetness	Wetness	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
14----------------- Pomona	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
15----------------- Pompano	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
16----------------- Surrency	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
17----------------- Wauchula	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Percs slowly---	Wetness, fast intake, soil blowing.	Wetness, erodes easily, soil blowing.	Wetness, erodes easily, percs slowly.
18*:							
Wauchula----------	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Percs slowly---	Wetness, fast intake, soil blowing.	Wetness, erodes easily, soil blowing.	Wetness, erodes easily, percs slowly.
Urban land.							
19----------------- Monteocha	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, fast intake, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
20B---------------- Tavares	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
21----------------- Newnan	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
22----------------- Floridana	Severe: seepage.	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly.	Ponding, fast intake, soil blowing.	Ponding, soil blowing, percs slowly.	Wetness, percs slowly.
23----------------- Mulat	Severe: seepage.	Severe: thin layer, wetness.	Severe: cutbanks cave.	Favorable-------	Wetness, fast intake, soil blowing.	Wetness, soil blowing.	Wetness.
25----------------- Pomona	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
26 Samsula	Severe: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
27*. Urban land							
28 Chipley	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
29B, 29C Lochloosa	Severe: seepage.	Moderate: wetness.	Severe: cutbanks cave.	Slope	Wetness, fast intake, soil blowing.	Wetness, soil blowing.	Favorable.
30B, 30C Kendrick	Severe: seepage.	Slight	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty, rooting depth.
31A Blichton	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
31B, 31C Blichton	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
32B, 32C Bivans	Moderate: slope.	Severe: wetness.	Severe: no water.	Percs slowly, slope.	Wetness, fast intake, soil blowing.	Wetness, soil blowing, percs slowly.	Wetness, slope, percs slowly.
32D Bivans	Severe: slope.	Severe: wetness.	Severe: no water.	Percs slowly, slope.	Wetness, fast intake, soil blowing.	Slope, wetness, soil blowing.	Wetness, slope, percs slowly.
33B, 33C Norfolk	Moderate: seepage.	Slight	Severe: deep to water.	Deep to water	Slope	Favorable	Favorable.
34 Placid	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, fast intake, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
35B, 35C Gainesville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
36*. Arents							

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
37: Zolfo	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
38*: Pits.							
Dumps.							
39B: Bonneau	Moderate: seepage, slope.	Slight	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, slope.	Soil blowing	Droughty.
41B: Pedro	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
42B*: Pedro	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
Jonesville	Moderate: seepage, depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
44B*: Blichton	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
Urban land.							
45*: Urban land.							
Millhopper	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
46B*: Jonesville	Moderate: seepage, depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
Cadillac	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Bonneau	Moderate: seepage.	Slight	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
47B*:							
Candler	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Apopka	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
48 Myakka	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
49A Lochloosa	Severe: seepage.	Moderate: wetness.	Severe: cutbanks cave.	Favorable	Wetness, fast intake, soil blowing.	Wetness, soil blowing.	Favorable.
50 Sparr	Severe: seepage, wetness.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
51 Plummer	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
52 Ledwith	Slight	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Ponding, soil blowing, percs slowly.	Wetness, percs slowly.
53 Shenks	Severe: seepage.	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Ponding, soil blowing, percs slowly.	Wetness, percs slowly.
54 Emeralda	Slight	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly	Wetness, fast intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
55B Lake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
56 Wauberg	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly	Wetness, fast intake, soil blowing.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
57B Micanopy	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Wetness, fast intake, soil blowing.	Wetness, soil blowing, percs slowly.	Percs slowly.
58B Lake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
59----------------- Pottsburg	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
60----------------- Udorthents	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Deep to water	Slow intake, percs slowly.	Percs slowly---	Percs slowly.
61----------------- Oleno	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Flooding, slow intake, wetness.	Slow intake, wetness, percs slowly.	Wetness, percs slowly.
62C---------------- Boardman	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Percs slowly, slope.	Wetness, droughty, fast intake.	Erodes easily, wetness.	Wetness, erodes easily.
63----------------- Terra Ceia	Severe: seepage.	Severe: excess humus, ponding.	Slight----------	Ponding, subsides.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
64----------------- Okeechobee	Severe: seepage.	Severe: excess humus, ponding.	Slight----------	Ponding, subsides.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
65----------------- Martel	Slight----------	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
66----------------- Lynne	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness, soil blowing.	Wetness, droughty.
67C---------------- Wacahoota	Severe: seepage.	Severe: wetness.	Severe: no water.	Slope-----------	Wetness, droughty, fast intake.	Wetness---------	Wetness, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
2B--------------- Candler	0-70	Fine sand--------	SP, SP-SM	A-3	0	100	95-100	75-100	2-8	---	NP
	70-82	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	95-100	75-100	5-12	---	NP
2C--------------- Candler	0-62	Fine sand--------	SP, SP-SM	A-3	0	100	95-100	75-100	2-8	---	NP
	62-85	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	95-100	75-100	5-12	---	NP
3B--------------- Arredondo	0-49	Fine sand--------	SP-SM, SM	A-2-4, A-3	0	95-100	90-100	75-95	5-15	---	NP
	49-54	Loamy sand, loamy fine sand, sandy loam.	SM, SM-SC	A-2-4	0	95-100	90-100	75-95	13-25	<25	NP-7
	54-86	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM-SC	A-2-4, A-2-6, A-4, A-6	0	95-100	90-100	85-95	20-40	<40	NP-20
3C--------------- Arredondo	0-65	Fine sand--------	SP-SM, SM	A-2-4, A-3	0	95-100	90-100	75-95	5-15	---	NP
	65-88	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM-SC	A-2-4, A-2-6, A-4, A-6	0	95-100	90-100	85-95	20-40	<40	NP-20
4B*: Arredondo-------	0-49	Fine sand--------	SP-SM, SM	A-2-4, A-3	0	95-100	90-100	75-95	5-15	---	NP
	49-54	Loamy sand, loamy fine sand, sandy loam.	SM, SM-SC	A-2-4	0	95-100	90-100	75-95	13-25	<25	NP-7
	54-86	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM-SC	A-2-4, A-2-6, A-4, A-6	0	95-100	90-100	85-95	20-40	<40	NP-20
Urban land.											
5B--------------- Fort Meade	0-14	Fine sand--------	SM	A-2-4	0	95-100	90-100	80-100	13-25	---	NP
	14-85	Loamy sand, loamy fine sand, fine sand.	SM	A-2-4	0	95-100	90-100	80-100	13-25	---	NP
6B, 6C----------- Apopka	0-61	Sand-------------	SP, SP-SM	A-3	0	100	100	85-100	3-10	---	NP
	61-82	Sandy loam, sandy clay loam, sandy clay.	SM-SC, SC	A-2-4, A-2-6, A-4, A-6	0	98-100	95-100	60-95	20-40	20-40	4-20
7B--------------- Kanapaha	0-44	Sand-------------	SP-SM	A-3, A-2-4	0	95-100	90-100	75-95	5-12	---	NP
	44-50	Sandy loam, sandy clay loam.	SM-SC, SC	A-2-4	0	95-100	90-100	80-95	20-35	20-30	4-10
	50-80	Sandy clay loam, sandy clay, sandy loam.	SC, SM-SC	A-2-4, A-2-6, A-4, A-6	0	95-100	90-100	80-95	25-45	19-40	6-22
8B--------------- Millhopper	0-58	Sand-------------	SP-SM, SM	A-3, A-2-4	0	100	97-100	75-95	5-20	---	NP
	58-64	Loamy sand, loamy fine sand.	SM	A-2-4	0	100	97-100	75-95	15-22	---	NP
	64-89	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4	0	100	97-100	75-95	18-40	<28	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
8C----------------- Millhopper	0-54	Sand--------------	SP-SM, SM	A-3, A-2-4	0	100	97-100	75-95	5-20	---	NP
	54-56	Loamy sand, loamy fine sand.	SM	A-2-4	0	100	97-100	75-95	15-22	---	NP
	56-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4	0	100	97-100	75-95	18-40	<28	NP-10
9B*:											
Millhopper-------	0-58	Sand--------------	SP-SM, SM	A-3, A-2-4	0	100	97-100	75-95	5-20	---	NP
	58-64	Loamy sand, loamy fine sand.	SM	A-2-4	0	100	97-100	75-95	15-22	---	NP
	64-89	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4	0	100	97-100	75-95	18-40	<28	NP-10
Urban land.											
11----------------- Riviera	0-32	Sand--------------	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	4-12	---	NP
	32-42	Sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4	0	100	100	80-100	15-35	<35	NP-15
	42-55	Sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	0	100	100	80-100	20-35	20-40	4-20
	55-80	Sand, fine sand, loamy sand.	SP, SP-SM	A-3, A-1, A-2-4	0	60-80	50-75	40-70	3-10	---	NP
13----------------- Pelham	0-27	Sand--------------	SM	A-2	0	100	95-100	75-90	10-25	---	NP
	27-69	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	65-90	30-50	15-30	2-12
	69-80	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, ML, CL	A-2, A-4, A-6, A-7	0	100	95-100	65-90	30-65	20-45	5-20
14----------------- Pomona	0-5	Sand--------------	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	5-16	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	16-24	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	5-15	---	NP
	24-43	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	43-84	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, SM	A-2, A-4, A-6	0	100	95-100	85-100	25-50	<40	NP-16
15----------------- Pompano	0-82	Sand--------------	SP, SP-SM	A-3, A-2-4	0	100	100	75-100	1-12	---	NP
16----------------- Surrency	0-28	Sand--------------	SM	A-2	0	100	95-100	50-75	10-26	---	NP
	28-44	Sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2	0	100	95-100	75-93	22-35	<30	NP-10
	44-80	Sandy clay loam	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	80-98	30-44	<35	NP-15
17----------------- Wauchula	0-8	Sand--------------	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	8-14	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	14-18	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	8-25	---	NP
	18-28	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-20	---	NP
	28-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6	0	100	92-100	90-100	25-50	<40	NP-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
18*:											
Wauchula	0-8	Sand	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	8-14	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	14-18	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	8-25	---	NP
	18-28	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-20	---	NP
	28-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6	0	100	92-100	90-100	25-50	<40	NP-20
Urban land.											
19 Monteocha	0-12	Loamy sand	SP-SM, SM	A-3, A-2-4	0	100	100	80-95	5-23	---	NP
	12-48	Sand, fine sand	SP, SP-SM, SM	A-3, A-2-4	0	100	100	80-90	3-15	---	NP
	48-85	Fine sandy loam, sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	0	100	100	75-100	16-35	<35	NP-12
	85-94	Sand, loamy sand, sandy loam.	SP-SM, SM, SM-SC	A-3, A-2-4	0	100	100	85-98	6-20	<26	NP-7
20B Tavares	0-80	Sand	SP, SP-SM	A-3	0	100	95-100	85-100	2-10	---	NP
21 Newnan	0-12	Sand	SP, SP-SM	A-3, A-2-4	0	100	98-100	80-98	3-12	---	NP
	12-16	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	98-100	80-98	6-15	---	NP
	16-56	Sand, fine sand	SP, SP-SM, SM	A-3, A-2-4	0	100	98-100	80-98	3-18	---	NP
	56-59	Loamy sand, loamy fine sand.	SM	A-2-4	0	100	98-100	80-98	15-22	---	NP
	59-82	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4, A-6	0	100	98-100	85-98	18-40	<35	NP-20
22 Floridana	0-14	Sand	SP-SM, SM	A-3, A-2-4	0	100	100	80-90	5-25	---	NP
	14-30	Sand, fine sand	SP, SP-SM	A-3	0	100	100	80-90	2-10	---	NP
	30-74	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	0	100	100	85-95	20-35	20-30	7-16
23 Mulat	0-26	Sand	SP-SM	A-3, A-2-4	0	100	100	80-95	5-12	---	NP
	26-54	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4	0	100	100	80-95	20-35	20-30	NP-10
	54-80	Fine sand, sand, loamy sand.	SP, SP-SM	A-3	0	100	100	75-95	4-20	---	NP
25 Pomona	0-4	Sand	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	4-25	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	25-32	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	5-15	---	NP
	32-52	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	85-100	2-12	---	NP
	52-80	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, SM	A-2, A-4, A-6	0	100	95-100	85-100	25-50	<40	NP-16

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
26---------------- Samsula	0-35	Muck--------------	PT	---	---	---	---	---	---	---	---
	35-75	Sand, fine sand, loamy sand.	SP-SM, SM, SP	A-3, A-2-4	0	100	100	80-100	2-20	---	NP
27*. Urban land											
28---------------- Chipley	0-12	Sand--------------	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP
	12-81	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP
29B--------------- Lochloosa	0-31	Fine sand---------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	90-98	8-20	---	NP
	31-35	Fine sandy loam, sandy loam, loamy sand.	SM, SM-SC	A-2-4	0	95-100	95-100	90-98	18-30	<28	NP-6
	35-54	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	95-100	95-100	90-98	25-40	25-40	5-18
	54-83	Sandy clay, sandy clay loam.	SC	A-6, A-7	0	95-100	95-100	90-98	40-50	35-45	15-25
29C--------------- Lochloosa	0-25	Fine sand---------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	90-98	8-20	---	NP
	25-30	Fine sandy loam, sandy loam, loamy sand.	SM, SM-SC	A-2-4	0	95-100	95-100	90-98	18-30	<28	NP-6
	30-67	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	95-100	95-100	90-98	25-40	25-40	5-18
	67-80	Sandy clay, sandy clay loam.	SC	A-6, A-7	0	95-100	95-100	90-98	40-50	35-45	15-25
30B--------------- Kendrick	0-26	Sand--------------	SP-SM	A-3, A-2-4	0	95-100	90-100	75-100	5-12	---	NP
	26-31	Sandy clay loam, fine sandy loam, sandy loam.	SC, SM-SC	A-2-6, A-2-4	0	95-100	90-100	85-100	25-35	20-35	4-18
	31-73	Sandy clay loam, sandy clay.	SC	A-2-6, A-6	0	95-100	90-100	85-100	25-45	25-40	11-20
	73-90	Sandy clay loam, sandy loam.	SC, SM-SC	A-2-6, A-2-4	0	95-100	90-100	85-100	25-35	20-35	4-18
30C--------------- Kendrick	0-24	Sand--------------	SP-SM	A-3, A-2-4	0	95-100	90-100	75-100	5-12	---	NP
	24-29	Sandy clay loam, fine sandy loam, sandy loam.	SC, SM-SC	A-2-6, A-2-4	0	95-100	90-100	85-100	25-35	20-35	4-18
	29-76	Sandy clay loam, sandy clay.	SC	A-2-6, A-6	0	95-100	90-100	85-100	25-45	25-40	11-20
31A--------------- Blichton	0-24	Sand--------------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	85-98	8-25	---	NP
	24-30	Sandy loam, fine sandy loam.	SM, SM-SC	A-2-4	0	95-100	95-100	85-98	20-30	<25	NP-7
	30-80	Sandy clay loam	SC	A-6	0	95-100	95-100	85-98	36-45	30-40	15-24
	45-77	Sandy clay loam, sandy clay.	SC	A-2, A-6, A-7	0	95-100	90-100	85-98	30-50	25-45	11-24
	77-80	Stratified sandy loam to sandy clay loam.	SM-SC, SM	A-2-4	0	95-100	90-100	80-95	20-30	<25	NP-7
31B--------------- Blichton	0-28	Sand--------------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	85-98	8-25	---	NP
	28-62	Sandy clay loam	SC	A-6	0	95-100	95-100	85-98	36-45	30-40	15-24
	62-80	Sandy clay loam, sandy clay.	SC	A-2, A-6, A-7	0	95-100	90-100	85-98	30-50	25-45	11-24

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
31C---------------- Blichton	0-31	Sand--------------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	85-98	8-25	---	NP
	31-37	Sandy loam, fine sandy loam.	SM, SM-SC	A-2-4	0	95-100	95-100	85-98	20-30	<25	NP-7
	37-66	Sandy clay loam	SC	A-6	0	95-100	95-100	85-98	36-45	30-40	15-24
	66-80	Sandy clay loam, sandy clay.	SC	A-2, A-6, A-7	0	95-100	90-100	85-98	30-50	25-45	11-24
32B---------------- Bivans	0-15	Sand--------------	SP-SM, SM	A-2-4	0	95-100	95-100	80-95	10-25	---	NP
	15-45	Sandy clay, clay	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	45-69	37-57	22-35
	45-61	Sandy clay loam, sandy clay.	SC, CL	A-6, A-7	0	95-100	95-100	82-98	36-55	30-46	15-26
	61-81	Sandy clay loam, sandy clay, clay.	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	38-69	32-58	17-36
32C---------------- Bivans	0-10	Sand--------------	SP-SM, SM	A-2-4	0	95-100	95-100	80-95	10-25	---	NP
	10-59	Sandy clay, clay	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	45-69	37-57	22-35
	59-80	Sandy clay loam, sandy clay, clay.	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	38-69	32-58	17-36
32D---------------- Bivans	0-11	Sand--------------	SP-SM, SM	A-2-4	0	95-100	95-100	80-95	10-25	---	NP
	11-56	Sandy clay, clay	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	45-69	37-57	22-35
	56-80	Sandy clay loam, sandy clay, clay.	SC, CL, CH	A-6, A-7	0	95-100	95-100	85-98	38-69	32-58	17-36
33B---------------- Norfolk	0-9	Loamy fine sand	SM	A-2	0	95-100	92-100	50-91	13-30	<20	NP
	9-41	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-55	20-38	4-15
	41-80	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7-6	0	100	98-100	65-98	36-72	20-52	4-23
33C---------------- Norfolk	0-11	Loamy fine sand	SM	A-2	0	95-100	92-100	50-91	13-30	<20	NP
	11-46	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-55	20-38	4-15
	46-75	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7-6	0	100	98-100	65-98	36-72	20-52	4-23
34----------------- Placid	0-15	Sand--------------	SP, SP-SM, SM	A-3, A-2-4	0	100	100	90-100	1-20	---	NP
	15-82	Sand, fine sand, loamy fine sand.	SP, SP-SM, SM	A-3, A-2-4	0	100	100	90-100	1-20	---	NP
35B---------------- Gainesville	0-82	Sand, fine sand, loamy sand, loamy fine sand.	SM	A-2-4	0	97-100	95-100	85-100	13-28	---	NP
35C---------------- Gainesville	0-80	Sand, fine sand, loamy sand, loamy fine sand.	SM	A-2-4	0	97-100	95-100	85-100	13-28	---	NP
36*. Arents											
37----------------- Zolfo	0-8	Sand--------------	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	8-60	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-18	---	NP
	60-82	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-18	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
38*:											
Pits.											
Dumps.											
39B--------------- Bonneau	0-29	Fine sand---------	SM, SP-SM	A-2, A-3	0	100	100	60-80	8-20	---	NP
	29-38	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC	A-2, A-6, A-4	0	100	100	60-90	30-50	21-37	4-14
	38-84	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2	0	100	100	60-95	34-60	20-40	4-18
41B--------------- Pedro	0-12	Fine sand---------	SP-SM	A-3, A-2-4	0-1	100	95-100	90-100	5-12	---	NP
	12-17	Sandy clay loam	SC	A-2, A-4, A-6	0-1	90-100	85-100	80-100	25-40	25-35	8-16
	17-72	Weathered bedrock	---	---	---	---	---	---	---	---	---
42B**:											
Pedro------------	0-12	Fine sand---------	SP-SM	A-3, A-2-4	0-1	100	95-100	90-100	5-12	---	NP
	12-17	Sandy clay loam	SC	A-2, A-4, A-6	0-1	90-100	85-100	80-100	25-40	25-35	8-16
	17-72	Weathered bedrock	---	---	---	---	---	---	---	---	---
Jonesville-------	0-7	Fine sand---------	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-15	---	NP
	7-29	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-15	---	NP
	29-33	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-2-6, A-4, A-6	0-10	90-100	85-100	80-95	20-40	<40	NP-15
	33-80	Weathered bedrock	---	---	---	---	---	---	---	---	---
44B*:											
Blichton---------	0-28	Sand--------------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	85-98	8-25	---	NP
	28-62	Sandy clay loam	SC	A-6	0	95-100	95-100	85-98	36-45	30-40	15-24
	62-80	Sandy clay loam, sandy clay.	SC	A-2, A-6, A-7	0	95-100	90-100	85-98	30-50	25-45	11-24
Urban land.											
45*:											
Urban land.											
Millhopper-------	0-58	Sand--------------	SP-SM, SM	A-3, A-2-4	0	100	97-100	75-95	5-20	---	NP
	58-64	Loamy sand, loamy fine sand.	SM	A-2-4	0	100	97-100	75-95	15-22	---	NP
	64-89	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4	0	100	97-100	75-95	18-40	<28	NP-10
46B*:											
Jonesville-------	0-7	Fine sand---------	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-15	---	NP
	7-29	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-15	---	NP
	29-33	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-2-6, A-4, A-6	0-10	90-100	85-100	80-95	20-40	<40	NP-15
	33-80	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
46B*:											
Cadillac----------	0-7	Fine sand---------	SP-SM, SM	A-3, A-2-4	0-3	100	100	80-95	5-15	---	NP
	7-52	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0-3	100	100	80-95	5-15	---	NP
	52-76	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	0-3	97-100	95-100	85-95	20-35	<38	4-22
	76-99	Sandy clay loam, sandy clay, clay.	SC, CL, CH	A-6, A-7	0-10	90-100	90-100	85-98	40-88	35-65	20-39
Bonneau----------	0-29	Fine sand---------	SM, SP-SM	A-2, A-3	0	100	100	60-80	8-20	---	NP
	29-38	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC	A-2, A-6, A-4	0	100	100	60-90	30-50	21-38	4-21
	38-84	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2	0	100	100	60-95	34-60	20-40	4-18
47B*:											
Candler----------	0-70	Fine sand---------	SP, SP-SM	A-3	0	100	95-100	75-100	2-8	---	NP
	70-82	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	95-100	75-100	5-12	---	NP
Apopka-----------	0-61	Sand--------------	SP, SP-SM	A-3	0	100	100	85-100	3-10	---	NP
	61-82	Sandy loam, sandy clay loam, sandy clay.	SM-SC, SC	A-2-4, A-2-6, A-4, A-6	0	98-100	95-100	60-95	20-40	20-40	4-20
48---------------- Myakka	0-24	Sand--------------	SP, SP-SM	A-3	0	100	100	85-100	2-10	---	NP
	24-30	Sand, fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	0	100	100	85-100	5-20	---	NP
	30-82	Sand, fine sand	SP, SP-SM	A-3	0	100	100	85-100	2-8	---	NP
49A--------------- Lochloosa	0-34	Fine sand---------	SP-SM, SM	A-2-4, A-3	0	95-100	95-100	90-98	8-20	---	NP
	34-44	Fine sandy loam, sandy loam, loamy sand.	SM, SM-SC	A-2-4	0	95-100	95-100	90-98	18-30	<28	NP-6
	44-57	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	95-100	95-100	90-98	25-40	25-40	5-18
	57-80	Sandy clay, sandy clay loam.	SC	A-6, A-7	0	95-100	95-100	90-98	40-50	35-45	15-25
50---------------- Sparr	0-8	Fine sand---------	SP-SM, SM	A-3, A-2-4	0	100	100	75-99	5-14	---	NP
	8-48	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	75-99	5-14	---	NP
	48-56	Sandy loam, sandy clay loam, fine sandy loam.	SM-SC, SC, SM	A-2-4	0	100	100	75-99	25-35	<30	NP-10
	56-84	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-2, A-4, A-6	0	100	95-100	75-99	25-40	<35	NP-12
51---------------- Plummer	0-42	Fine sand---------	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	42-81	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<30	NP-10
52---------------- Ledwith	0-9	Muck--------------	PT	---	---	---	---	---	---	---	---
	9-15	Loamy sand, sandy loam, fine sandy loam.	SM, SM-SC, CL-ML	A-2-4, A-4	0	100	100	88-98	25-55	<28	NP-7
	15-17	Sand, loamy sand	SM, SP-SM	A-2-4	0	100	100	88-98	10-28	---	NP
	17-44	Sandy clay, clay	SC, CL, CH	A-7	0	100	100	88-98	47-65	45-62	26-34
	44-93	Sandy clay, clay	SC, CL, CH	A-7	0	100	100	88-98	47-65	45-62	26-34

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
53----------------- Shenks	0-21	Muck--------------	PT	---	---	---	---	---	---	---	---
	21-28	Sandy clay loam, clay loam, sandy clay.	SC, CL, CH	A-6, A-7	0	100	100	90-98	46-75	34-66	14-43
	28-82	Sandy clay, clay	CH	A-7	0	100	100	90-98	56-85	52-80	32-60
54----------------- Emeralda	0-10	Fine sandy loam	SP-SM, SM	A-2-4	0	100	100	90-99	10-40	---	NP
	10-18	Fine sand, loamy fine sand, loamy sand.	SP-SM, SM	A-2-4	0	100	100	90-99	10-25	---	NP
	18-56	Sandy clay, clay	CH, SC, CL	A-7	0	100	100	90-99	45-80	46-66	23-39
	56-80	Sandy clay, clay	CH, SC, CL	A-7	0	100	100	90-99	45-80	46-66	23-39
55B---------------- Lake	0-82	Sand--------------	SP-SM	A-3, A-2-4	0	100	100	85-98	5-12	---	NP
56----------------- Wauberg	0-9	Sand--------------	SP-SM, SM	A-3, A-2-4	0	100	95-100	80-98	5-20	---	NP
	9-24	Sand, fine sand, loamy sand.	SP, SP-SM, SM	A-3, A-2-4	0	100	95-100	80-95	3-17	---	NP
	24-40	Sandy clay loam	SC	A-2-4, A-2-6, A-6, A-4	0	100	98-100	90-99	28-42	22-36	9-16
	40-63	Sandy loam, sandy clay loam, fine sandy loam.	SM-SC, SC	A-2-4, A-2-6, A-4, A-6	0	100	98-100	90-99	22-40	18-34	5-14
	63-81	Sandy clay, clay	SC, CL, CH	A-6, A-7	0	100	98-100	90-99	45-65	37-55	21-40
57B---------------- Micanopy	0-6	Loamy fine sand	SM, SP-SM	A-2-4	0	95-100	95-100	90-100	11-25	---	NP
	6-12	Sandy clay, sandy clay loam.	SC	A-2, A-6, A-7	0	95-100	95-100	90-100	30-50	25-45	12-25
	12-55	Sandy clay, clay	CH	A-7	0	95-100	95-100	90-100	51-70	51-75	25-45
	55-85	Sandy clay, sandy clay loam.	CH, SC	A-7, A-6	0	95-100	95-100	90-100	45-55	35-70	17-42
58B---------------- Lake	0-82	Fine sand---------	SP-SM	A-3, A-2-4	0	100	100	85-98	5-12	---	NP
59----------------- Pottsburg	0-52	Sand--------------	SP-SM	A-3, A-2-4	0	100	100	90-100	5-18	---	NP
	52-86	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	90-100	4-18	---	NP
60----------------- Udorthents	0-72	Mixed or stratified sand, sandy loam, clay	SP-SM, CL, CH	A-2, A-4, A-6	0	100	100	85-100	5-90	24-70	5-50
	72-90	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2-4	0	95-100	90-100	85-95	5-20	---	NP
61----------------- Oleno	0-32	Clay--------------	CH	A-7-5, A-7-6	0	100	100	85-95	60-90	65-100	40-65
	32-71	Fine sandy loam, loamy sand, sand.	SM, SC, SM-SC	A-4, A-2-4	0	100	100	60-70	30-40	<25	NP-5
	71-77	Sandy clay, sandy clay loam.	CL, SC	A-6	0	100	100	60-90	40-85	20-28	10-16
	77-82	Clay, sandy clay	CH	A-7-5, A-7-6	0	100	100	90-100	75-90	68-100	40-65
62C---------------- Boardman	0-14	Loamy sand--------	SP-SM, SM	A-2-4, A-3	0	70-95	65-95	60-90	8-25	---	NP
	14-24	Loamy sand, loamy fine sand, sandy loam.	SM, SM-SC	A-2-4	0	70-95	65-95	60-90	20-30	<25	NP-7
	24-38	Sandy clay loam	SC	A-2, A-4, A-6	0	70-95	65-95	60-90	30-45	25-40	8-20
	38-50	Sandy clay loam, sandy clay.	SC	A-6, A-7	0	70-95	65-95	60-90	40-50	30-50	11-26
	50-63	Sandy clay, clay	SC, CL, CH	A-7	0	70-100	65-100	60-95	45-60	45-60	22-35
	63-80	Clay--------------	CH	A-7	0	90-100	80-100	75-98	65-85	60-80	40-60

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
63---------------- Terra Ceia	0-68	Muck--------------	PT	A-8	---	---	---	---	---	---	---
64---------------- Okeechobee	0-20	Muck--------------	PT	---	0	---	---	---	---	---	---
	20-35	Hemic material---	PT	---	0	---	---	---	---	---	---
	35-80	Sapric material	PT	---	---	---	---	---	---	---	---
65---------------- Martel	0-16	Sandy clay loam	SC, CL	A-4, A-6	0	100	95-100	90-100	36-55	25-40	8-20
	16-80	Sandy clay, clay	CL, CH	A-7	0	100	95-100	90-100	51-70	41-60	25-40
66---------------- Lynne	0-5	Sand--------------	SP, SP-SM	A-3	0	100	100	90-100	3-10	---	NP
	5-20	Sand, fine sand	SP, SP-SM	A-3	0	100	100	90-100	3-10	---	NP
	20-29	Sand, fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	8-15	---	NP
	29-32	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	90-100	5-12	---	NP
	32-37	Sandy clay, clay loam, sandy clay loam.	SC, CH, CL	A-6, A-7	0	100	100	90-100	40-60	35-60	20-40
	37-80	Sandy clay--------	SC, CH, CL	A-6, A-7	0	100	100	90-100	45-60	35-60	20-40
67C--------------- Wacahoota	0-7	Loamy sand--------	SP-SM, SM	A-1-B, A-3, A-2-4	0-5	80-98	65-95	40-85	8-25	---	NP
	7-32	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-1-B, A-3, A-2-4	0-5	80-98	65-95	40-85	8-25	---	NP
	32-80	Sandy clay loam, gravelly sandy clay loam.	SC	A-6, A-2-6	0-5	80-98	65-95	55-85	30-45	25-40	11-20

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
2B---------------- Candler	0-70	<3	1.35-1.55	6.0-20	0.02-0.06	4.5-6.0	<2	Low--------	0.10	5	2	<1
	70-82	3-8	1.50-1.65	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.10			
2C---------------- Candler	0-62	<3	1.35-1.55	6.0-20	0.02-0.06	4.5-6.0	<2	Low--------	0.10	5	2	<1
	62-85	3-8	1.50-1.65	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.10			
3B---------------- Arredondo	0-49	5-12	1.25-1.65	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.10	5	2	<2
	49-54	10-18	1.45-1.60	2.0-6.0	0.08-0.15	4.5-6.0	<2	Low--------	0.20			
	54-86	15-25	1.55-1.70	0.2-2.0	0.12-0.17	4.5-6.0	<2	Low--------	0.24			
3C---------------- Arredondo	0-65	5-12	1.25-1.65	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.10	5	2	<2
	65-88	15-25	1.55-1.70	0.2-2.0	0.12-0.17	4.5-6.0	<2	Low--------	0.24			
4B*:												
Arredondo--------	0-49	5-12	1.25-1.65	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.10	5	2	<2
	49-54	10-18	1.45-1.60	2.0-6.0	0.08-0.15	4.5-6.0	<2	Low--------	0.20			
	54-86	15-25	1.55-1.70	0.2-2.0	0.12-0.17	4.5-6.0	<2	Low--------	0.24			
Urban land.												
5B---------------- Fort Meade	0-14	3-13	1.15-1.55	6.0-20	0.08-0.15	5.1-7.3	<2	Low--------	0.15	5	2	1-5
	14-85	3-13	1.20-1.65	6.0-20	0.06-0.10	4.5-6.0	<2	Low--------	0.15			
6B, 6C------------ Apopka	0-61	0.-3.	1.45-1.60	6.0-20	0.03-0.05	4.5-6.0	<2	Low--------	0.10	5	2	<2
	61-82	18-37	1.55-1.75	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low--------	0.24			
7B---------------- Kanapaha	0-44	2-6	1.55-1.75	2.0-6.0	0.03-0.10	4.5-6.0	<2	Low--------	0.10	5	2	.5-4
	44-50	15-32	1.50-1.65	0.06-0.6	0.10-0.15	4.5-6.0	<2	Low--------	0.24			
	50-80	15-40	1.50-1.65	0.06-0.6	0.07-0.15	4.5-6.0	<2	Low--------	0.32			
8B---------------- Millhopper	0-58	2-8	1.50-1.67	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.10	5	2	.5-2
	58-64	8-14	1.60-1.80	2.0-6.0	0.08-0.12	4.5-6.0	<2	Low--------	0.15			
	64-89	12-28	1.80-1.90	0.06-2.0	0.08-0.15	4.5-6.0	<2	Low--------	0.28			
8C---------------- Millhopper	0-54	2-8	1.50-1.67	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.10	5	2	.5-2
	54-56	8-14	1.60-1.80	2.0-6.0	0.08-0.12	4.5-6.0	<2	Low--------	0.15			
	56-80	12-28	1.80-1.90	0.06-2.0	0.08-0.15	4.5-6.0	<2	Low--------	0.28			
9B*:												
Millhopper-------	0-58	2-8	1.50-1.67	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.10	5	2	.5-2
	58-64	8-14	1.60-1.80	2.0-6.0	0.08-0.12	4.5-6.0	<2	Low--------	0.15			
	64-89	12-28	1.80-1.90	0.06-2.0	0.08-0.15	4.5-6.0	<2	Low--------	0.32			
Urban land.												
11---------------- Riviera	0-32	1-6	1.40-1.65	6.0-20	0.05-0.08	4.5-7.3	<2	Low--------	0.10	4	2	.1-2
	32-42	12-25	1.50-1.70	<0.2	0.10-0.14	6.1-8.4	<2	Low--------	0.24			
	42-53	15-25	1.50-1.70	<0.2	0.12-0.15	6.1-8.4	<2	Low--------	0.24			
	53-80	1-8	1.40-1.65	0.6-6.0	0.05-0.08	7.9-8.4	<2	Low--------	0.15			
13---------------- Pelham	0-27	1-8	1.50-1.70	6.0-20	0.04-0.07	4.5-5.5	<2	Low--------	0.10	5	2	1-2
	27-69	15-30	1.30-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.24			
	69-80	15-40	1.30-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.24			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
14---------------	0-5	1-6	1.20-1.50	6.0-20	0.05-0.10	3.6-5.5	<2	Low--------	0.10	5	2	1-2
Pomona	5-16	<6	1.45-1.70	6.0-20	0.03-0.08	3.6-5.5	<2	Low--------	0.10			
	16-24	2-7	1.30-1.60	0.6-20.0	0.10-0.20	3.6-5.5	<2	Low--------	0.15			
	24-43	1-6	1.40-1.65	2.0-20	0.03-0.15	3.6-6.0	<2	Low--------	0.10			
	43-84	13-36	1.50-1.80	0.2-2.0	0.10-0.17	3.6-5.5	<2	Low--------	0.20			
15---------------	0-82	<5	1.30-1.65	6.0-20	0.02-0.05	4.5-7.8	<2	Low--------	0.10	5	2	1-5
Pompano												
16---------------	0-28	<10	1.00-1.70	2.0-20	0.05-0.20	3.6-5.0	<2	Low--------	0.10	5	2	1-15
Surrency	28-44	10-23	1.60-1.85	0.6-6.0	0.06-0.15	3.6-5.5	<2	Low--------	0.15			
	44-80	22-35	1.65-1.85	0.06-2.0	0.10-0.15	3.6-5.5	<2	Low--------	0.15			
17---------------	0-8	<2	1.25-1.45	2.0-20	0.08-0.15	3.6-5.5	<2	Low--------	0.10	5	2	1-3
Wauchula	8-14	<2	1.45-1.60	6.0-20	0.02-0.10	3.6-5.5	<2	Low--------	0.10			
	14-18	2-8	1.45-1.60	0.2-6.0	0.15-0.25	3.6-5.5	<2	Low--------	0.15			
	18-28	<2	1.45-1.65	2.0-6.0	0.08-0.15	4.5-5.5	<2	Low--------	0.10			
	28-80	15-30	1.60-1.80	0.06-0.6	0.11-0.17	4.5-5.5	<2	Low--------	0.20			
18*:												
Wauchula--------	0-8	<2	1.25-1.45	2.0-20	0.08-0.15	3.6-5.5	<2	Low--------	0.10	5	2	1-3
	8-14	<2	1.45-1.60	6.0-20	0.02-0.10	3.6-5.5	<2	Low--------	0.10			
	14-18	2-8	1.45-1.60	0.2-6.0	0.15-0.25	3.6-5.5	<2	Low--------	0.15			
	18-28	<2	1.45-1.65	2.0-6.0	0.08-0.15	4.5-5.5	<2	Low--------	0.10			
	28-80	15-30	1.60-1.80	0.06-0.6	0.11-0.17	4.5-5.5	<2	Low--------	0.20			
Urban land.												
19---------------	0-12	1-8	0.90-1.25	6.0-20	0.15-0.30	3.6-5.5	<2	Low--------	0.15	5	2	5-12
Monteocha	12-48	<6	1.40-1.65	2.0-20	0.10-0.15	3.6-5.5	<2	Low--------	0.10			
	48-85	15-30	1.50-1.70	0.2-2.0	0.10-0.15	3.6-5.5	<2	Low--------	0.24			
	85-94	4-17	1.40-1.60	2.0-20	0.05-0.15	3.6-5.5	<2	Low--------	0.20			
20B--------------	0-8	0-4	1.25-1.60	>6.0	0.05-0.10	3.6-6.0	<2	Low--------	0.10	5	2	.5-2
Tavares	8-80	0-4	1.40-1.70	>6.0	0.02-0.05	3.6-6.0	<2	Low--------	0.10			
21---------------	0-12	<5	1.45-1.55	6.0-20	0.03-0.10	3.6-6.0	<2	Low--------	0.10	5	2	1-2
Newnan	12-16	2-8	1.40-1.55	2.0-20	0.07-0.15	3.6-6.0	<2	Low--------	0.15			
	16-56	<5	1.45-1.65	6.0-20	0.05-0.12	3.6-6.0	<2	Low--------	0.10			
	56-59	8-14	1.65-1.75	2.0-6.0	0.08-0.13	3.6-6.0	<2	Low--------	0.17			
	59-82	12-30	1.65-1.80	0.06-0.6	0.07-0.15	3.6-6.0	<2	Low--------	0.24			
22---------------	0-14	3-10	1.40-1.49	6.0-20	0.10-0.20	4.5-8.4	<2	Low--------	0.10	5	2	6-15
Floridana	14-30	1-7	1.52-1.53	6.0-20	0.05-0.10	4.5-8.4	<2	Low--------	0.10			
	30-74	15-30	1.60-1.69	<0.2	0.10-0.20	4.5-8.4	<2	Low--------	0.24			
23---------------	0-26	2-5	1.25-1.50	2.0-20	0.10-0.15	4.5-6.0	<2	Low--------	0.10	5	2	1-4
Mulat	26-54	14-25	1.55-1.70	0.06-0.6	0.10-0.15	4.5-6.0	<2	Low--------	0.24			
	54-80	3-7	1.55-1.70	2.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.17			
25---------------	0-4	1-6	1.20-1.50	6.0->20	0.05-0.10	3.6-5.5	<2	Low--------	0.10	5	2	1-2
Pomona	4-25	<6	1.43-1.70	6.0-20	0.03-0.08	3.6-5.5	<2	Low--------	0.10			
	25-32	2-7	1.30-1.60	0.6-20	0.10-0.20	3.6-5.5	<2	Low--------	0.15			
	32-52	1-6	1.40-1.65	2.0-20	0.03-0.15	3.6-5.5	<2	Low--------	0.10			
	52-80	13-36	1.50-1.80	0.2-2.0	0.10-0.17	3.6-5.5	<2	Low--------	0.20			
26---------------	0-35	---	0.25-0.50	6.0-20	0.20-0.25	4.5-5.5	<2	Low--------	----	---	2	>20
Samsula	35-75	1-14	1.35-1.55	6.0-20	0.02-0.05	3.6-6.0	<2	Low--------	0.17			
27*.												
Urban land												
28---------------	0-12	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.10	5	2	2-5
Chipley	12-81	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Low--------	0.10			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
29B--------------- Lochloosa	0-31	2-12	1.35-1.65	2.0-20	0.05-0.20	4.5-5.5	<2	Low--------	0.10	5	2	1-4
	31-35	13-20	1.55-1.70	0.6-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	35-54	15-35	1.55-1.70	0.6-0.2	0.12-0.15	4.5-5.5	<2	Low--------	0.28			
	54-83	20-45	1.60-1.70	0.06-0.2	0.13-0.18	4.5-5.5	<2	Low--------	0.28			
29C--------------- Lochloosa	0-25	2-12	1.35-1.65	2.0-20	0.05-0.20	4.5-5.5	<2	Low--------	0.10	5	2	1-4
	25-30	13-20	1.55-1.70	0.6-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	30-67	15-35	1.55-1.70	0.6-0.2	0.12-0.15	4.5-5.5	<2	Low--------	0.28			
	67-80	20-45	1.60-1.70	0.06-0.2	0.13-0.18	4.5-5.5	<2	Low--------	0.28			
30B--------------- Kendrick	0-26	1-7	1.25-1.50	6.0-20	0.05-0.07	4.5-6.0	<2	Low--------	0.10	5	2	<2
	26-31	15-25	1.55-1.70	0.6-6.0	0.10-0.15	4.5-6.0	<2	Low--------	0.24			
	31-73	20-40	1.55-1.75	0.06-2.0	0.12-0.20	4.5-6.0	<2	Low--------	0.32			
	73-90	15-25	1.55-1.75	<0.0-2.0	0.12-0.15	4.5-6.0	<2	Low--------	0.32			
30C--------------- Kendrick	0-24	1-7	1.25-1.50	6.0-20	0.05-0.07	4.5-6.0	<2	Low--------	0.10	5	2	<2
	24-29	15-25	1.55-1.70	0.6-6.0	0.10-0.15	4.5-6.0	<2	Low--------	0.24			
	29-76	20-40	1.55-1.75	0.06-2.0	0.12-0.20	4.5-6.0	<2	Low--------	0.32			
31A--------------- Blichton	0-24	2-12	1.35-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.15	5	2	1-4
	24-30	13-20	1.55-1.70	2.0-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	30-80	20-35	1.45-1.70	0.06-0.6	0.10-0.15	<4.-5.5	<2	Moderate	0.28			
	45-77	20-45	1.60-1.80	0.06-0.6	0.05-0.15	<4.-5.5	<2	Moderate	0.28			
	77-80	15-25	1.55-1.70	2.0-6.0	0.08-0.12	<4.-5.5	<2	Low--------	0.32			
31B--------------- Blichton	0-28	2-12	1.35-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.15	5	2	1-4
	28-62	20-35	1.45-1.70	0.06-0.6	0.10-0.15	<4.-5.5	<2	Moderate	0.28			
	62-80	20-45	1.60-1.80	0.06-0.6	0.05-0.15	<4.-5.5	<2	Moderate	0.28			
31C--------------- Blichton	0-31	2-12	1.35-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.15	5	2	1-4
	31-37	13-20	1.55-1.70	2.0-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	37-66	20-35	1.45-1.70	0.06-0.6	0.10-0.15	<4.-5.5	<2	Moderate	0.28			
	66-80	20-45	1.60-1.80	0.06-0.6	0.05-0.15	<4.-5.5	<2	Moderate	0.28			
32B--------------- Bivans	0-15	3-12	1.05-1.65	0.6-6.0	0.10-0.20	3.6-6.5	<2	Low--------	0.10	5	2	1-4
	15-45	35-59	1.30-1.65	<0.2	0.10-0.15	3.6-6.0	<2	High-------	0.20			
	45-61	25-48	1.25-1.85	<0.2	0.05-0.15	3.6-6.0	<2	High-------	0.20			
	61-81	29-60	1.30-1.90	<0.2	0.05-0.15	3.6-6.0	<2	High-------	0.20			
32C--------------- Bivans	0-10	3-12	1.05-1.65	0.6-6.0	0.10-0.20	3.6-6.5	<2	Low--------	0.10	5	2	1-4
	10-59	35-59	1.30-1.65	<0.2	0.10-0.15	3.6-6.0	<2	High-------	0.20			
	59-80	29-60	1.30-1.90	<0.2	0.05-0.15	3.6-6.0	<2	High-------	0.20			
32D--------------- Bivans	0-11	3-12	1.05-1.65	0.6-6.0	0.10-0.20	3.6-6.5	<2	Low--------	0.10	5	2	1-4
	11-56	35-59	1.30-1.65	<0.2	0.10-0.15	3.6-6.0	<2	High-------	0.20			
	56-80	29-60	1.30-1.90	<0.2	0.05-0.15	3.6-6.0	<2	High-------	0.20			
33B--------------- Norfolk	0-9	2-8	1.55-1.75	2.0-20	0.06-0.11	4.5-6.0	<2	Low--------	0.20	5	2	.5-2
	9-41	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low--------	0.24			
	41-80	20-43	1.30-1.40	0.06-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
33C--------------- Norfolk	0-11	2-8	1.55-1.75	2.0-20	0.06-0.11	4.5-6.0	<2	Low--------	0.20	5	2	.5-2
	11-46	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low--------	0.24			
	46-75	20-43	1.30-1.40	<0.06-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
34----------------- Placid	0-15	<10	1.20-1.40	6.0-20	0.15-0.20	3.6-5.5	<2	Low--------	0.10	5	2	2-10
	15-82	<10	1.30-1.60	6.0-20	0.05-0.08	3.6-5.5	<2	Low--------	0.10			
35B--------------- Gainesville	0-82	4-10	1.40-1.55	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.15	5	2	2-4

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
35C---------------- Gainesville	0-80	4-10	1.40-1.55	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.15	5	2	2-4
36*. Arents												
37---------------- Zolfo	0-8	1-5	1.40-1.55	6.0-20	0.10-0.15	4.5-7.3	<2	Low--------	0.10	5	2	.5-1
	8-60	1-5	1.50-1.60	6.0-20	0.03-0.10	4.5-7.3	<2	Low--------	0.10			
	60-82	1-5	1.50-1.70	0.6-2.0	0.10-0.25	3.6-6.5	<2	Low--------	0.15			
38*: Pits.												
Dumps.												
39B---------------- Bonneau	0-29	2-8	1.30-1.70	2.0-20	0.04-0.08	4.5-6.0	<2	Low--------	0.15	5	1	.5-2
	29-38	17-35	1.40-1.80	0.2-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
	38-84	15-40	1.40-1.65	<0.06-0.2	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
41B---------------- Pedro	0-12	1-5	1.36-1.55	6.0-20	0.03-0.08	5.1-6.5	<2	Low--------	0.10	1	2	.5-2
	12-17	20-35	1.55-1.70	2.0-6.0	0.10-0.15	6.1-7.8	<2	Low--------	0.28			
	17-72	---	---	---	---	---	---	---	--			
42B*: Pedro------------	0-12	1-5	1.36-1.55	6.0-20	0.03-0.08	5.1-6.5	<2	Low--------	0.10	1	2	.5-2
	12-17	20-35	1.55-1.70	2.0-6.0	0.10-0.15	6.1-7.8	<2	Low--------	0.28			
	17-72	---	---	---	---	---	---	---	--			
Jonesville-------	0-7	3-5	1.35-1.50	6.0-20	0.05-0.10	5.1-6.5	<2	Low--------	0.10	3	2	.5-2
	7-29	0-2	1.45-1.55	6.0-20	0.02-0.08	5.1-6.5	<2	Low--------	0.10			
	29-33	15-35	1.60-1.70	0.2-2.0	0.05-0.10	6.6-8.4	<2	Low--------	0.20			
	33-80	---	---	---	---	---	---	----------	----			
44B*: Blichton---------	0-28	2-12	1.35-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.15	5	2	1-4
	28-62	20-35	1.45-1.70	0.06-0.6	0.10-0.15	<4.-5.5	<2	Moderate	0.28			
	62-80	20-45	1.60-1.80	0.06-0.6	0.05-0.15	<4.-5.5	<2	Moderate	0.28			
Urban land.												
45*: Urban land.												
Millhopper-------	0-58	2-8	1.50-1.67	6.0-20	0.05-0.10	4.5-6.5	<2	Low--------	0.10	5	2	.5-2
	58-64	8-14	1.60-1.80	2.0-6.0	0.08-0.12	4.5-6.0	<2	Low--------	0.15			
	64-89	12-28	1.80-1.90	0.06-2.0	0.08-0.15	4.5-6.0	<2	Low--------	0.28			
46B*: Jonesville-------	0-7	3-5	1.35-1.50	6.0-20	0.05-0.10	5.1-6.5	<2	Low--------	0.10	3	2	.5-2
	7-29	0-2	1.45-1.55	6.0-20	0.02-0.08	5.1-7.3	<2	Low--------	0.10			
	29-33	15-35	1.60-1.70	0.2-2.0	0.05-0.10	6.1-8.4	<2	Low--------	0.20			
	33-80	---	---	---	---	---	---	----------	----			
Cadillac---------	0-7	<5	1.35-1.50	6.0-20	0.05-0.10	5.1-7.8	<2	Low--------	0.10	5	2	<2
	7-52	<5	1.45-1.65	>6.0	0.04-0.08	5.1-7.8	<2	Low--------	0.10			
	52-76	14-32	1.65-1.75	0.06-2.0	0.06-0.15	6.1-8.4	<2	Low--------	0.20			
	76-99	31-73	1.65-1.75	<0.2	0.08-0.18	6.6-8.4	<2	High-------	0.24			
Bonneau----------	0-29	2-8	1.30-1.70	2.0-20	0.04-0.08	4.5-6.0	<2	Low--------	0.15	5	1	.5-2
	29-38	17-35	1.40-1.80	0.2-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
	38-84	15-40	1.40-1.65	<0.06-0.2	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
47B*: Candler----------	0-70	<3	1.35-1.55	6.0-20	0.02-0.06	4.5-6.0	<2	Low--------	0.10	5	2	<1
	70-82	3-8	1.50-1.65	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.10			
Apopka-----------	0-61	0.-3.	1.45-1.60	6.0-20	0.03-0.05	4.5-6.0	<2	Low--------	0.10	5	2	<2
	61-82	18-37	1.55-1.75	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low--------	0.24			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
48----------------- Myakka	0-24	<2	1.35-1.55	6.0-20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	2	<2
	24-30	1-8	1.45-1.60	0.6-6.0	0.10-0.20	3.6-6.5	<2	Low--------	0.15			
	30-82	<2	1.48-1.70	6.0-20	0.02-0.10	3.6-6.5	<2	Low--------	0.10			
49A---------------- Lochloosa	0-34	2-12	1.35-1.65	2.0-20	0.05-0.20	4.5-5.5	<2	Low--------	0.10	5	2	1-4
	34-44	13-20	1.55-1.70	0.6-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	44-57	15-35	1.55-1.70	0.6-0.2	0.12-0.15	4.5-5.5	<2	Low--------	0.28			
	57-80	20-45	1.60-1.70	0.06-0.2	0.13-0.18	4.5-5.5	<2	Low--------	0.28			
50----------------- Sparr	0-8	1-5	1.20-1.50	6.0->20	0.08-0.12	3.6-6.5	<2	Low--------	0.10	5	2	<3
	8-48	1-5	1.45-1.70	6.0->20	0.05-0.08	3.6-6.5	<2	Low--------	0.10			
	48-56	15-32	1.55-1.80	0.6-2.0	0.10-0.15	3.6-6.5	<2	Low--------	0.20			
	56-84	15-30	1.55-1.70	0.06-0.6	0.10-0.15	3.6-6.5	<2	Low--------	0.24			
51----------------- Plummer	0-42	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Low--------	0.10	5	2	1-3
	42-81	15-30	1.50-1.70	0.6-2.0	0.07-0.15	3.6-5.5	<2	Low--------	0.15			
52----------------- Ledwith	0-9	---	0.12-0.35	>6.0	0.25-0.40	3.6-4.4	<2	Low--------	-----	---	2	30-90
	9-15	5-18	1.10-1.25	0.6-6.0	0.10-0.18	4.5-5.5	<2	Low--------	0.20			
	15-17	1-10	1.10-1.65	0.6-20.0	0.10-0.15	4.5-5.5	<2	Low--------	0.17			
	17-44	35-55	1.20-1.65	<0.2	0.04-0.15	5.1-7.3	<2	High-------	0.24			
	44-93	35-55	1.20-1.65	<0.2	0.04-0.15	6.1-8.4	<2	High-------	0.24			
53----------------- Shenks	0-21	---	0.10-0.40	>6.0	0.25-0.40	3.6-4.4	<2	Low--------	-----	---	2	>20
	21-28	29-50	0.85-1.30	0.06-0.6	0.18-0.30	5.1-6.5	<2	Moderate	0.32			
	28-82	38-65	1.10-1.35	<0.06	0.10-0.20	5.6-7.8	<2	High-------	0.28			
54----------------- Emeralda	0-10	6-12	0.70-1.50	6.0-20	0.15-0.20	3.6-6.0	<2	Low--------	0.15	5	2	3-10
	10-18	4-12	1.40-1.70	6.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.15			
	18-56	38-60	1.60-1.85	<0.2	0.10-0.20	4.5-6.5	<2	High-------	0.24			
	56-80	38-60	1.60-1.85	<0.2	0.10-0.20	4.5-7.3	<2	High-------	0.24			
55B---------------- Lake	0-82	1-3	1.45-1.65	>6.0	0.03-0.08	4.5-5.5	<2	Low--------	0.10	5	2	.5-1
56----------------- Wauberg	0-9	1-12	1.05-1.55	>6.0	0.05-0.15	4.5-6.5	<2	Low--------	0.15	5	2	1-4
	9-24	1-10	1.30-1.60	>6.0	0.03-0.10	4.5-6.5	<2	Low--------	0.15			
	24-40	24-35	1.50-1.70	<0.2	0.07-0.13	5.1-7.3	<2	Moderate	0.28			
	40-63	18-35	1.50-1.90	<0.2	0.05-0.13	5.1-7.3	<2	Low--------	0.24			
	63-81	36-50	1.60-1.70	<0.2	0.08-0.15	5.1-7.3	<2	High-------	0.24			
57B---------------- Micanopy	0-6	3-12	1.50-1.65	6.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.15	5	2	1-5
	6-12	20-38	1.50-1.65	0.6-2.0	0.10-0.15	3.6-6.0	<2	Moderate	0.32			
	12-55	40-60	1.55-1.70	<0.0-0.2	0.10-0.18	3.6-6.0	<2	High-------	0.28			
	55-85	25-38	1.55-1.70	<0.0-0.2	0.10-0.15	3.6-6.0	<2	High-------	0.32			
58B---------------- Lake	0-82	1-3	1.45-1.65	>6.0	0.03-0.08	4.5-5.5	<2	Low--------	0.10	5	2	.5-1
59----------------- Pottsburg	0-52	<5	1.20-1.70	6.0-20	0.03-0.10	3.6-6.5	<2	Low--------	0.10	5	2	<3
	52-86	1-6	1.30-1.70	0.6-2.0	0.10-0.25	3.6-6.0	<2	Low--------	0.15			
60----------------- Udorthents	0-72	2-72	1.35-1.70	0.06-6.0	0.10-0.20	5.1-7.3	<2	High-------	0.32	4	7	.5-2
	72-90	2-8	1.25-1.35	6.0-20.0	0.05-0.10	4.5-6.0	<2	Low--------	0.17			
61----------------- Oleno	0-32	46-85	1.10-1.35	0.06-0.2	0.20-0.33	3.6-6.5	<2	High-------	0.37	5	4	1-3
	32-71	2-15	1.35-1.55	2.0-6.0	0.01-0.05	4.5-7.8	<2	Low--------	0.24			
	71-77	22-40	1.35-1.55	0.2-0.6	0.05-0.12	6.6-7.8	<2	Low--------	0.32			
	77-82	40-70	1.20-1.45	0.06-0.2	0.20-0.27	5.6-7.8	<2	High-------	0.32			
62C---------------- Boardman	0-14	1-10	1.30-1.45	6.0-20	0.05-0.10	4.5-5.5	<2	Low--------	0.15	4	2	<1
	14-24	5-15	1.30-1.50	0.6-2.0	0.07-0.12	4.5-5.5	<2	Low--------	0.20			
	24-38	20-40	1.55-1.70	0.2-0.6	0.12-0.15	4.5-5.5	<2	Moderate	0.24			
	38-50	20-55	1.55-1.70	0.06-0.2	0.13-0.17	4.5-5.5	<2	Moderate	0.28			
	50-63	35-70	1.55-1.70	0.06-0.2	0.15-0.18	4.5-5.5	<2	High-------	0.28			
	63-80	40-80	1.55-1.70	0.06-0.2	0.15-0.18	4.5-5.5	<2	High-------	0.28			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
63---------------- Terra Ceia	0-68	---	0.15-0.35	6.0-20	0.30-0.50	5.6-8.4	<2	Low--------	----	---	2	>60
64---------------- Okeechobee	0-20	---	0.15-0.30	6.0-20	0.30-0.50	5.6-8.4	<2	Low--------	----	---	2	>60
	20-35	---	0.10-0.30	6.0-20	0.45-0.65	5.6-8.4	<2	Low--------	----			
	35-80	---	0.15-0.30	6.0-20	0.30-0.50	5.6-8.4	<2	Low--------	----			
65---------------- Martel	0-16	15-35	1.20-1.50	0.6-2.0	0.15-0.20	4.5-5.5	<2	Moderate	0.32	5	3	1-6
	16-80	35-55	1.30-1.70	<0.06	0.13-0.18	4.5-5.5	<2	High-------	0.28			
66---------------- Lynne	0-5	1-5	1.10-1.50	6.0-20	0.08-0.15	3.6-5.5	<2	Low--------	0.10	5	2	1-5
	5-20	1-5	1.40-1.60	6.0-20	0.03-0.08	3.6-5.5	<2	Low--------	0.10			
	20-29	1-7	1.50-1.60	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low--------	0.15			
	29-32	1-5	1.30-1.60	6.0-20	0.05-0.10	3.6-5.5	<2	Low--------	0.10			
	32-37	30-45	1.60-1.70	0.2-2.0	0.13-0.17	3.6-5.5	<2	Moderate	0.32			
	37-80	35-55	1.60-1.70	0.2-0.6	0.13-0.17	3.6-5.5	<2	High-------	0.32			
67C--------------- Wacahoota	0-7	1-10	1.20-1.50	6.0-20	0.08-0.12	4.5-6.0	<2	Low--------	0.15	5	2	2-4
	7-32	1-10	1.55-1.65	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.15			
	32-80	20-35	1.55-1.65	0.6-2.0	0.08-0.12	4.5-6.0	<2	Moderate	0.24			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Flooding		High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
				Ft			In		In	In		
2B, 2C----------- Candler	A	None--------	---	>6.0	---	---	>60	---	---	---	Low------	High.
3B, 3C----------- Arredondo	A	None--------	---	>6.0	---	---	>60	---	---	---	Moderate	High.
4B*:												
Arredondo--------	A	None--------	---	>6.0	---	---	>60	---	---	---	Moderate	High.
Urban land.												
5B--------------- Fort Meade	A	None--------	---	>6.0	---	---	>60	---	---	---	Low------	High.
6B, 6C----------- Apopka	A	None--------	---	>6.0	---	---	>60	---	---	---	Moderate	High.
7B--------------- Kanapaha	B/D	None--------	---	0-1.0	Apparent	Jul-Sep	>60	---	---	---	High-----	High.
8B, 8C----------- Millhopper	A	None--------	---	3.5-6.0	Perched	Aug-Feb	>60	---	---	---	Low------	Moderate.
9B*:												
Millhopper-------	A	None--------	---	3.5-6.0	Perched	Aug-Feb	>60	---	---	---	Low------	Moderate.
Urban land.												
11--------------- Riviera	D	None--------	---	0-1.0	Apparent	Jun-Dec	>60	---	---	---	High-----	High.
13--------------- Pelham	B/D	None--------	---	0.5-1.5	Apparent	Jan-Apr	>60	---	---	---	High-----	High.
14--------------- Pomona	B/D	None--------	---	0-1.0	Apparent	Jul-Sep	>60	---	---	---	High-----	High.
15--------------- Pompano	B/D	None--------	---	0-1.0	Apparent	Jun-Nov	>60	---	---	---	High-----	Moderate.
16--------------- Surrency	D	None--------	---	0-0.5	Apparent	Dec-Apr	>60	---	---	---	High-----	High.
17--------------- Wauchula	B/D	None--------	---	0-1.0	Apparent	Jun-Feb	>60	---	---	---	High-----	High.
18*:												
Wauchula---------	B/D	None--------	---	0-1.0	Apparent	Jun-Feb	>60	---	---	---	High-----	High.
Urban land.												

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding		High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
				Ft			In		In	In		
19**----------------- Monteocha	D	None---------	---	+2-0	Apparent	Jun-Feb	>60	---	---	---	Moderate	High.
20B----------------- Tavares	A	None---------	---	3.5-6.0	Apparent	Jun-Dec	>60	---	---	---	Low-------	High.
21------------------ Newnan	C	None---------	---	1.5-2.5	Apparent	Aug-Feb	>60	---	---	---	Low-------	High.
22**---------------- Floridana	D	None---------	---	+2-1.0	Apparent	Jun-Feb	>60	---	---	---	Moderate	Low.
23------------------ Mulat	D	Rare---------	---	0-1.0	Apparent	Dec-Jun	>60	---	---	---	High------	High.
25**---------------- Pomona	D	None---------	---	+2-1.0	Apparent	Jun-Feb	>60	---	---	---	High------	High.
26**---------------- Samsula	B/D	None---------	---	+2-1.0	Apparent	Jan-Dec	>60	---	16-20	30-36	High------	High.
27*. Urban land												
28------------------ Chipley	C	None---------	---	2.0-3.0	Apparent	Dec-Apr	>60	---	---	---	Low-------	High.
29B, 29C------------ Lochloosa	C	None---------	---	2.5-5.0	Apparent	Jul-Oct	>60	---	---	---	High------	High.
30B, 30C------------ Kendrick	A	None---------	---	>6.0	---	---	>60	---	---	---	Moderate	High.
31A, 31B, 31C------- Blichton	D	None---------	---	0-1.0	Apparent	Jun-Sep	>60	---	---	---	High------	High.
32B, 32C, 32D------- Bivans	D	None---------	---	0-1.0	Perched	Jun-Dec	>60	---	---	---	High------	Moderate.
33B, 33C------------ Norfolk	B	None---------	---	4.0-6.0	Apparent	Jan-Mar	>60	---	---	---	Moderate	High.
34**---------------- Placid	D	None---------	---	+2-1.0	Apparent	Jun-Mar	>60	---	---	---	High------	High.
35B, 35C------------ Gainesville	A	None---------	---	>6.0	---	---	>60	---	---	---	Low-------	High.
36*. Arents												
37------------------ Zolfo	C	None---------	---	2.0-3.5	Apparent	Jun-Nov	>60	---	---	---	Low-------	Moderate.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding: Frequency	Flooding: Duration	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Subsidence: Initial	Subsidence: Total	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
				Ft			In		In	In		
38*:												
Pits.												
Dumps.												
39B---------------- Bonneau	A	None---------	---	3.5-5.0	Apparent	Dec-Mar	>60	---	---	---	Low-------	High.
41B---------------- Pedro	C	None---------	---	>6.0	---	---	10-30	Soft	---	---	Moderate	Moderate.
42B*:												
Pedro--------------	C	None---------	---	>6.0	---	---	10-30	Soft	---	---	Moderate	Moderate.
Jonesville---------	B	None---------	---	>6.0	---	---	20-40	Soft	---	---	Low-------	Low.
44B*:												
Blichton-----------	D	None---------	---	0-1.0	Apparent	Jun-Sep	>60	---	---	---	High------	High.
Urban land.												
45*:												
Urban land.												
Millhopper---------	A	None---------	---	3.5-6.0	Perched	Aug-Feb	>60	---	---	---	Low-------	Moderate.
46B*:												
Jonesville---------	B	None---------	---	>6.0	---	---	20-40	Soft	---	---	Low-------	Low.
Cadillac-----------	A	None---------	---	>6.0	---	---	>60	---	---	---	Low-------	Low.
Bonneau------------	A	None---------	---	3.5-5.0	Apparent	Dec-Mar	>60	---	---	---	Low-------	High.
47B*:												
Candler------------	A	None---------	---	>6.0	---	---	>60	---	---	---	Low-------	High.
Apopka-------------	A	None---------	---	>6.0	---	---	>60	---	---	---	Moderate	High.
48----------------- Myakka	B/D	None---------	---	0-1.0	Apparent	Jun-Nov	>60	---	---	---	High------	High.
49A---------------- Lochloosa	C	None---------	---	2.5-5.0	Apparent	Jul-Oct	>60	---	---	---	High------	High.
50----------------- Sparr	C	None---------	---	1.5-3.5	Apparent	Jul-Oct	>60	---	---	---	Moderate	High.
51----------------- Plummer	B/D	None---------	---	0-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
52**--------------- Ledwith	B/D	None---------	---	+2-1.0	Apparent	Jun-Feb	>60	---	3-6	8-12	High------	High.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding		High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
				Ft			In		In	In		
53**: Shenks	B/D	None	---	+2-1.0	Apparent	Jan-Dec	>60	---	10-20	24-45	High	High.
54: Emeralda	D	Rare	---	0-1.0	Apparent	Jun-Feb	>60	---	---	---	High	Low.
55B: Lake	A	None	---	>6.0	---	---	>60	---	---	---	Low	High.
56: Wauberg	D	None	---	0-1.0	Apparent	Jun-Dec	>60	---	---	---	High	Moderate.
57B: Micanopy	C	None	---	1.5-2.5	Perched	Jul-Nov	>60	---	---	---	High	High.
58B: Lake	A	None	---	>6.0	---	---	>60	---	---	---	Low	High.
59: Pottsburg	B/D	None	---	0-1.0	Apparent	Jul-Mar	>60	---	---	---	High	High.
60: Udorthents	C	None	---	3.0-6.0	Perched	Jun-Oct	>60	---	---	---	High	Moderate.
61: Oleno	D	Occasional	Long	0.5-1.5	Apparent	Mar-Sep	>60	---	---	---	High	High.
62C: Boardman	D	None	---	0-1.0	Perched	Jun-Sep	>60	---	---	---	High	High.
63**: Terra Ceia	B/D	None	---	+1-1.0	Apparent	Jan-Dec	>60	---	16-20	50-60	Moderate	Moderate.
64**: Okeechobee	B/D	None	---	+1-1.0	Apparent	Jun-Apr	>60	---	4-8	50-65	High	Low.
65**: Martel	D	None	---	+1-0	Apparent	May-Nov	>60	---	---	---	Moderate	High.
66: Lynne	B/D	None	---	0-1.0	Apparent	Jul-Sep	>60	---	---	---	High	High.
67C: Wacahoota	D	None	---	0-1.0	Perched	Jun-Sep	>60	---	---	---	High	High.

* See description of the map unit for composition and behavior characteristics of the map unit.
** A plus sign under "Depth to high water table" indicates that the water table is above the surface of the soil.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS

Soil series and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay					
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2-0.05 mm)	(0.05-0.002 mm)	(<0.002 mm)			1/10 bar	1/3 bar	15 bar
	Cm										Cm/hr	G/cm	----Pct(wt)----		
Arredondo fine sand:															
S76FL-001-12-1	0-20	Ap	0.0	1.8	25.5	52.8	12.3	92.4	4.5	3.1	22.6	1.53	7.3	4.9	2.2
2	20-79	A21	0.0	1.9	26.1	51.1	12.6	91.7	4.7	3.6	27.3	1.58	6.0	3.7	1.8
3	79-124	A22	0.0	2.3	27.3	51.8	11.6	93.0	4.3	2.7	12.2	1.52	6.8	4.3	1.4
4	124-137	B1	0.0	2.2	24.1	48.6	11.7	86.6	4.2	9.2	5.9	1.64	12.7	9.8	4.8
5	137-162	B21t	0.1	2.1	21.1	39.9	9.8	73.0	4.6	22.4	0.1	1.62	20.5	18.1	10.1
6	162-183	B22t	0.1	1.8	19.5	36.3	8.8	66.5	5.8	27.7	0.0	1.60	23.1	21.9	12.3
7	183-218	B23t	0.0	2.0	21.3	36.0	8.6	67.9	5.6	26.5	0.0	1.65	23.0	21.6	12.7
Bivans sand:															
S80FL-001-53-1	0-15	Ap	0.2	6.2	39.2	34.5	8.7	88.8	7.5	3.7	2.5	1.63	11.9	8.6	2.4
2	15-38	A2	0.4	7.3	40.3	32.0	7.6	87.6	8.2	4.2	1.6	1.69	8.4	5.9	1.7
3	38-46	B21tg	0.1	4.9	23.5	18.1	4.4	51.0	7.6	41.4	0.1	1.42	28.3	27.2	21.5
4	46-68	B22tg	0.2	4.2	22.2	17.2	4.4	48.2	8.4	43.4	0.0	1.45	28.4	27.0	21.4
5	68-114	B23tg	0.3	5.1	25.4	19.1	4.9	54.8	8.4	36.8	0.0	1.63	24.5	23.0	19.4
6	114-155	B24tg	0.3	6.2	32.4	22.0	4.9	65.8	6.6	27.6	0.0	1.85	17.6	16.5	13.9
7	155-206	Cg	0.2	5.6	29.4	22.7	5.1	63.0	6.0	31.0	0.5	1.91	17.5	16.5	14.3
Blichton sand:															
S80FL-001-54-1	0-15	Ap	0.4	9.2	50.9	27.8	4.7	93.0	4.1	2.9	19.0	1.61	7.3	5.2	1.6
2	15-33	A21	0.4	8.1	46.1	29.3	5.6	89.5	5.5	5.0	12.5	1.69	7.4	5.5	1.7
3	33-71	A22	0.4	9.1	45.9	28.0	4.8	88.2	5.1	6.7	2.9	1.66	9.5	7.2	2.5
4	71-86	B21tg	0.2	6.1	33.5	22.4	4.9	67.1	5.6	27.3	0.4	1.46	24.7	22.0	12.9
5	86-157	B22tg	0.1	4.5	28.6	21.1	4.8	59.1	7.9	33.0	1.2	1.55	25.1	23.2	15.9
6	157-203	B3g	0.1	5.5	32.0	23.4	5.3	61.1	12.3	26.6	0.3	1.77	17.9	16.9	13.5
Bonneau fine sand:															
S76FL-001-13-1	0-23	Ap	0.1	2.2	27.0	51.5	11.1	91.9	4.9	3.2	6.7	1.55	9.0	6.3	2.8
2	23-74	A2	0.0	2.1	26.7	52.2	11.8	92.8	4.2	3.0	10.4	1.62	6.2	4.0	1.1
3	74-97	B21t	0.0	2.7	22.4	44.1	9.4	78.6	4.0	17.4	0.0	1.65	18.3	16.1	9.6
4	97-152	B22t	0.0	1.5	21.0	38.4	6.0	66.9	2.4	30.7	0.0	1.75	20.3	19.6	13.5
5	152-190	B23t	0.0	2.2	27.7	37.3	4.7	71.9	2.0	26.1	0.0	1.79	18.1	17.0	11.2
6	190-213	B3g	0.0	2.4	29.0	40.5	4.3	76.2	1.9	21.9	7.9	1.63	13.8	11.9	7.4
Cadillac fine sand:															
S76FL-001-19-1	0-18	Ap	0.0	2.6	30.5	54.0	8.4	95.5	3.8	0.7	37.1	1.48	6.8	4.8	2.1
2	18-74	A21	0.0	2.8	32.2	54.6	6.8	96.4	3.2	0.4	49.6	1.51	4.9	3.3	1.0
3	74-132	A22	0.1	3.2	30.7	55.3	8.0	97.3	2.3	0.4	26.9	1.59	5.0	2.9	0.8
4	132-150	B21t	0.0	2.5	25.5	44.0	6.1	78.1	4.3	17.6	0.2	1.70	16.8	15.1	10.8
5	150-193	B22t	0.0	2.0	24.1	41.9	5.9	73.9	4.4	21.7	0.8	1.72	16.2	14.1	10.9
6	193-249	C1	0.0	1.0	7.6	11.2	1.4	21.2	12.6	66.2	---	---	---	---	---
7	249-300	C2	0.0	0.9	5.6	5.6	0.5	12.6	14.6	72.8	---	---	---	---	---

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil series and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.10 mm)	Sand: Very fine (0.10-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm										Cm/hr	G/cm	----Pct(wt)----		
Candler fine sand:															
S80FL-001-59-1	0-15	Ap	0.0	0.1	17.2	72.2	8.8	98.3	0.3	1.4	26.0	1.49	7.1	5.1	1.2
2	15-41	A21	0.0	0.1	17.6	72.3	8.2	98.2	0.8	1.0	33.2	1.53	4.8	3.2	0.7
3	41-71	A22	0.0	0.1	16.7	73.3	8.3	98.4	0.6	1.0	37.8	1.52	4.3	3.0	0.6
4	71-145	A23	0.0	0.0	16.8	72.9	8.4	98.1	0.5	1.4	37.1	1.49	4.1	2.7	0.6
5	145-178	A24	0.0	0.0	14.6	74.9	9.0	98.5	0.3	1.2	37.4	1.50	4.6	3.0	0.6
6	178-208	A25&B	0.0	0.0	16.8	74.3	7.8	98.9	0.1	1.0	33.5	1.49	4.5	3.0	0.4
Chipley sand:															
S76FL-001-14-1	0-15	Ap1	0.0	3.3	39.8	44.2	5.3	92.6	5.4	2.0	7.2	1.63	17.4	14.8	7.1
2	15-30	Ap2	0.1	4.9	42.6	40.3	3.4	91.3	4.8	3.9	11.8	1.50	12.0	9.3	3.8
3	30-64	C1	0.1	3.2	36.7	46.7	5.0	91.7	4.3	4.0	19.4	1.55	7.9	5.9	2.7
4	64-124	C2	0.1	4.3	38.1	45.1	4.6	92.2	4.0	3.8	26.3	1.56	6.8	5.0	2.3
5	124-206	C3	0.1	3.8	38.7	46.2	5.2	94.0	4.2	1.8	23.0	1.64	7.0	4.7	2.0
Fort Meade fine sand:															
S76FL-001-17-1	0-25	Ap1	0.1	2.5	27.7	51.8	7.1	89.2	8.3	2.5	17.1	1.33	18.7	15.0	9.3
2	25-36	Ap2	0.1	2.4	26.1	51.3	6.9	86.8	11.0	2.2	32.8	1.17	21.2	16.8	8.4
3	36-86	C1	0.1	2.4	27.5	51.6	6.4	88.0	9.7	2.3	47.3	1.09	19.6	15.4	7.7
4	86-109	C2	0.1	2.8	28.1	51.3	6.5	88.0	8.2	3.0	56.8	1.18	15.3	12.4	7.1
5	109-180	C3	0.1	2.3	24.3	54.5	7.5	88.7	7.5	3.8	53.2	1.30	14.4	11.8	6.6
6	180-216	C4	0.1	2.6	27.7	53.8	6.5	90.7	6.5	2.8	51.6	1.34	12.3	10.3	5.8
Gainesville sand:															
S76FL-001-16-1	0-18	A1	0.1	3.9	30.6	44.2	8.5	87.3	11.8	0.9	17.9	1.47	12.4	9.2	5.1
2	18-33	C1	0.1	3.5	31.1	46.0	8.3	89.0	6.4	4.6	55.5	1.41	9.9	7.2	3.3
3	33-74	C2	0.1	3.7	31.0	45.8	8.2	88.8	5.4	5.8	32.2	1.43	8.6	6.3	3.5
4	74-137	C3	0.1	3.6	28.9	44.6	9.0	86.2	4.2	9.6	25.3	1.52	10.2	8.0	4.3
5	137-208	C4	0.1	3.4	28.8	46.2	9.6	88.1	3.6	8.3	21.0	1.46	10.3	7.9	3.7
Jonesville sand:															
S76FL-001-18-1	0-18	A1	0.1	4.4	37.4	37.6	11.9	91.4	4.5	4.1	27.2	1.40	7.6	4.8	2.2
2	18-43	A21	0.0	2.2	27.0	55.3	10.0	94.5	5.0	0.5	24.9	1.46	6.4	3.8	1.5
3	43-74	A22	0.0	2.5	26.8	55.3	10.1	94.7	4.6	0.7	20.3	1.50	6.6	3.9	1.1
4	74-84	B2t	0.1	2.0	18.1	43.1	9.6	72.9	6.6	20.5	0.1	1.69	15.6	13.6	9.9
5	84-203	IIR	---	---	---	---	---	---	---	---	---	---	---	---	---
Kendrick sand:															
S76FL-001-11-1	0-23	Ap	0.0	2.4	29.0	47.2	11.4	90.0	5.2	4.8	12.5	1.65	8.5	6.1	3.0
2	23-66	A3	0.0	2.3	26.9	45.5	12.3	87.0	6.0	7.0	21.0	1.46	9.5	7.1	3.3
3	66-79	B21t	0.0	2.5	23.4	40.0	11.3	77.2	6.6	16.2	6.4	1.56	19.5	12.9	6.8
4	79-130	B22t	0.0	1.9	19.5	34.6	10.4	66.4	7.1	26.5	1.2	1.42	32.0	27.0	13.3
5	130-183	B23t	0.0	2.1	21.8	39.7	10.8	74.4	5.6	20.0	0.1	1.60	21.2	18.6	9.9
6	183-211	B24t	0.0	2.4	23.8	38.5	10.7	75.4	6.7	17.9	0.0	1.71	19.6	18.0	9.4
7	211-229	B3	0.1	2.7	23.3	37.4	10.7	74.2	5.7	20.1	0.0	1.66	20.0	18.3	11.1

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil series and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay					
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2-0.05 mm)	(0.05-0.002 mm)	(<0.002 mm)			1/10 bar	1/3 bar	15 bar
	Cm										Cm/hr	G/cm	----Pct(wt)----		
Lake fine sand:															
S80FL-001-58-1	0-18	Ap	0.0	0.6	9.8	63.5	20.7	94.6	3.5	1.9	15.1	1.41	9.8	6.0	1.5
2	18-28	C1	0.0	0.7	9.3	63.7	21.9	95.6	2.9	1.5	12.4	1.54	7.2	4.2	1.0
3	28-74	C2	0.0	0.7	9.6	65.2	20.6	96.1	2.7	1.2	18.7	1.45	6.3	3.6	0.7
4	74-107	C3	0.0	0.7	8.9	67.0	20.3	96.9	2.3	0.8	17.4	1.44	5.9	3.4	0.5
5	107-152	C4	0.0	0.6	8.9	66.5	21.6	97.6	1.9	0.5	17.4	1.49	6.6	3.9	0.4
6	152-208	C5	0.0	0.8	9.1	68.0	20.3	98.2	1.5	0.3	22.0	1.49	6.1	4.1	0.5
Lake sand:															
S76FL-001-46-1	0-23	Ap	0.1	5.2	47.3	34.2	6.0	92.8	3.5	3.7	147.5	1.17	9.3	7.4	2.8
2	23-104	C1	0.2	6.2	51.4	31.4	4.0	93.2	3.0	3.8	75.9	1.46	4.3	3.0	1.5
3	104-175	C2	0.4	6.6	46.8	35.2	3.2	92.2	2.8	5.0	96.8	1.41	5.2	3.5	1.9
4	175-208	C3	0.2	6.0	45.6	36.8	5.2	93.8	2.8	3.4	84.8	1.46	4.6	3.0	1.6
Ledwith muck:															
S77FL-001-43-1	23-0	O2	---	---	---	---	---	---	---	---	246.0	0.15	287.8	210.5	52.5
2	0-15	A1	0.1	1.5	18.4	20.6	14.1	54.7	40.2	5.1	2.3	1.18	32.1	26.7	12.0
3	15-20	A2	0.1	1.8	22.0	44.5	15.3	83.7	14.9	1.4	3.2	1.65	10.6	6.9	2.1
4	20-43	B21tg	0.0	2.4	17.2	21.2	4.8	45.6	10.6	43.8	1.5	1.22	42.6	41.3	31.4
5	43-89	B22tg	0.0	2.8	21.6	25.2	5.2	54.8	10.0	35.2	0.4	1.43	32.1	31.1	25.9
6	89-135	B23tg	0.0	2.4	19.2	23.2	4.8	49.6	12.5	37.9	1.2	1.49	30.6	29.8	25.6
7	135-211	Cg	0.4	2.8	17.6	20.4	4.4	45.6	18.2	36.2	0.7	1.51	31.1	30.5	27.9
Lochloosa fine sand:															
S80FL-001-56-1	0-18	A1	0.0	1.8	8.2	47.1	32.2	89.3	7.7	3.0	5.1	1.43	15.9	9.5	2.5
2	18-36	A21	0.0	1.8	7.9	49.2	31.8	90.7	6.9	2.4	4.9	1.43	13.4	7.3	1.8
3	36-76	A22	0.0	2.0	8.0	49.5	32.2	91.7	6.2	2.1	4.6	1.57	12.1	4.3	1.0
4	76-86	A23	0.0	1.8	7.1	46.5	34.2	89.6	5.2	5.2	1.8	1.66	15.4	7.9	3.2
5	86-112	B21t	0.0	1.4	6.6	41.5	30.1	79.6	5.7	14.7	1.5	1.65	18.0	13.4	6.3
6	112-145	B22tg	0.0	1.4	6.0	35.2	30.2	72.8	7.5	19.7	0.4	1.62	21.5	18.9	10.6
7	145-203	B3g	0.0	0.8	5.4	34.4	31.6	72.2	6.2	21.6	0.1	1.70	19.3	17.5	10.5
Millhopper sand:															
S75FL-001-6-1	0-23	Ap	0.1	3.9	35.4	47.0	5.8	92.2	3.7	4.1	36.1	1.50	32.7	6.0	2.5
2	23-53	A21	0.1	3.8	34.8	48.3	5.7	92.7	2.6	4.7	35.5	1.58	6.0	4.4	1.9
3	53-66	A22	0.1	5.1	38.7	45.7	4.7	94.3	2.4	3.3	61.7	1.57	4.7	3.2	1.2
4	66-122	A23	0.1	3.5	34.0	50.1	7.2	94.9	2.4	2.7	43.4	1.54	4.6	2.9	0.7
5	122-147	A24	0.1	4.7	35.9	48.3	6.0	95.0	2.3	2.7	21.7	1.67	6.5	4.3	1.3
6	147-162	B21t	0.4	6.5	33.1	38.4	6.2	84.6	2.2	13.2	11.5	1.80	11.0	9.3	5.2
7	162-218	B22tg	0.3	6.9	38.3	25.6	5.5	76.6	1.2	22.2	0.1	1.81	15.8	14.1	9.8
8	218-224	B3g	0.4	8.6	49.5	21.9	1.1	81.5	0.9	17.6	0.2	1.90	14.4	12.5	9.2

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil series and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.10 mm)	Sand: Very fine (0.10-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm										Cm/hr	G/cm	Pct(wt)	Pct(wt)	Pct(wt)
Monteocha loamy sand:															
S76FL-001-33-1	0-30	A1	0.1	3.6	32.4	36.5	5.0	78.4	18.5	3.1	43.0	0.91	55.5	43.2	10.0
2	30-46	A2	0.1	4.5	39.8	42.0	6.3	92.7	5.4	1.9	14.8	1.54	8.9	6.8	1.8
3	46-68	B2h	0.1	4.2	37.5	43.0	6.5	91.3	5.1	3.6	11.7	1.63	10.5	8.4	2.1
4	68-86	B3	0.1	4.8	38.1	43.0	6.1	92.1	4.6	3.3	11.6	1.61	10.8	7.8	2.2
5	86-122	A'2	0.1	4.5	36.4	44.6	6.5	92.1	5.3	2.6	5.3	1.63	8.4	5.4	1.4
6	122-150	B'21tg	0.1	3.5	30.1	38.0	5.9	77.6	5.6	16.8	0.4	1.66	17.4	15.0	6.4
7	150-216	B'22tg	0.1	3.2	32.3	38.8	5.4	79.8	4.8	15.4	0.7	1.66	16.0	12.5	4.8
8	216-239	Cg	0.1	4.2	34.4	45.9	4.6	89.2	4.1	6.7	12.1	1.58	10.7	7.5	3.0
Mulat sand:															
S76FL-001-34-1	0-13	Ap1	0.1	4.3	36.7	42.3	7.6	92.8	7.0	2.0	11.1	1.50	11.7	8.1	2.3
2	13-20	Ap2	0.2	4.4	36.6	41.3	8.0	91.4	5.0	3.6	6.0	1.62	10.4	7.8	2.1
3	20-30	A21	0.1	5.3	35.5	42.6	7.8	91.3	5.7	3.0	4.2	1.68	15.7	7.7	1.8
4	30-53	A22	0.2	5.7	36.3	42.2	7.2	91.6	5.3	3.1	10.9	1.60	16.0	6.9	1.9
5	53-66	A23	0.2	5.5	33.6	42.0	8.5	89.8	6.0	4.2	5.8	1.68	9.6	6.9	2.9
6	66-76	B1g	0.1	4.3	30.5	39.5	7.6	82.0	7.0	11.0	0.2	1.68	15.9	14.0	5.8
7	76-119	B2tg	0.1	4.3	29.1	38.3	7.7	79.5	6.3	14.2	0.4	1.69	16.7	14.0	5.5
8	119-137	B3g	0.2	5.2	34.9	38.7	6.7	85.7	6.9	7.4	13.8	1.57	13.2	10.4	4.7
9	137-203	Cg	0.3	5.4	36.0	37.0	6.5	85.2	10.7	4.1	10.1	1.55	15.4	12.2	5.0
Newnan sand:															
S76FL-001-21-1	0-13	A1	0.0	3.6	43.9	42.3	5.1	94.9	4.2	0.9	---	---	---	---	---
2	13-30	A2	0.0	3.8	42.7	43.9	5.5	95.9	3.7	0.4	30.7	1.53	4.7	2.8	0.9
3	30-41	B2h	0.0	3.7	37.4	44.5	5.8	91.4	6.2	2.4	19.0	1.45	12.4	9.8	2.7
4	41-51	B3	0.0	3.8	39.2	44.7	5.5	93.2	5.0	1.8	24.3	1.45	10.1	7.6	2.0
5	51-68	A'21	0.0	3.9	41.0	44.3	5.6	94.8	4.1	1.1	25.9	1.53	7.1	4.9	1.0
6	68-142	A'22	0.1	3.7	39.6	47.0	5.5	95.9	3.2	0.9	24.6	1.61	4.4	2.9	0.3
7	142-150	B'1g	0.0	3.2	33.1	42.6	4.9	83.8	5.5	10.7	4.3	1.74	10.5	8.4	4.0
8	150-190	B'21tg	0.0	2.9	31.7	44.1	4.5	83.2	3.3	13.5	8.9	1.69	10.2	7.6	3.2
9	190-208	B'22tg	0.0	2.2	27.1	38.4	3.4	71.1	2.4	26.5	0.2	1.74	15.9	14.5	10.5
Norfolk loamy fine sand:															
S76FL-001-10-1	0-23	Ap	0.0	2.1	17.6	59.3	8.6	87.6	6.0	6.4	12.2	1.53	11.5	8.7	4.6
2	23-38	B1	0.0	1.4	12.8	55.7	8.9	78.8	5.9	15.3	3.6	1.67	16.2	13.8	7.5
3	38-66	B21t	0.1	1.2	8.8	41.9	7.4	59.4	6.9	33.7	0.0	1.30	30.0	26.8	15.5
4	66-104	B22t	0.2	1.0	8.8	42.0	7.2	59.2	6.8	34.0	0.1	1.37	31.7	30.1	16.4
5	104-140	B23t	0.4	2.0	9.2	29.5	9.2	50.3	6.7	43.0	14.2	1.09	49.0	42.3	24.0
6	140-157	B3	0.2	1.4	5.3	13.0	4.9	24.8	14.0	61.2	0.1	1.16	50.5	49.5	39.7
7	157-203	C	0.3	1.0	2.9	8.0	5.3	17.5	17.0	65.5	0.0	1.14	53.9	53.7	51.3

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil series and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.10 mm)	Sand: Very fine (0.10-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm										Cm/hr	G/cm	----Pct(wt)----		
Plummer fine sand:															
S80FL-001-57-1	0-15	Ap	0.0	0.9	9.8	54.5	29.5	94.7	3.6	1.7	4.8	1.43	16.9	9.4	2.6
2	15-36	A21	0.0	0.7	8.2	55.1	30.0	94.0	4.3	1.7	3.3	1.62	13.6	7.3	1.5
3	36-81	A22	0.0	0.9	8.8	54.4	30.4	94.5	4.3	1.2	5.2	1.67	13.9	5.0	0.7
4	81-107	A23	0.0	1.1	7.6	55.4	31.1	95.2	3.8	1.0	6.4	1.59	11.8	3.9	0.6
5	107-127	B21tg	0.0	0.6	7.0	40.8	30.6	79.0	6.0	15.0	2.0	1.74	18.7	17.1	8.1
6	127-162	B22tg	0.0	0.6	6.4	36.2	29.2	72.4	4.3	23.3	0.0	1.69	18.0	16.1	9.6
7	162-206	B3g	0.0	0.4	4.4	33.0	28.6	66.4	11.1	22.5	0.2	1.57	21.0	19.0	14.3
Pomona sand:															
S75FL-001-15-1	0-13	A1	0.0	4.4	44.0	39.8	4.4	92.6	6.6	0.8	78.1	1.30	11.1	8.5	2.9
2	13-23	A21	0.0	5.2	41.9	42.5	5.4	95.0	4.9	0.1	37.4	1.47	6.3	4.5	0.8
3	23-41	A22	0.1	4.9	38.0	45.7	6.2	94.9	4.3	0.8	25.0	1.56	4.9	3.4	0.5
4	41-51	B21h	0.0	3.7	32.5	47.4	6.0	89.6	6.3	4.1	19.0	1.39	16.4	13.1	2.8
5	51-61	B22h	0.0	4.5	37.0	42.1	5.0	88.6	6.8	4.6	20.4	1.38	14.4	12.0	5.1
6	61-81	A'21	0.1	4.2	36.4	47.5	5.6	93.8	4.0	2.2	7.9	1.51	13.6	10.5	3.3
7	81-109	A'22	0.0	5.4	38.5	45.8	5.6	95.3	2.7	2.0	28.2	1.65	5.3	3.4	0.8
8	109-119	B'21tg	0.1	4.1	31.5	41.1	5.3	82.1	4.5	13.4	5.9	1.82	9.7	7.6	3.6
9	119-175	B'22tg	0.1	3.9	29.3	37.2	4.4	74.9	2.9	22.2	2.1	1.67	16.6	14.4	6.6
10	175-213	Cg	0.1	4.0	33.0	45.7	4.6	87.4	1.8	10.8	---	---	---	---	---
Pottsburg sand:															
S78FL-001-47-1	0-20	Ap	0.3	8.6	37.5	37.1	7.2	90.7	5.3	4.0	41.6	1.35	11.8	8.2	2.8
2	20-38	A21	0.3	10.3	42.2	32.7	6.0	91.5	5.8	2.7	25.5	1.48	8.5	5.6	1.8
3	38-84	A22	0.6	12.6	39.2	36.4	4.8	93.6	5.3	1.1	46.6	1.44	6.0	3.8	1.5
4	84-132	A23	1.2	18.8	42.4	26.8	4.4	93.6	4.3	2.1	15.5	1.67	6.0	3.8	1.8
5	132-183	B21h	0.6	12.2	38.6	36.0	4.2	91.6	7.1	1.3	5.9	1.73	10.4	7.4	1.8
6	183-218	B22h	0.6	11.0	36.8	38.0	5.4	91.8	7.0	1.2	3.1	1.61	16.9	12.5	3.3
Shenks muck:															
S77FL-001-42-1	0-46	Oa1	---	---	---	---	---	---	---	---	198.0	0.12	464.1	324.9	48.7
2	46-53	Oa2	---	---	---	---	---	---	---	---	23.3	0.40	180.6	130.6	31.4
3	53-71	IIC1	0.1	1.1	8.2	15.9	5.6	30.9	37.7	31.4	0.8	0.90	62.7	57.5	25.5
4	71-102	IIC2g	0.0	1.2	10.0	13.2	4.8	29.2	16.4	54.4	1.4	1.15	50.1	49.3	33.2
5	102-130	IIC3g	0.0	1.2	8.4	12.8	4.4	26.8	15.8	57.4	0.5	1.13	52.6	50.5	37.5
6	130-155	IIC4g	0.0	1.6	12.0	18.4	6.4	38.4	17.1	44.5	0.6	1.28	40.9	40.0	29.2
7	155-185	IIC5g	0.0	1.2	11.2	14.0	4.4	30.8	17.7	51.5	1.1	1.19	48.0	45.7	35.2
8	185-208	IIC6g	0.0	1.6	11.6	14.0	4.8	32.0	15.7	52.3	1.4	1.23	44.6	43.4	35.8
Sparr fine sand:															
S78FL-001-49-1	0-10	Ap1	0.1	4.3	34.7	50.1	4.6	93.8	4.0	2.2	37.8	1.41	7.6	4.9	1.7
2	10-20	Ap2	0.2	5.4	35.1	50.0	4.2	94.9	3.1	2.0	73.3	1.38	5.8	3.8	1.5
3	20-64	A21	0.2	5.2	38.6	47.8	3.8	95.6	2.2	2.2	64.1	1.45	4.6	2.8	1.0
4	64-81	A22	0.2	5.2	32.8	53.2	4.6	96.2	1.8	2.0	66.7	1.45	3.8	2.1	0.7
5	81-122	A23	0.1	4.4	28.5	56.0	6.8	95.8	3.0	1.2	42.7	1.54	3.2	1.6	0.4
6	122-142	B1g	0.2	4.4	26.9	44.0	4.2	79.7	11.6	8.7	0.5	1.78	13.9	12.0	6.4
7	142-213	B2tg	0.2	3.6	26.2	41.4	2.8	74.2	13.9	11.9	0.1	1.78	17.5	16.1	10.8

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil series and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.10 mm)	Sand: Very fine (0.10-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm										Cm/hr	G/cm	----Pct(wt)----		
Surrency sand:															
S76FL-001-32-1	0-38	A1	0.1	4.4	35.5	49.6	7.1	96.7	2.6	0.7	8.9	0.97	63.5	53.1	16.0
2	38-71	A2	0.1	3.9	34.5	49.4	8.0	95.9	3.3	0.8	15.3	1.68	5.3	3.1	0.5
3	71-112	B21tg	0.0	3.5	25.1	34.4	5.7	68.7	8.2	23.1	0.5	1.59	18.9	17.2	7.4
4	112-140	B22tg	0.1	3.3	27.7	35.2	5.1	71.4	5.9	22.7	0.4	1.78	17.2	16.0	9.5
5	140-203	B23tg	0.1	3.9	29.0	33.3	4.4	70.7	2.6	26.7	0.0	1.83	15.9	14.9	9.9
Tavares sand:															
S78FL-001-50-1	0-20	Ap	0.1	7.0	48.6	35.1	5.5	96.3	2.2	1.5	46.0	1.60	5.4	3.4	1.0
2	20-48	C1	0.1	6.4	48.7	33.7	5.5	94.4	4.9	0.7	42.0	1.60	5.1	3.1	1.0
3	48-91	C2	0.1	7.4	51.4	31.9	4.3	95.1	2.9	2.0	53.9	1.60	4.7	2.8	1.0
4	91-114	C3	0.2	7.8	45.9	37.3	4.2	95.4	2.7	1.9	44.3	1.67	4.5	2.6	0.9
5	114-145	C4	0.2	8.4	44.8	37.6	4.8	95.8	2.2	2.0	33.5	1.63	3.9	2.4	0.7
6	145-203	C5	0.4	10.0	40.2	40.0	5.4	96.0	3.4	0.6	20.7	1.71	5.1	2.8	0.5
Wauberg sand:															
S76FL-001-45-1	0-13	Ap1	0.1	4.6	44.1	42.7	3.7	95.2	1.5	3.3	248.5	1.09	11.0	8.8	3.6
2	13-23	Ap2	0.2	5.4	49.2	38.9	2.4	96.1	2.6	1.3	86.1	1.23	8.6	6.5	2.5
3	23-48	A21	0.1	7.8	56.9	31.0	1.5	97.3	1.2	1.5	85.2	1.41	3.3	2.2	0.7
4	48-61	A22	0.3	6.9	47.9	38.7	2.1	95.9	0.9	3.2	31.5	1.58	4.8	3.9	1.8
5	61-102	B21t	0.0	3.6	30.8	27.2	4.0	65.6	4.2	30.2	0.0	1.62	21.6	20.6	15.4
6	102-127	B22t	0.2	4.9	33.6	32.3	4.7	75.7	2.9	21.4	0.2	1.87	13.6	11.9	7.7
7	127-160	B3	0.1	4.1	33.5	31.6	4.6	73.9	3.9	22.2	0.1	1.79	17.1	15.9	11.8
8	160-205	C	0.0	1.6	15.2	19.6	5.2	41.6	14.6	43.8	0.2	1.39	34.2	33.0	26.4
Wauchula sand:															
S76FL-001-24-1	0-13	A11	0.0	3.3	34.0	47.9	7.7	92.9	5.8	1.3	14.7	1.49	14.0	8.9	2.8
2	13-20	A12	0.0	2.9	32.3	49.9	8.6	93.7	5.2	1.1	7.0	1.60	8.0	4.6	1.3
3	20-36	A2	0.0	3.0	32.1	50.2	9.1	94.4	4.9	0.7	15.3	1.61	6.4	3.2	0.8
4	36-46	B2h	0.1	2.9	27.3	44.8	8.0	83.1	10.9	6.0	1.3	1.49	23.6	20.6	6.7
5	46-58	B3	0.1	3.1	30.3	49.2	8.8	91.5	5.6	2.9	8.5	1.55	12.5	8.7	3.5
6	58-71	A'2	0.0	3.3	30.8	50.8	8.7	93.6	4.4	2.0	5.8	1.65	10.6	6.6	2.2
7	71-94	B'2tg	0.1	2.8	25.8	42.8	7.6	79.1	5.4	15.5	1.4	1.64	17.7	15.3	5.2
8	94-142	B'31g	0.1	3.0	29.1	46.5	7.0	85.7	4.0	10.3	0.6	1.69	16.3	12.5	3.7
9	142-157	B'32g	0.1	2.7	26.7	43.7	6.3	79.5	3.7	16.8	0.1	1.80	15.1	14.0	8.1
10	157-203	Cg	0.1	2.4	25.8	35.8	5.0	69.1	1.3	29.6	0.1	1.67	19.5	18.2	13.1

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Arredondo fine sand:																				
S76FL-001-12-1	0-20	Ap	1.48	0.44	0.01	0.12	2.05	4.22	6.27	33	0.57	0.05	6.0	5.4	5.0	--	--	--	0.17	0.08
2	20-79	A21	0.33	0.14	0.00	0.05	0.52	2.90	3.42	15	0.17	0.03	5.8	4.9	4.5	--	--	--	0.17	0.08
3	79-124	A22	0.27	0.15	0.00	0.02	0.44	1.85	2.29	19	0.05	0.03	5.6	5.0	4.5	--	--	--	0.15	0.07
4	124-137	B1	1.22	0.59	0.02	0.08	1.91	3.70	5.61	34	0.07	0.05	5.4	4.7	4.3	--	--	--	0.40	0.12
5	137-162	B21t	2.18	1.98	0.05	0.08	4.29	11.09	15.38	28	0.09	0.05	5.2	4.4	4.0	--	--	--	0.89	0.25
6	162-183	B22t	1.64	2.35	0.07	0.10	4.16	18.48	22.64	18	0.06	0.03	5.3	4.2	3.8	--	--	--	1.26	0.33
7	183-218	B23t	1.35	2.10	0.05	0.09	3.59	19.54	23.13	16	0.06	0.04	5.3	4.1	3.8	--	--	--	1.06	0.28
Bivans sand:																				
S80FL-001-53-1	0-15	Ap	2.20	0.42	0.03	0.05	2.70	2.24	4.94	55	0.81	0.13	5.6	5.1	5.2	--	--	--	--	--
2	15-38	A2	1.75	0.26	0.02	0.01	2.04	0.59	2.63	78	0.31	0.04	6.2	5.8	5.8	--	--	--	--	--
3	38-46	B21tg	14.00	3.21	0.29	0.14	17.64	11.19	28.83	61	0.42	0.12	5.8	5.3	4.7	--	--	--	0.10	0.07
4	46-68	B22tg	13.00	3.66	0.38	0.15	17.19	12.30	29.49	58	0.75	0.15	5.3	4.8	4.2	--	--	--	0.11	0.08
5	68-114	B23tg	10.75	3.17	0.44	0.12	14.48	11.65	26.13	55	0.30	0.17	5.2	4.6	4.2	--	--	--	0.06	0.06
6	114-155	B24tg	8.50	2.34	0.44	0.08	11.36	9.32	20.68	55	0.08	0.18	4.9	4.3	3.9	--	--	--	0.83	0.04
7	155-206	Cg	9.25	2.47	0.57	0.10	12.39	9.03	21.42	58	0.04	0.13	5.0	4.2	3.9	--	--	--	--	--
Blichton sand:																				
S80FL-001-54-1	0-15	Ap	0.55	0.12	0.02	0.24	0.93	3.01	3.94	24	0.48	0.15	4.8	4.3	4.1	--	--	--	--	--
2	15-33	A21	0.97	0.16	0.02	0.33	1.48	3.08	4.56	32	0.30	0.08	5.5	4.7	4.5	--	--	--	--	--
3	33-71	A22	1.12	0.33	0.02	0.21	1.68	4.84	6.52	26	0.20	0.08	5.4	4.8	4.5	--	--	--	--	--
4	71-86	B21tg	1.85	0.82	0.06	0.28	3.01	20.62	23.63	13	0.28	0.10	4.6	4.0	3.9	--	--	--	--	--
5	86-157	B22tg	1.62	1.32	0.11	0.20	3.25	25.62	28.87	11	0.14	0.11	4.3	3.8	3.6	--	--	--	0.46	0.14
6	157-203	B3g	0.50	1.15	0.13	0.07	1.85	16.10	17.95	10	0.05	0.07	4.4	3.6	3.5	--	--	--	--	--
Bonneau fine sand:																				
S76FL-001-13-1	0-23	Ap	0.92	0.11	0.02	0.08	1.13	6.07	7.20	16	0.59	0.04	5.6	4.9	4.4	--	--	--	0.09	0.08
2	23-74	A2	0.44	0.07	0.02	0.07	0.60	2.38	2.98	20	0.18	0.04	5.9	5.2	4.7	--	--	--	0.09	0.06
3	74-97	B21t	1.89	1.02	0.04	0.07	3.02	6.07	9.09	33	0.15	0.06	5.3	4.6	4.1	--	--	--	0.33	0.13
4	97-152	B22t	1.98	1.32	0.07	0.07	3.44	10.03	13.47	26	0.08	0.04	5.5	4.3	3.9	--	--	--	0.44	0.17
5	152-190	B23t	0.73	0.77	0.05	0.06	1.61	11.09	12.70	9	0.04	0.03	5.2	4.1	3.7	--	--	--	0.33	0.15
6	190-213	B3g	0.64	0.65	0.06	0.06	1.41	9.50	10.91	13	0.03	0.04	5.2	4.0	3.7	--	--	--	0.23	0.12
Cadillac fine sand:																				
S76FL-001-19-1	0-18	Ap	2.07	0.21	0.00	0.07	2.35	1.47	3.82	62	0.68	0.24	7.1	6.4	6.1	--	--	--	--	--
2	18-74	A21	0.33	0.01	0.00	0.04	0.38	0.90	1.28	30	0.08	0.20	6.3	5.6	5.2	--	--	--	--	--
3	74-132	A22	0.27	0.02	0.00	0.01	0.30	0.00	0.30	100	0.04	0.26	7.5	7.1	6.8	--	--	--	--	--
4	132-150	B21t	8.32	0.22	0.03	0.07	8.64	2.29	10.93	79	0.08	0.10	7.0	6.5	5.8	--	--	--	0.46	0.12
5	150-193	B22t	10.40	0.25	0.04	0.07	10.76	2.78	13.54	79	0.05	0.12	7.1	6.5	5.8	--	--	--	0.43	0.11
6	193-249	C1	34.13	0.46	0.09	0.18	34.86	8.98	43.84	80	0.43	0.44	7.3	6.8	6.0	--	--	--	--	--
7	249-300	C2	57.13	0.47	0.10	0.14	57.83	6.53	64.37	90	0.24	0.55	8.1	7.6	7.0	--	--	--	--	--

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Candler fine sand:																				
S80FL-001-59-1	0-15	Ap	0.32	0.07	0.00	0.03	0.42	2.10	2.52	17	0.48	0.03	5.5	4.8	4.6	--	--	--	--	--
2	15-41	A21	0.07	0.04	0.00	0.02	0.13	1.83	1.96	7	0.18	0.03	5.3	4.8	4.7	--	--	--	--	--
3	41-71	A22	0.02	0.04	0.01	0.01	0.08	0.98	1.06	8	0.09	0.02	5.1	4.8	4.7	--	--	--	--	--
4	71-145	A23	0.00	0.01	0.00	0.02	0.03	0.52	0.55	5	0.05	0.02	5.2	4.8	4.7	--	--	--	--	--
5	145-178	A24	0.00	0.00	0.01	0.01	0.02	0.66	0.68	3	0.03	0.02	5.3	4.7	4.7	--	--	--	--	--
6	178-208	A25&B	0.02	0.01	0.01	0.01	0.05	0.33	0.38	13	0.01	0.02	5.2	4.8	4.7	--	--	--	--	--
Chipley sand:																				
S76FL-001-14-1	0-15	Ap1	0.94	0.32	0.03	0.08	1.37	15.31	16.68	8	2.12	0.07	5.2	4.5	4.2	--	--	--	--	--
2	15-30	Ap2	0.25	0.00	0.01	0.01	0.52	8.45	8.97	6	0.64	0.03	5.5	4.9	4.5	--	--	--	--	--
3	30-64	C1	0.06	0.00	0.02	0.01	0.09	6.60	6.69	1	0.28	0.03	5.4	4.7	4.4	--	--	--	--	--
4	64-124	C2	0.02	0.00	0.02	0.01	0.05	8.98	9.03	1	0.09	0.04	5.0	4.4	4.3	--	--	--	--	--
5	124-206	C3	0.02	0.00	0.03	0.00	0.05	3.43	3.48	1	0.04	0.05	5.5	4.2	4.7	--	--	--	--	--
Fort Meade fine sand:																				
S76FL-001-17-1	0-25	Ap1	3.06	0.94	0.10	0.46	4.56	14.42	18.98	24	2.97	0.07	5.9	5.3	4.8	--	--	--	--	--
2	25-36	Ap2	1.35	0.32	0.03	0.29	1.99	10.53	12.52	16	1.45	0.03	6.4	5.5	5.0	--	--	--	--	--
3	36-86	C1	0.64	0.11	0.03	0.14	0.92	6.37	7.29	13	0.96	0.03	6.0	5.6	5.0	--	--	--	--	--
4	86-109	C2	0.37	0.11	0.02	0.04	0.54	5.55	6.09	9	0.57	0.02	6.0	5.5	5.0	--	--	--	--	--
5	109-180	C3	0.26	0.12	0.02	0.03	0.43	7.18	7.61	6	0.30	0.01	6.0	5.6	5.1	--	--	--	--	--
6	180-216	C4	0.22	0.10	0.02	0.03	0.37	7.89	8.26	4	0.54	0.01	6.0	5.6	4.9	--	--	--	--	--
Gainesville sand:																				
S76FL-001-16-1	0-18	A1	2.82	0.57	0.02	0.18	3.59	5.22	8.81	41	1.17	0.04	6.1	5.5	5.1	--	--	--	--	--
2	18-33	C1	1.52	0.40	0.02	0.07	2.01	4.00	6.01	33	0.39	0.03	6.5	5.7	5.1	--	--	--	--	--
3	33-74	C2	0.87	0.46	0.02	0.10	1.45	3.54	4.99	29	0.24	0.02	6.2	5.4	4.7	--	--	--	--	--
4	74-137	C3	1.11	0.83	0.02	0.07	2.03	3.67	5.70	36	0.07	0.02	5.8	5.0	4.4	--	--	--	--	--
5	137-208	C4	0.58	0.60	0.01	0.06	1.25	4.63	5.88	21	0.05	0.01	5.6	4.6	4.2	--	--	--	--	--
Jonesville sand:																				
S76FL-001-18-1	0-18	A1	2.06	0.34	0.01	0.07	2.48	4.76	7.24	34	0.83	0.03	6.0	5.8	4.8	--	--	--	--	--
2	18-43	A21	0.92	0.10	0.01	0.01	1.04	0.65	1.69	62	0.21	0.02	6.6	6.2	5.9	--	--	--	--	--
3	43-74	A22	0.48	0.07	0.01	0.02	0.58	0.33	0.91	64	0.08	0.02	6.7	6.4	6.1	--	--	--	--	--
4	74-84	B2t	8.81	0.12	0.02	0.05	9.00	2.78	11.78	76	0.29	0.01	6.7	6.4	5.5	--	--	--	0.73	0.19
5	84-203	IIR	22.89	0.25	0.01	0.02	23.17	0.00	23.17	100	0.02	0.35	7.8	7.5	7.4	--	--	--	--	--
Kendrick sand:																				
S76FL-001-11-1	0-23	Ap	2.07	0.74	0.03	0.20	3.04	6.60	9.64	32	0.73	0.06	5.6	5.0	4.6	--	--	--	0.19	0.10
2	23-66	A3	1.31	0.58	0.03	0.09	2.01	4.75	6.76	30	0.16	0.04	5.6	4.9	4.3	--	--	--	0.23	0.10
3	66-79	B21t	3.43	1.69	0.04	0.13	5.29	9.50	14.79	36	0.15	0.06	5.6	4.8	4.1	--	--	--	0.55	0.18
4	79-130	B22t	5.52	2.76	0.06	0.11	8.45	19.80	28.25	30	0.13	0.08	5.5	4.8	4.1	--	--	--	0.86	0.37
5	130-183	B23t	4.80	1.93	0.04	0.09	6.86	16.90	23.76	29	0.08	0.06	5.4	4.7	4.1	--	--	--	0.63	0.28
6	183-211	B24t	4.68	1.89	0.04	0.09	6.70	17.95	24.65	27	0.05	0.05	5.5	4.8	4.2	--	--	--	0.87	0.30
7	211-229	B3	5.45	2.51	0.05	0.10	8.11	15.31	23.42	35	0.06	0.10	5.5	4.8	4.2	--	--	--	0.84	0.25

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Lake fine sand:																				
S76FL-001-58-1	0-18	Ap	3.70	0.10	0.01	0.02	3.83	1.14	4.97	77	0.61	0.05	6.6	6.3	6.3	--	--	--	--	--
2	18-28	C1	1.17	0.02	0.01	0.01	1.21	1.53	2.74	44	0.25	0.03	6.3	6.0	5.9	--	--	--	--	--
3	28-74	C2	0.38	0.02	0.01	0.01	0.42	1.10	1.52	28	0.12	0.03	6.0	5.6	5.3	--	--	--	--	--
4	74-107	C3	0.12	0.02	0.00	0.00	0.14	0.52	0.66	21	0.04	0.02	5.6	5.2	4.9	--	--	--	--	--
5	107-152	C4	0.08	0.02	0.00	0.00	0.10	0.46	0.56	18	0.03	0.01	5.6	5.3	4.9	--	--	--	--	--
6	152-208	C5	0.08	0.02	0.00	0.00	0.10	0.26	0.36	28	0.00	0.01	5.6	5.3	5.0	--	--	--	--	--
Lake sand:																				
S76FL-001-46-1	0-23	Ap	1.70	0.58	0.00	0.09	2.37	2.21	4.58	52	1.09	0.05	6.5	6.1	5.9	--	--	--	--	--
2	23-104	C1	0.18	0.05	0.00	0.02	0.25	2.24	2.49	10	0.15	0.02	5.2	4.4	4.4	--	--	--	--	--
3	104-175	C2	0.40	0.16	0.00	0.02	0.58	2.37	2.95	20	0.12	0.02	5.1	4.4	4.3	--	--	--	--	--
4	175-208	C3	0.34	0.11	0.00	0.02	0.47	1.76	2.23	21	0.09	0.02	5.1	4.5	4.4	--	--	--	--	--
Ledwith muck:																				
S77FL-001-43-1	23-0	O2	26.86	5.20	1.54	0.51	34.11	68.15	102.26	33	45.85	0.13	5.0	4.4	4.2	--	--	--	--	--
2	0-15	A1	1.60	0.45	0.18	0.04	2.27	8.59	10.86	21	1.21	0.09	4.7	4.1	3.9	--	--	--	--	--
3	15-20	A2	0.48	0.12	0.04	0.01	0.65	1.30	1.95	33	0.20	0.06	5.4	4.4	4.2	--	--	--	--	--
4	20-43	B21tg	17.92	6.58	0.39	0.15	25.04	13.63	38.67	65	0.47	0.36	7.1	5.8	5.2	--	--	--	0.06	0.07
5	43-89	B22tg	16.23	5.88	0.30	0.14	22.55	10.00	32.55	69	0.18	0.32	7.3	6.7	6.1	--	--	--	0.08	0.06
6	89-135	B23tg	18.54	6.66	0.35	0.18	25.73	11.09	36.82	70	0.10	0.22	7.4	7.0	6.2	--	--	--	0.75	0.10
7	135-211	Cg	33.23	7.15	0.39	0.20	40.97	9.68	50.65	81	0.04	0.75	8.1	7.7	7.1	--	--	--	--	--
Lochloosa fine sand:																				
S80FL-001-56-1	0-18	A1	0.40	0.22	0.04	0.03	0.69	10.01	10.70	6	0.64	0.07	4.9	4.1	3.9	--	--	--	--	--
2	18-36	A21	0.05	0.02	0.03	0.01	0.11	3.34	3.45	3	0.20	0.02	5.4	4.7	4.6	--	--	--	--	--
3	36-76	A22	0.02	0.02	0.01	0.01	0.06	1.64	1.70	4	0.08	0.02	5.1	4.6	4.6	--	--	--	--	--
4	76-86	A23	0.10	0.15	0.03	0.00	0.28	2.49	2.77	10	0.05	0.03	5.2	4.4	4.4	--	--	--	--	--
5	86-112	B21t	0.12	0.44	0.07	0.01	0.64	5.10	5.74	11	0.04	0.03	5.3	4.3	4.3	--	--	--	--	--
6	112-145	B22tg	0.02	0.07	0.09	0.01	0.19	5.57	5.76	3	0.06	0.04	4.6	4.1	4.1	--	--	--	--	--
7	145-203	B3g	0.01	0.82	0.10	0.01	0.94	4.32	5.26	18	0.03	0.05	4.5	4.2	4.0	--	--	--	--	--
Millhopper sand:																				
S75FL-001-6-1	0-23	Ap	0.86	0.14	0.01	0.03	1.04	4.4	5.44	19	0.73	0.04	5.9	5.2	4.8	--	--	--	0.07	0.12
2	23-53	A21	0.30	0.05	0.00	0.01	0.36	2.4	2.76	13	0.18	0.02	6.2	5.3	4.8	--	--	--	0.08	0.10
3	53-66	A22	0.23	0.06	0.01	0.01	0.31	1.6	1.91	16	0.15	0.02	6.2	5.5	4.7	--	--	--	0.07	0.08
4	66-122	A23	0.14	0.06	0.00	0.01	0.21	1.2	1.41	15	0.10	0.02	6.1	5.0	4.7	--	--	--	0.06	0.06
5	122-147	A24	0.11	0.05	0.00	0.02	0.18	0.9	1.08	17	0.06	0.02	6.0	4.8	4.5	--	--	--	0.07	0.04
6	147-162	B21t	0.59	0.22	0.00	0.02	0.83	3.7	4.53	18	0.08	0.03	5.6	4.6	4.3	--	--	--	0.17	0.12
7	162-218	B22tg	0.36	0.28	0.00	0.02	0.66	4.8	5.46	12	0.03	0.02	5.2	4.1	3.9	--	--	--	0.14	0.10
8	218-224	B3g	0.06	0.13	0.00	0.02	0.21	3.6	3.81	6	0.03	0.03	5.1	4.1	3.9	--	--	--	0.06	0.08

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Monteocha loamy sand:																				
S76FL-001-33-1	0-30	A1	0.05	0.19	0.10	0.09	0.43	38.13	38.56	1	6.35	0.20	3.6	3.1	2.9	--	--	--	--	--
2	30-46	A2	0.02	0.03	0.01	0.00	0.06	3.87	3.93	2	0.49	0.08	4.0	3.8	3.3	--	--	--	--	--
3	46-68	B2h	0.01	0.02	0.01	0.01	0.05	8.49	8.54	1	0.95	0.08	4.3	3.9	3.7	0.86	0.00	0.15	0.03	0.12
4	68-86	B3	0.01	0.02	0.00	0.00	0.03	6.77	6.80	0	0.68	0.05	4.5	4.1	3.8	--	--	--	--	--
5	86-122	A'2	0.02	0.01	0.01	0.00	0.04	4.15	4.19	1	0.39	0.04	4.6	4.1	4.0	--	--	--	--	--
6	122-150	B'21tg	0.02	0.06	0.03	0.01	0.12	6.88	7.00	2	0.58	0.08	4.5	4.0	3.8	--	--	--	0.02	0.17
7	150-216	B'22tg	0.03	0.07	0.04	0.02	0.16	8.60	8.76	2	0.41	0.07	4.7	4.1	3.8	--	--	--	0.01	0.17
8	216-239	Cg	0.04	0.01	0.02	0.00	0.07	4.37	4.44	2	0.15	0.04	5.0	4.4	4.1	--	--	--	--	--
Mulat sand:																				
S76FL-001-34-1	0-13	Ap1	2.37	0.66	0.00	0.46	3.49	5.46	8.95	39	1.18	0.13	6.4	5.6	5.3	--	--	--	--	--
2	13-20	Ap2	1.01	0.22	0.01	0.22	1.46	7.02	8.48	17	0.94	0.11	5.5	4.8	4.2	--	--	--	--	--
3	20-30	A21	0.30	0.05	0.00	0.06	0.41	5.73	6.14	7	0.58	0.10	5.3	5.0	4.4	--	--	--	--	--
4	30-53	A22	0.11	0.02	0.00	0.03	0.16	4.73	4.89	3	0.34	0.14	4.8	4.7	4.3	--	--	--	--	--
5	53-66	A23	0.14	0.02	0.01	0.06	0.23	3.87	4.10	6	0.16	0.15	4.9	4.7	4.3	--	--	--	--	--
6	66-76	B1g	0.49	0.06	0.00	0.14	0.69	6.98	7.67	9	0.17	0.10	4.7	4.3	4.0	--	--	--	0.44	0.20
7	76-119	B2tg	0.65	0.09	0.01	0.22	0.97	8.60	9.57	10	0.09	0.09	4.6	4.2	3.8	--	--	--	0.26	0.18
8	119-137	B3g	0.39	0.03	0.01	0.09	0.52	9.70	10.22	5	0.07	0.07	4.8	4.5	4.1	--	--	--	--	--
9	137-203	Cg	0.47	0.06	0.06	0.07	0.66	13.55	14.21	5	0.10	0.09	5.6	5.1	4.7	--	--	--	--	--
Newnan sand:																				
S76FL-001-21-1	0-13	A1	0.57	0.08	0.04	0.03	0.72	6.12	6.84	11	0.68	0.03	4.6	3.7	3.2	--	--	--	--	--
2	13-30	A2	0.07	0.02	0.00	0.01	0.10	1.43	1.53	7	0.16	0.01	5.3	4.2	3.6	--	--	--	--	--
3	30-41	B2h	0.08	0.04	0.03	0.02	0.17	8.98	9.15	2	0.98	0.02	4.9	4.1	3.9	0.58	0.01	0.20	0.04	0.14
4	41-51	B3	0.02	0.01	0.01	0.01	0.05	6.67	6.72	1	0.74	0.02	5.4	4.8	4.4	--	--	--	--	--
5	51-68	A'21	0.01	0.00	0.01	0.01	0.03	2.31	2.34	1	0.28	0.01	5.7	5.5	4.7	--	--	--	--	--
6	68-142	A'22	0.02	0.01	0.00	0.00	0.03	0.82	0.85	4	0.04	0.01	5.9	5.8	4.8	--	--	--	--	--
7	142-150	B'1g	0.06	0.06	0.02	0.01	0.15	2.18	2.33	6	0.06	0.01	5.0	4.2	4.1	--	--	--	--	--
8	150-190	B'21tg	0.04	0.13	0.02	0.01	0.20	3.81	4.01	5	0.06	0.01	5.2	4.2	4.0	--	--	--	--	--
9	190-208	B'22tg	0.04	0.27	0.02	0.01	0.34	4.90	5.24	6	0.05	0.01	5.1	4.2	3.8	--	--	--	--	--
Norfolk loamy fine sand:																				
S76FL-001-10-1	0-23	Ap	1.02	0.58	0.01	0.57	2.18	11.35	13.53	16	1.00	0.12	5.5	4.7	4.2	--	--	--	0.39	0.18
2	23-38	B1	3.92	1.89	0.02	0.33	6.16	9.50	15.66	39	0.34	0.11	6.0	5.3	4.6	--	--	--	0.74	0.22
3	38-66	B21t	5.90	3.79	0.05	0.16	9.90	21.65	31.55	31	0.31	0.13	5.4	4.7	4.1	--	--	--	1.59	0.51
4	66-104	B22t	3.12	4.94	0.04	0.14	8.24	25.08	33.32	25	0.13	0.13	5.2	4.5	4.0	--	--	--	1.60	0.58
5	104-140	B23t	1.90	6.05	0.08	0.18	8.21	43.82	52.03	16	0.10	0.07	5.1	4.3	3.8	--	--	--	3.70	1.19
6	140-157	B3	2.13	9.18	0.12	0.55	11.98	56.50	68.48	17	0.13	0.16	4.7	4.1	3.6	--	--	--	5.50	1.23
7	157-203	C	2.91	11.56	0.18	0.81	15.46	61.78	77.24	20	0.06	0.23	4.8	4.0	3.4	--	--	--	2.42	0.76

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Plummer fine sand:																				
S80FL-001-57-1	0-15	AP	0.16	0.02	0.02	0.02	0.22	4.72	4.94	4	1.07	0.02	4.2	3.7	3.4	--	--	--	--	--
2	15-36	A21	0.04	0.02	0.02	0.01	0.09	4.13	4.22	2	0.51	0.03	5.0	4.5	4.4	--	--	--	--	--
3	36-81	A22	0.02	0.02	0.01	0.01	0.06	1.24	1.30	5	0.14	0.02	4.7	4.8	4.7	--	--	--	--	--
4	81-107	A23	0.01	0.01	0.00	0.01	0.03	0.46	0.49	6	0.04	0.03	4.9	4.8	4.8	--	--	--	--	--
5	107-127	B21tg	0.26	0.17	0.02	0.03	0.48	5.18	5.66	8	0.14	0.07	4.4	4.2	4.2	--	--	--	0.05	0.06
6	127-162	B22tg	0.26	0.44	0.03	0.01	0.74	5.90	6.64	11	0.14	0.04	4.4	4.1	4.0	--	--	--	0.06	0.04
7	162-206	B3g	0.32	0.82	0.04	0.01	1.30	5.25	6.55	20	0.07	0.03	4.6	4.2	4.0	--	--	--	--	--
Pomona sand:																				
S75FL-001-15-1	0-13	A1	1.26	0.20	0.03	0.05	1.54	5.6	7.14	22	1.28	0.05	4.6	3.7	3.4	--	--	--	0.03	0.02
2	13-23	A21	0.27	0.05	0.01	0.02	0.35	1.8	2.15	16	0.38	0.03	5.0	3.8	3.5	--	--	--	0.02	0.02
3	23-41	A22	0.15	0.03	0.01	0.01	0.20	0.8	1.00	20	0.17	0.04	5.3	4.2	3.8	--	--	--	0.02	0.02
4	41-51	B21h	0.28	0.08	0.06	0.05	0.47	12.6	13.07	4	1.85	0.10	4.6	3.8	3.7	1.18	0.01	0.15	0.02	0.14
5	51-61	B22h	0.12	0.03	0.02	0.01	0.18	18.9	19.09	1	1.90	0.05	4.9	4.1	4.0	1.77	0.01	0.42	0.01	0.35
6	61-81	A'21	0.01	0.02	0.00	0.00	0.03	5.6	5.63	1	0.45	0.02	5.5	4.7	4.5	--	--	--	0.01	0.17
7	81-109	A'22	0.04	0.02	0.01	0.00	0.07	1.5	1.57	4	0.12	0.02	6.0	4.9	4.7	--	--	--	0.01	0.06
8	109-119	B'21tg	0.02	0.01	0.00	0.01	0.04	4.0	4.04	1	0.02	0.03	5.1	4.5	4.4	--	--	--	0.02	0.14
9	119-175	B'22tg	0.02	0.04	0.02	0.01	0.09	8.0	8.09	1	0.19	0.03	4.9	4.3	4.2	--	--	--	0.15	0.23
10	175-213	Cg	0.14	0.13	0.01	0.00	0.28	2.7	2.98	9	0.06	0.03	5.2	4.3	4.1	--	--	--	0.02	0.08
Pottsburg sand:																				
S78FL-001-47-1	0-20	Ap	0.21	0.05	0.00	0.02	0.28	10.05	10.33	3	1.39	0.04	4.4	3.9	3.9	--	--	--	--	--
2	20-38	A21	0.01	0.04	0.00	0.01	0.06	3.94	4.00	2	0.19	0.03	4.6	4.5	4.6	--	--	--	--	--
3	38-84	A22	0.01	0.00	0.00	0.01	0.02	2.10	2.12	1	0.00	0.03	4.4	4.6	4.7	--	--	--	--	--
4	84-132	A23	0.01	0.04	0.00	0.02	0.07	1.45	1.52	5	0.00	0.03	4.5	4.6	4.7	--	--	--	--	--
5	132-183	B21h	0.02	0.00	0.00	0.04	0.06	3.94	4.00	2	0.87	0.02	4.7	4.6	4.7	0.51	0.01	0.15	0.02	0.10
6	183-218	B22h	0.03	0.00	0.00	0.01	0.04	10.44	10.48	<1	0.56	0.02	4.7	4.5	4.5	0.81	0.00	0.24	0.02	0.29
Shenks muck:																				
S77FL-001-42-1	0-46	Oa1	11.64	3.16	0.78	0.24	15.82	85.28	101.10	16	42.96	1.25	4.6	3.9	3.7	--	--	--	--	--
2	46-53	Oa2	10.64	3.16	0.82	0.17	14.29	76.01	90.30	16	20.91	0.44	4.9	4.2	3.8	--	--	--	--	--
3	53-71	IIC1	12.42	5.22	0.60	0.11	18.35	31.35	49.70	37	3.05	0.10	5.4	4.4	3.8	--	--	--	--	--
4	71-102	IIC2g	19.17	8.35	0.39	0.24	28.15	19.22	47.37	59	0.40	0.05	5.9	5.0	4.4	--	--	--	--	--
5	102-130	IIC3g	22.11	9.29	0.45	0.27	32.12	17.34	49.46	65	0.27	0.07	6.7	5.8	5.1	--	--	--	--	--
6	130-155	IIC4g	19.54	7.65	0.46	0.19	27.84	14.05	41.85	66	0.24	0.10	6.4	5.7	5.1	--	--	--	--	--
7	155-185	IIC5g	22.86	8.96	0.51	0.25	32.58	15.52	48.10	68	0.15	0.10	6.9	6.2	5.6	--	--	--	--	--
8	185-208	IIC6g	23.30	9.13	0.59	0.28	33.30	14.80	48.10	69	0.08	0.09	6.8	6.4	5.8	--	--	--	--	--
Sparr fine sand:																				
S78FL-001-49-1	0-10	Ap1	0.40	0.10	0.00	0.09	0.59	4.66	5.25	11	0.28	0.04	4.6	4.3	4.1	--	--	--	--	--
2	10-20	Ap2	0.73	0.04	0.00	0.05	0.82	3.35	4.17	20	0.89	0.02	4.9	4.8	4.5	--	--	--	--	--
3	20-64	A21	0.66	0.03	0.00	0.02	0.71	3.09	3.80	19	0.00	0.02	5.3	5.2	5.1	--	--	--	--	--
4	64-81	A22	0.11	0.02	0.00	0.01	0.14	0.85	0.99	14	0.27	0.01	5.0	4.9	4.7	--	--	--	--	--
5	81-122	A23	0.02	0.01	0.00	0.01	0.04	0.72	0.76	5	0.00	0.01	4.6	4.6	4.6	--	--	--	--	--
6	122-142	B1g	0.10	0.12	0.00	0.02	0.24	4.04	4.28	6	0.00	0.02	4.0	3.9	3.9	--	--	--	0.21	0.07
7	142-213	B2tg	0.11	0.25	0.00	0.02	0.38	5.02	5.40	7	0.06	0.02	4.0	3.8	3.7	--	--	--	0.18	0.06

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate dithionite extractable: Fe	Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho /cm				Pct	Pct	Pct	Pct	Pct
Surrency sand:																				
S76FL-001-32-1	0-38	A1	0.12	0.16	0.23	0.08	0.59	58.96	59.55	1	8.64	0.26	3.9	3.6	3.4	--	--	--	--	--
2	38-71	A2	0.03	0.01	0.02	0.00	0.06	0.75	0.81	7	0.08	0.07	4.6	4.3	3.9	--	--	--	--	--
3	71-112	B21tg	0.06	0.83	0.24	0.04	1.17	12.35	13.52	9	0.23	0.22	4.0	3.5	3.1	--	--	--	0.27	0.11
4	112-140	B22tg	0.08	1.16	0.36	0.03	1.63	9.99	11.62	14	0.22	0.22	4.1	3.6	3.0	--	--	--	0.10	0.09
5	140-203	B23tg	0.24	1.23	0.35	0.03	1.85	7.52	9.37	20	0.18	0.19	4.0	3.3	2.9	--	--	--	0.10	0.06
Tavares sand:																				
S78FL-001-50-1	0-20	Ap	0.09	0.02	0.00	0.02	0.13	4.73	4.86	3	1.41	0.02	4.2	4.0	3.8	--	--	--	--	--
2	20-48	C1	0.01	0.04	0.00	0.01	0.06	2.69	2.75	2	0.66	0.01	4.3	4.5	4.4	--	--	--	--	--
3	48-91	C2	0.01	0.04	0.00	0.01	0.06	2.30	2.36	3	0.44	0.02	4.2	4.5	4.5	--	--	--	--	--
4	91-114	C3	0.01	0.01	0.00	0.01	0.03	0.99	1.02	3	0.18	0.01	4.3	4.6	4.6	--	--	--	--	--
5	114-145	C4	0.01	0.04	0.00	0.01	0.06	0.85	0.91	7	0.08	0.01	4.3	4.6	4.7	--	--	--	--	--
6	145-203	C5	0.01	0.04	0.00	0.05	0.10	0.33	0.43	23	0.05	0.01	4.4	4.8	4.8	--	--	--	--	--
Wauberg sand:																				
S76FL-001-45-1	0-13	Ap1	2.15	0.49	0.00	0.04	2.68	2.45	5.13	52	1.68	0.06	5.7	5.6	5.6	--	--	--	--	--
2	13-23	Ap2	2.15	0.33	0.00	0.02	2.50	1.66	4.16	60	0.16	0.05	6.3	6.1	6.0	--	--	--	--	--
3	23-48	A21	0.43	0.16	0.00	0.02	0.61	0.95	1.56	39	0.31	0.03	6.1	5.9	5.1	--	--	--	--	--
4	48-61	A22	0.60	0.30	0.00	0.02	0.92	1.42	2.34	39	0.22	0.03	5.8	5.4	5.1	--	--	--	--	--
5	61-102	B21t	8.73	2.39	0.13	0.13	11.38	10.26	21.64	53	0.22	0.03	5.3	4.6	4.4	--	--	--	0.54	0.13
6	102-127	B22t	8.28	2.22	0.07	0.08	10.65	6.18	16.83	63	0.09	0.03	5.2	4.6	4.6	--	--	--	0.77	0.07
7	127-160	B3	9.38	2.63	0.04	0.07	12.12	6.57	18.69	65	0.12	0.03	5.4	4.9	4.7	--	--	--	--	--
8	160-205	C	20.78	5.76	0.11	0.15	26.80	16.91	43.71	61	0.16	0.06	5.6	5.2	5.0	--	--	--	--	--
Wauchula sand:																				
S76FL-001-24-1	0-13	A11	0.33	0.20	0.05	0.05	0.63	11.52	12.15	5	1.78	0.08	4.2	3.5	3.1	--	--	--	--	--
2	13-20	A12	0.22	0.11	0.02	0.01	0.36	5.97	6.33	6	0.55	0.06	4.3	3.6	3.2	--	--	--	--	--
3	20-36	A2	0.07	0.03	0.02	0.01	0.13	3.50	3.63	4	0.23	0.08	5.0	4.4	3.8	--	--	--	--	--
4	36-46	B2h	0.06	0.11	0.03	0.03	0.23	21.81	22.04	1	2.45	0.06	4.4	3.8	3.7	1.61	0.01	0.30	0.02	0.21
5	46-58	B3	0.00	0.01	0.01	0.01	0.03	11.25	11.28	<1	0.79	0.06	4.8	4.3	4.2	--	--	--	--	--
6	58-71	A'2	0.02	0.01	0.01	0.01	0.05	6.31	6.36	1	0.47	0.06	5.1	4.5	4.3	--	--	--	--	--
7	71-94	B'2tg	0.03	0.08	0.01	0.01	0.13	11.25	11.38	1	0.39	0.05	4.8	4.2	4.1	--	--	--	0.28	0.22
8	94-142	B'31g	0.03	0.08	0.00	0.01	0.12	7.13	7.25	2	0.18	0.05	4.9	4.3	4.1	--	--	--	--	--
9	142-157	B'32g	0.09	0.25	0.01	0.01	0.36	5.97	6.33	6	0.09	0.04	4.8	4.1	3.8	--	--	--	--	--
10	157-203	Cg	0.08	0.74	0.03	0.02	0.87	8.03	8.90	10	0.08	0.06	5.0	4.1	3.7	--	--	--	--	--

TABLE 19.--CLAY MINERALOGY OF SELECTED SOILS

Soil name and sample numbers	Depth	Horizon	Clay minerals				
			Montmorillonite	14 Angstrom intergrade	Kaolinite	Gibbsite	Quartz
	Cm		Pct	Pct	Pct	Pct	Pct
Arredondo fine sand:							
S76FL-001-12-1	0-20	Ap	0	32	17	0	51
3	79-124	A22	0	38	15	0	47
5	137-162	B21t	0	34	20	0	46
7	183-218	B23t	0	35	47	0	18
Bivans sand:							
S80FL-001-53-1	0-15	Ap	53	21	6	0	20
3	38-46	B21tg	46	34	7	0	13
5	68-114	B23tg	50	21	13	0	16
7	155-206	Cg	66	8	14	0	12
Blichton sand:							
S80FL-001-54-1	0-15	Ap	4	16	11	0	69
5	86-157	B22tg	63	9	16	0	12
6	157-203	B3g	48	9	13	0	30
Bonneau fine sand:							
S76FL-001-13-1	0-23	Ap	0	23	31	0	46
4	97-152	B22t	0	13	75	0	12
6	190-213	B3g	0	0	79	0	21
Cadillac fine sand:							
S76FL-001-19-1	0-18	Ap	0	50	0	0	50
3	74-132	A22	0	30	0	0	70
4*	132-150	B21t	35	53	0	0	12
6*	193-249	C1	82	14	0	0	4
Candler fine sand:							
S80FL-001-59-1	0-15	Ap	0	38	16	5	41
3	41-71	A22	0	52	16	5	27
6	178-208	A25&B	0	56	22	6	16
Chipley sand:							
S76FL-001-14-1	0-15	Ap1	0	15	6	0	79
3	30-64	C1	0	20	5	0	75
5	124-206	C3	0	17	3	0	80
Fort Meade fine sand:							
S76FL-001-17-1*	0-25	Ap1	0	0	40	0	60
4	86-109	C2	0	63	0	0	37
6	180-216	C4	0	55	0	0	45
Gainesville sand:							
S76FL-001-16-1*	0-18	A1	0	70	0	0	30
4	74-137	C3	0	47	30	0	23
5*	137-208	C4	0	0	50	0	50
Jonesville sand:							
S76FL-001-18-1	0-18	A1	0	39	17	0	44
4*	74-84	B2t	0	82	0	0	18
5*+	84-203	IIR	0	0	8	0	15

See footnotes at end of table.

TABLE 19.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil name and sample numbers	Depth	Horizon	Clay minerals				
			Montmorillonite	14 Angstrom intergrade	Kaolinite	Gibbsite	Quartz
	Cm		Pct	Pct	Pct	Pct	Pct
Kendrick sand:							
S76FL-001-11-1	0-23	Ap	0	22	10	0	68
7	211-229	B3	0	2	2	0	96
Lake fine sand:							
S80FL-001-58-1	0-18	Ap	0	48	36	0	16
3	28-74	C2	0	44	42	4	10
6	152-208	C5	0	62	14	4	20
Lake sand:							
S76FL-001-46-1	0-23	Ap	0	43	29	0	28
2	23-104	C1	0	50	27	0	23
4	175-208	C3	0	52	23	0	25
Ledwith muck:							
S77FL-001-43-2	0-15	A1	32	12	8	0	48
4	20-43	B21tg	64	0	4	0	32
6	89-135	B23tg	94	0	2	0	4
7	135-211	Cg	91	0	3	0	6
Lochloosa fine sand:							
S80FL-001-56-1	0-18	A1	0	42	22	0	36
5	86-112	B21t	6	38	46	0	10
7	145-203	B3g	5	23	68	0	4
Millhopper sand:							
S75FL-001-6-1	0-23	Ap	0	23	40	0	37
7	162-218	B22tg	0	2	96	0	2
Monteocha loamy sand:							
S76FL-001-33-1	0-30	A1	0	0	0	0	100
3	46-68	B2h	0	9	4	0	87
6	122-150	B'21tg	0	34	21	0	45
8	216-239	Cg	0	15	24	0	61
Mulat sand:							
S76FL-001-34-1	0-13	Ap1	0	20	5	0	75
6	66-76	B1g	0	26	15	0	59
7	76-119	B2tg	0	38	38	0	24
9	137-203	Cg	0	30	25	0	45
Newnan sand:							
S76FL-001-21-1	0-13	A1	0	16	7	0	77
3	30-41	B2h	0	12	7	0	81
8	150-190	B'21tg	0	10	20	19	51
Norfolk loamy fine sand:							
S76FL-001-10-1	0-23	Ap	0	0	2	0	98
4	66-104	B22t	0	0	2	0	98
7	157-203	C	95	0	0	0	5
Plummer fine sand:							
S80FL-001-57-1	0-15	Ap	20	24	11	0	45
5	107-127	B21tg	10	38	33	0	19
7	162-206	B3g	6	10	81	0	3

See footnotes at end of table.

TABLE 19.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil name and sample numbers	Depth	Horizon	Clay minerals				
			Montmorillonite	14 Angstrom intergrade	Kaolinite	Gibbsite	Quartz
	Cm		Pct	Pct	Pct	Pct	Pct
Pomona sand:							
S75FL-001-15-1	0-13	A1	0	7	5	0	88
4	41-51	B21h	0	21	21	0	58
8	109-119	B'21tg	0	17	11	27	45
10	175-213	Cg	0	26	46	22	6
Pottsburg sand:							
S78FL-001-47-1	0-20	Ap	26	0	0	0	74
3	38-84	A22	39	0	0	0	61
5	132-183	B21h	0	0	0	0	100
Shenks muck:							
S77FL-001-42-3	53-71	IIC1	55	0	7	0	38
4	71-102	IIC2g	79	0	5	0	16
6	130-155	IIC4g	83	0	5	0	12
8	185-208	IIC6g	93	0	2	0	5
Sparr fine sand:							
S78FL-001-49-1	0-10	Ap1	0	52	22	0	26
4	64-81	A22	0	49	24	0	27
6	122-142	B1g	0	31	62	0	7
Surrency sand:							
S76FL-001-32-1	0-38	A1	0	12	5	0	83
3	71-112	B21tg	61	0	26	0	13
5	140-203	B23tg	9	0	80	0	11
Tavares sand:							
S78FL-001-50-1	0-20	Ap	0	36	0	0	64
3	48-91	C2	0	51	0	0	49
6	145-203	C5	0	11	11	0	78
Wauberg sand:							
S76FL-001-45-1	0-13	Ap1	0	57	0	0	43
5	61-102	B21t	95	0	0	0	5
7	127-160	B3	95	0	3	0	2
Wauchula sand:							
S76FL-001-24-1	0-13	A11	0	5	7	0	88
4	36-46	B2h	0	9	5	0	86
7	71-94	B'2tg	0	37	32	0	31
10	157-203	Cg	0	0	100	0	0

* Trace of feldspar.
+ Mica content is 77 percent.

TABLE 20.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution[1]							Liquid limit	Plasticity index	Moisture[2] density	
			Percentage passing sieve			Percentage smaller than--							
	AASHTO[3]	Unified	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/ft3	Pct
Arredondo fine sand: (S76FL-001-12) FDOT 11, 12													
A21----------------8 to 31	A-2-4	SM	100	94	14	8	2	0	0	-	NP[4]	114	12
B22t--------------64 to 72	A-2-4	SM	100	95	35	32	27	24	23	-	NP[4]	108	17
Bivans sand: (S80FL-001-53) FDOT 66, 67													
Ap-----------------0 to 6	A-2-4	SM	100	88	17	13	7	3	2	-	NP[4]	116	11
B23tg-------------27 to 45	A-7-6	SC	100	91	44	41	36	32	31	45	31	95	15
Blichton sand: (S80FL-001-54) FDOT 68, 69													
A22---------------13 to 28	A-2-4	SM	100	78	15	14	9	7	6	-	NP[4]	116	10
B22tg-------------34 to 62	A-6	SC	100	91	40	36	30	28	27	36	15	107	18
Bonneau fine sand: (S76FL-001-13) FDOT 13, 14, 15													
A2-----------------9 to 29	A-2-4	SM	100	94	13	8	3	0	0	-	NP[4]	112	12
B22t--------------38 to 60	A-6	SC	100	96	38	34	29	28	27	38	21	106	18
B3g---------------75 to 84	A-2-6	SC	100	94	26	25	22	21	19	27	12	112	16
Cadillac fine sand: (S76FL-001-19) FDOT 26, 27													
A21----------------7 to 29	A-3	SP-SM	100	93	8	4	0	0	0	-	NP[4]	108	12
B22t--------------59 to 76	A-6	SC	100	94	37	35	32	31	30	34	20	112	12
Chipley sand: (S76FL-001-14) FDOT 16, 17													
C2----------------25 to 49	A-3	SP-SM	100	90	10	6	4	1	0	-	NP[4]	115	10
C3----------------49 to 81	A-3	SP-SM	100	92	9	9	6	2	1	-	NP[4]	115	11
Fort Meade fine sand: (S76FL-001-17) FDOT 20, 21, 22													
C1----------------14 to 34	A-2-4	SM	100	96	18	14	7	2	0	-	NP[4]	101	20
C3----------------43 to 71	A-2-4	SM	100	96	21	10	0	0	0	-	NP[4]	108	17
C4----------------71 to 85	A-2-4	SM	100	95	15	8	1	0	0	-	NP[4]	111	14
Gainesville sand: (S76FL-001-16) FDOT 18, 19													
C1-----------------7 to 13	A-2-4	SM	100	92	15	6	0	0	0	-	NP[4]	115	10
C4----------------54 to 82	A-2-4	SM	100	90	15	13	10	8	7	-	NP[4]	117	13
Jonesville sand: (S76FL-001-18) FDOT 23, 24, 25													
A22---------------17 to 29	A-2-4	SM	100	94	13	9	3	1	0	-	NP[4]	110	13
B2t---------------29 to 33	A-2-4	SM-SC	100	94	25	21	16	14	13	21	7	118	13

See footnotes at end of table.

TABLE 20.--ENGINEERING INDEX PROPERTIES--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution[1]							Liquid limit	Plasticity index	Moisture[2] density	
			Percentage passing sieve			Percentage smaller than--							
	AASHTO[3]	Unified	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/ft[3]	Pct
Kendrick sand: (S76FL-001-11) FDOT 9, 10													
A3----------------9 to 26	A-2-4	SM	100	94	19	15	9	5	5	-	NP[4]	118	11
B22t--------------51 to 72	A-2-4	SC	100	94	31	27	20	18	17	27	9	109	17
Lake fine sand: (S80FL-001-58) FDOT 76													
C3----------------29 to 42	A-3	SP-SM	100	98	9	5	2	2	1	-	NP[4]	106	12
Lake sand: (S76FL-001-46) FDOT 56													
C1-----------------8 to 41	A-2-4	SM	100	88	15	10	5	5	4	-	NP[4]	114	11
Ledwith muck: (S77FL-001-43) FDOT 50, 51													
B22tg-------------17 to 35	A-7-5	SC	100	94	48	44	41	39	37	51	30	93	20
Cg----------------53 to 84	A-7-5	CH	100	94	57	54	49	41	37	51	31	99	21
Lochloosa fine sand: (S80FL-001-56) FDOT 72, 73													
A22---------------14 to 30	A-2-4	SM	100	97	27	15	4	3	2	-	NP[4]	110	13
B22tg-------------44 to 57	A-6	SC	100	98	42	33	23	19	17	32	12	115	14
Millhopper sand: (S75FL-001-6) FDOT 4, 5													
A23---------------28 to 48	A-3	SP-SM	100	91	9	5	1	0	0	-	NP[4]	112	11
B22tg-------------64 to 86	A-2-6	SC	100	85	26	24	20	18	17	26	13	118	13
Monteocha loamy sand: (S76FL-001-33) FDOT 38, 39, 40													
B2h---------------18 to 27	A-2-4	SM	100	90	15	10	4	2	1	-	NP[4]	113	10
A'2---------------34 to 48	A-3	SP-SM	100	90	10	8	5	3	1	-	NP[4]	115	9
B'21tg------------48 to 59	A-2-4	SM	100	92	17	17	16	14	13	-	NP[4]	119	11
Mulat sand: (S76FL-001-34) FDOT 43, 44, 45													
A22---------------12 to 21	A-2-4	SP-SM	100	89	11	9	4	2	2	-	NP[4]	114	11
B2tg--------------30 to 47	A-2-4	SM	100	90	21	19	14	13	13	-	NP[4]	120	11
B3g---------------47 to 54	A-2-4	SM	100	90	14	12	7	3	2	-	NP[4]	113	12
Newnan sand: (S76FL-001-21) FDOT 31, 32													
A'22--------------27 to 56	A-3	SP-SM	100	92	10	6	1	0	0	-	NP[4]	112	12
B'21tg------------59 to 75	A-2-4	SM	100	93	18	16	13	12	11	-	NP[4]	123	10

See footnotes at end of table.

TABLE 20.--ENGINEERING INDEX PROPERTIES--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution[1]							Liquid limit	Plasticity index	Moisture[2] density	
			Percentage passing sieve			Percentage smaller than--							
	AASHTO[3]	Unified	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/ft[3]	Pct
Norfolk loamy fine sand: (S76FL-001-10) FDOT 6, 7, 8													
Ap----------------0 to 9	A-2-4	SM	100	95	17	13	8	5	2	-	NP[4]	112	13
B22t--------------26 to 41	A-7-5	CH	100	96	63	60	53	46	41	52	23	77	35
C-----------------62 to 80	A-7-5	CH	100	97	80	78	71	64	62	79	52	70	32
Plummer fine sand: (S80FL-001-57) FDOT 74, 75													
A22---------------14 to 32	A-2-4	SM	100	98	19	10	4	2	1	-	NP[4]	109	11
B22tg-------------50 to 64	A-4	SC	100	99	36	30	24	22	2	24	10	116	13
Pomona sand: (S75FL-001-15) FDOT 1, 2, 3													
B22h--------------20 to 24	A-2-4	SM	100	90	13	6	0	0	0	-	NP[4]	99	18
A'22--------------32 to 43	A-3	SP-SM	100	89	7	5	1	0	0	-	NP[4]	112	11
B'22tg------------47 to 69	A-2-4	SM	100	92	24	21	16	12	10	-	NP[4]	119	13
Pottsburg sand: (S78FL-001-47) FDOT 57, 58													
A23---------------33 to 52	A-3	SP-SM	100	78	9	6	4	3	2	-	NP[4]	116	10
B22h--------------72 to 86	A-2-4	SM	100	82	13	10	6	2	0	-	NP[4]	112	13
Shenks muck: (S77FL-001-42) FDOT 48, 49													
IIC2g-------------28 to 40	A-7-6	CH	100	97	69	65	62	57	55	77	60	82	26
IIC5g-------------61 to 73	A-7-6	CH	100	96	67	63	59	55	52	68	45	90	26
Sparr fine sand: (S78FL-001-49) FDOT 61, 62													
A21----------------8 to 25	A-3	SP-SM	100	90	6	0	0	0	0	-	NP[4]	109	11
B2tg--------------56 to 84	A-2-4	SM-SC	100	92	26	25	24	23	23	26	7	114	14
Surrency sand: (S76FL-001-32) FDOT 41, 42													
B21tg-------------28 to 44	A-2-6	SC	100	93	30	28	26	22	22	22	14	116	13
B22tg-------------44 to 55	A-2-6	SC	100	92	28	27	24	21	20	28	16	116	13
Tavares sand: (S78FL-001-50) FDOT 63													
C2----------------19 to 36	A-3	SP-SM	100	87	6	4	2	0	0	-	NP[4]	112	12
Wauberg sand: (S76FL-001-45) FDOT 54, 55													
A21----------------9 to 19	A-3	SP	100	86	3	3	2	1	1	-	NP[4]	108	12
B21t--------------24 to 40	A-6	SC	100	92	37	35	33	32	32	24	22	103	16

See footnotes at end of table.

TABLE 20.--ENGINEERING INDEX PROPERTIES--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution[1]							Liquid limit	Plasticity index	Moisture[2] density	
			Percentage passing sieve			Percentage smaller than--							
	AASHTO[3]	Unified	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/ft3	Pct
Wauchula sand:													
(S76FL-001-24)													
FDOT 36, 37													
A2------------------8 to 14	A-2-4	SP-SM	100	93	11	7	3	0	0	-	NP[4]	107	13
B'2tg--------------28 to 37	A-2-4	SM	100	93	22	19	15	13	13	-	NP[4]	119	12

[1]Mechanical analyses according to AASHTO designation T88-78. Results by this procedure differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-sized 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 the calculations of grain-sized fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[2]Based on AASHTO Designation T99-74.

[3]Based on AASHTO Designation M145-73.

[4]NP means nonplastic.

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Apopka	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Arredondo	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Arents	Arents
Bivans	Fine, montmorillonitic, hyperthermic Typic Albaqualfs
Blichton	Loamy, siliceous, hyperthermic Arenic Plinthic Paleaquults
Boardman	Fine-loamy, siliceous, hyperthermic Typic Ochraqualfs
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Cadillac	Loamy, siliceous, hyperthermic Grossarenic Paleudalfs
Candler	Hyperthermic, uncoated Typic Quartzipsamments
Chipley	Thermic, coated Aquic Quartzipsamments
*Emeralda	Fine, mixed, hyperthermic Mollic Albaqualfs
Floridana	Loamy, siliceous, hyperthermic Arenic Argiaquolls
Fort Meade	Sandy, siliceous, hyperthermic Quartzipsammentic Haplumbrepts
Gainesville	Hyperthermic, coated Typic Quartzipsamments
Jonesville	Loamy, siliceous, hyperthermic Arenic Hapludalfs
Kanapaha	Loamy, siliceous, hyperthermic Grossarenic Paleaquults
Kendrick	Loamy, siliceous, hyperthermic Arenic Paleudults
Lake	Hyperthermic, coated Typic Quartzipsamments
Ledwith	Fine, montmorillonitic, hyperthermic Mollic Albaqualfs
Lochloosa	Loamy, siliceous, hyperthermic Aquic Arenic Paleudults
Lynne	Sandy over clayey, siliceous, hyperthermic Ultic Haplaquods
Martel	Fine, montmorillonitic, hyperthermic Typic Umbraqualfs
*Micanopy	Fine, mixed, hyperthermic Aquic Paleudalfs
Millhopper	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Monteocha	Sandy, siliceous, hyperthermic Ultic Haplaquods
Mulat	Loamy, siliceous, thermic Arenic Ochraquults
*Myakka	Sandy, siliceous, hyperthermic Aeric Haplaquods
Newnan	Sandy, siliceous, hyperthermic Ultic Haplohumods
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Okeechobee	Euic, hyperthermic Hemic Medisaprists
Oleno	Clayey over loamy, montmorillonitic, acid, thermic Vertic Haplaquepts
Pedro	Fine-loamy, siliceous, hyperthermic, shallow Typic Hapludalfs
Pelham	Loamy, siliceous, thermic Arenic Paleaquults
Placid	Sandy, siliceous, hyperthermic Typic Humaquepts
Plummer	Loamy, siliceous, thermic Grossarenic Paleaquults
Pomona	Sandy, siliceous, hyperthermic Ultic Haplaquods
Pompano	Siliceous, hyperthermic Typic Psammaquents
Pottsburg	Sandy, siliceous, thermic Grossarenic Haplaquods
Riviera	Loamy, siliceous, hyperthermic Arenic Glossaqualfs
Samsula	Sandy or sandy-skeletal, siliceous, dysic, hyperthermic Terric Medisaprists
Shenks	Clayey, montmorillonitic, dysic, hyperthermic Terric Medisaprists
Sparr	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Surrency	Loamy, siliceous, thermic Arenic Umbric Paleaquults
Tavares	Hyperthermic, uncoated Typic Quartzipsamments
Terra Ceia	Euic, hyperthermic Typic Medisaprists
Udorthents	Udorthents
Wacahoota	Loamy, siliceous, hyperthermic Arenic Paleaquults
Wauberg	Loamy, siliceous, hyperthermic Arenic Albaqualfs
Wauchula	Sandy, siliceous, hyperthermic Ultic Haplaquods
Zolfo	Sandy, siliceous, hyperthermic Grossarenic Entic Haplohumods

* An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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