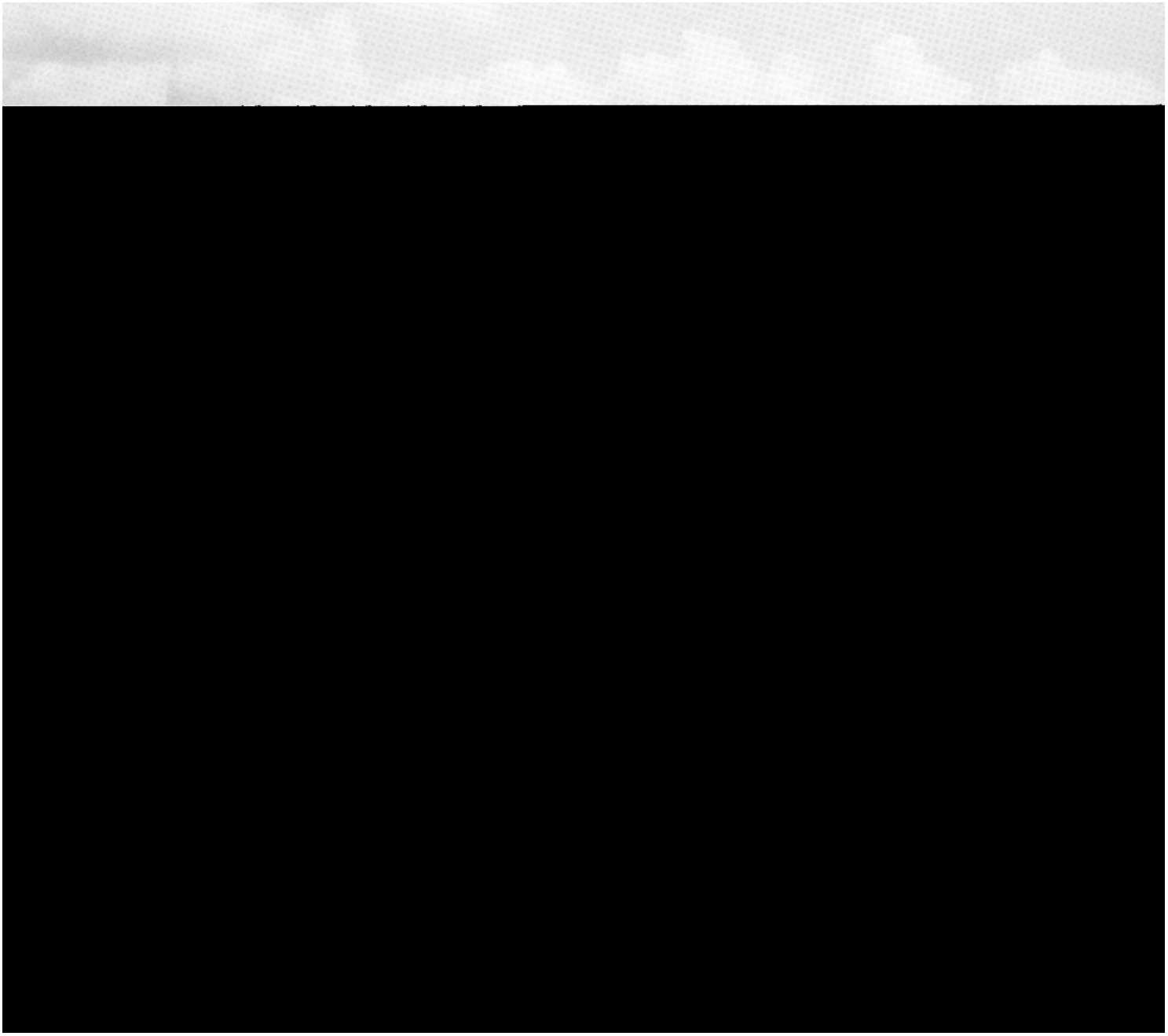
United States Department of Agriculture

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

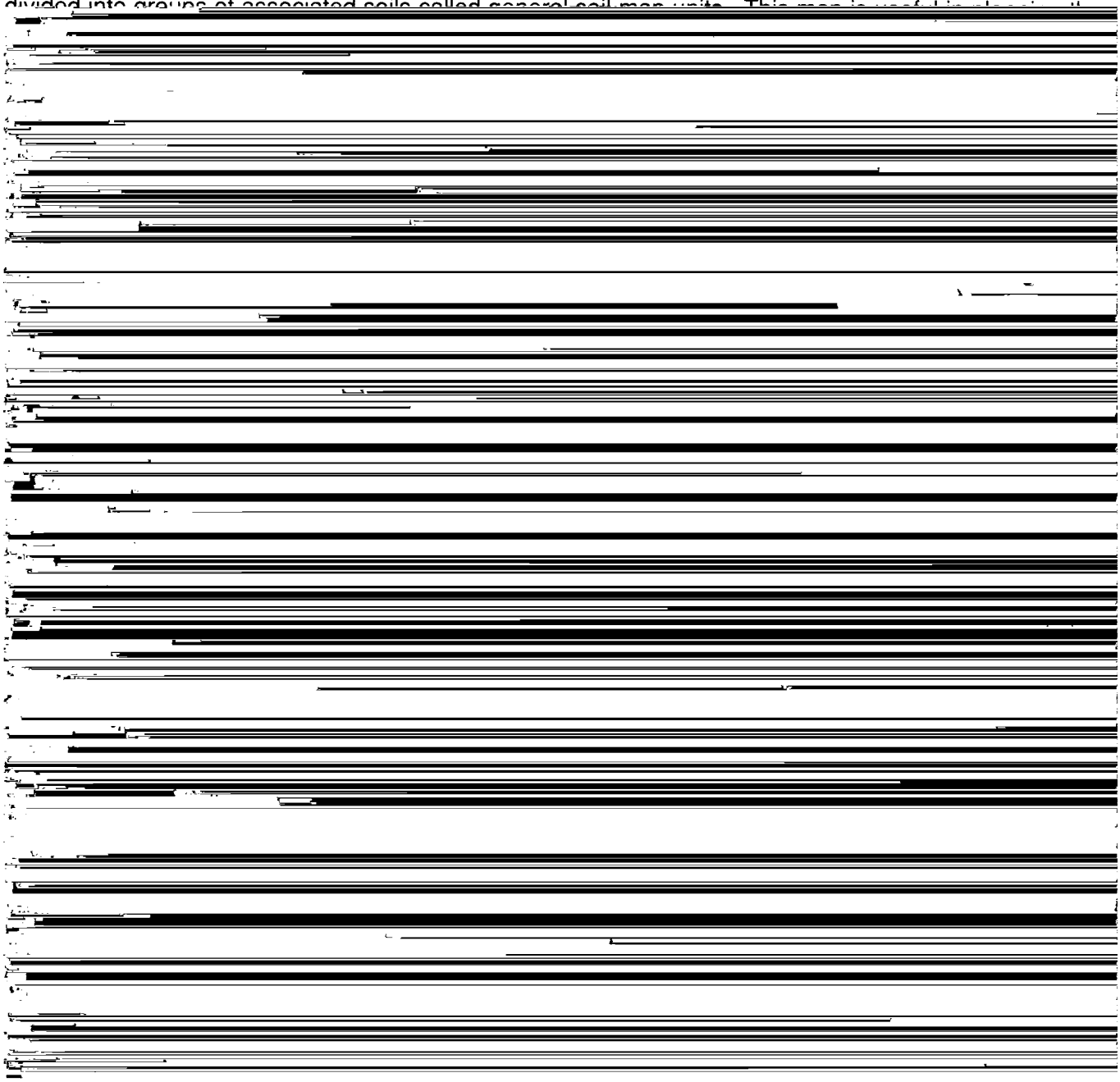
Soil Survey of Orange County, Florida



How To Use This Soil Survey

General Soil Map

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



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

Major fieldwork for this soil survey was completed in 1956. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1983. This soil 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, and the Florida Department of Agriculture and Consumer Services. It is part of the technical assistance furnished to the Orange County Soil and Water Conservation District. The Orange County Board of Commissioners contributed financially to the acceleration of the survey.

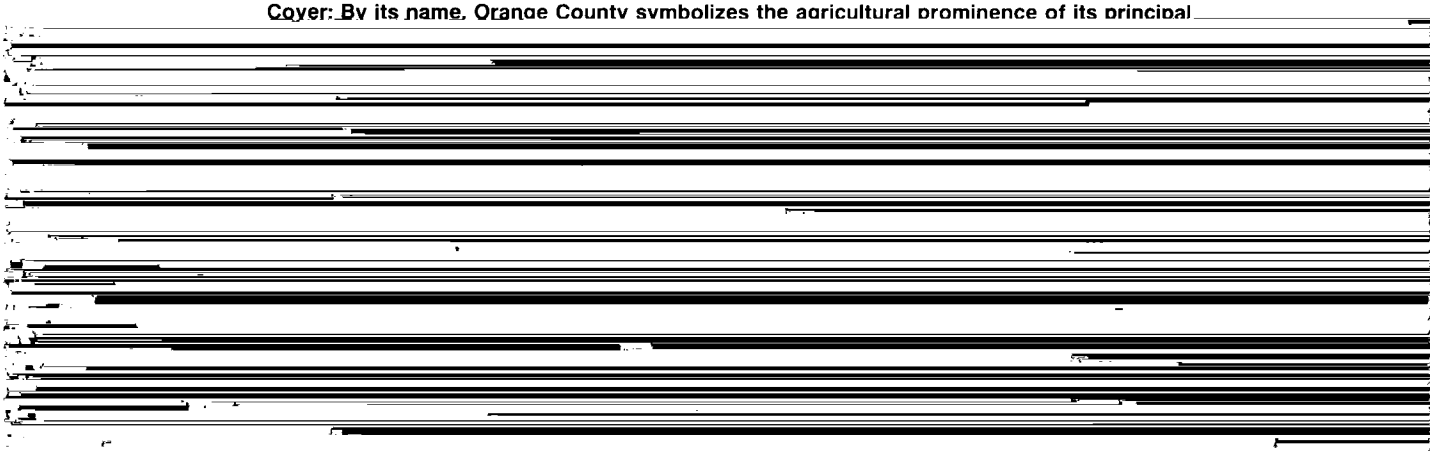
Some of the boundaries on the soil maps of Orange County do not match those on the soil maps of adjacent counties, and some of the soil names and descriptions do not fully agree. The differences are the result of improvements in the classification of soils, particularly modification or refinements in soil series concepts. Also, there may be differences in the intensity of mapping or in the extent of the soils within the county.

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.

This survey supersedes the soil survey of Orange County published in 1960 *(25).*

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

Cover: By its name, Orange County symbolizes the agricultural prominence of its principal



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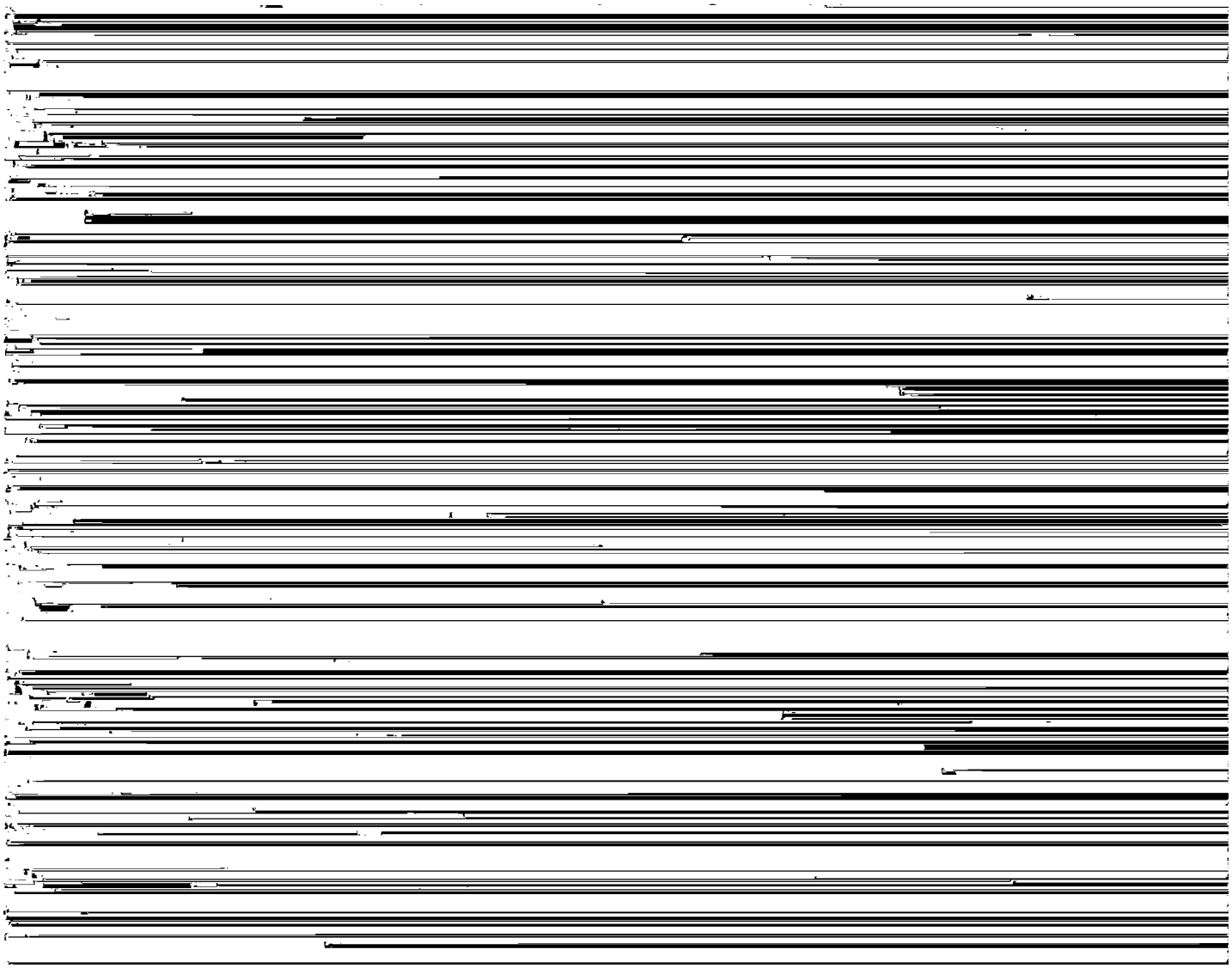
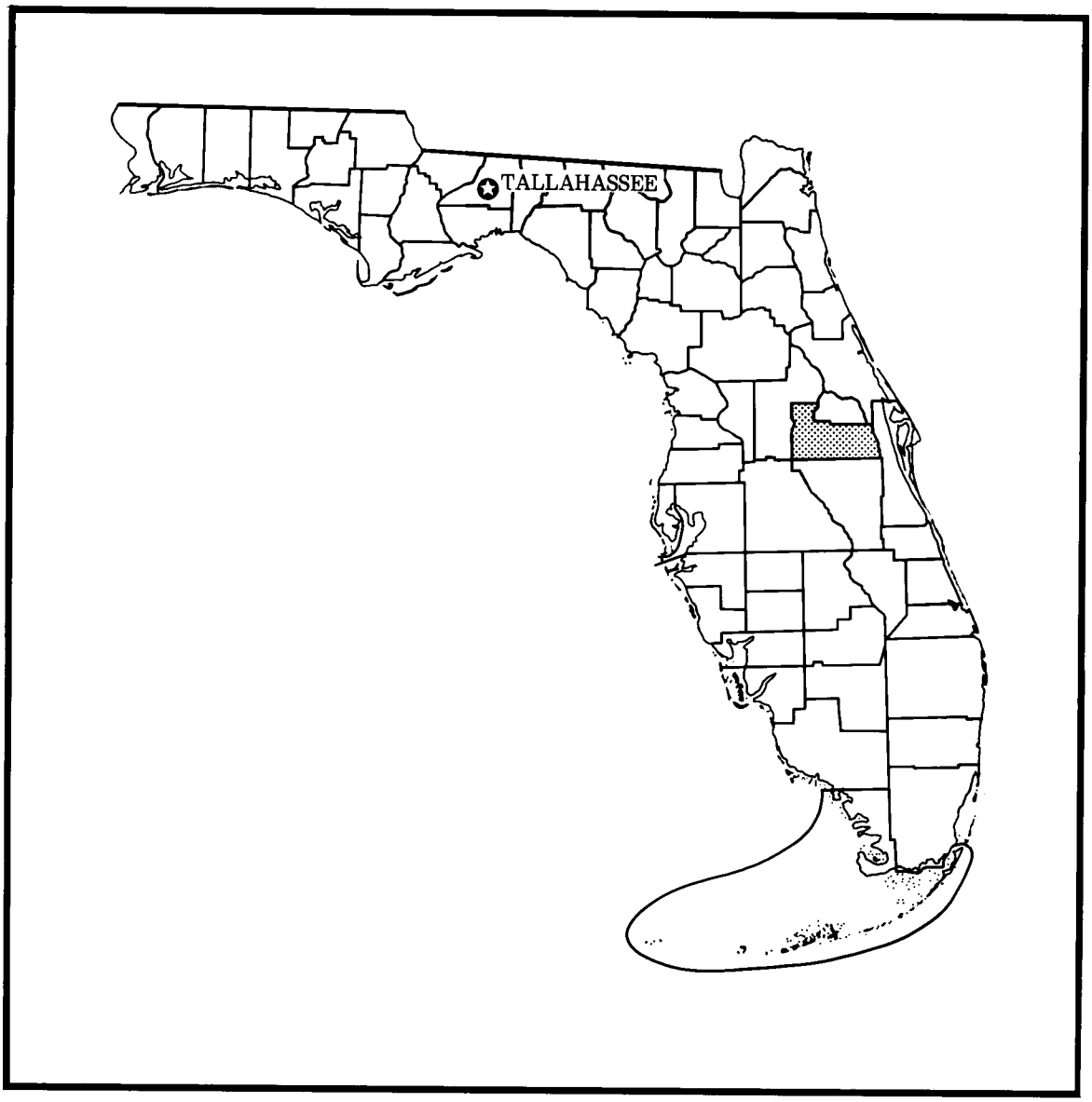
Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in Orange 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





Location of Orange County in Florida.

Soil Survey of
Orange County, Florida

By James A. Doolittle and Gregg Schellentrager, Soil Conservation Service

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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,
and Florida Department of Agriculture and Consumer Services

ORANGE COUNTY is in the north-central part of peninsular Florida. It extends about 48 miles from east to west and a maximum of 30 miles from north to south. Orange County is bounded on the north by Seminole and Lake Counties, on the west by Lake County, on the south by Osceola County, and on the east by the St. Johns River, which separates Orange County from Brevard County. The county is somewhat rectangular. Orlando, the county seat, is in the north-central part of the county.

The total land area is 910 square miles, or 582,713 acres. In addition, about 33,578 acres is covered by the many lakes in the county.

General Nature of the County

In this section, environmental and cultural factors that affect the use and management of the soils in Orange County are discussed. These factors are climate; history and development; geology, physiography, and ground water; land use; and recreation.

Climate

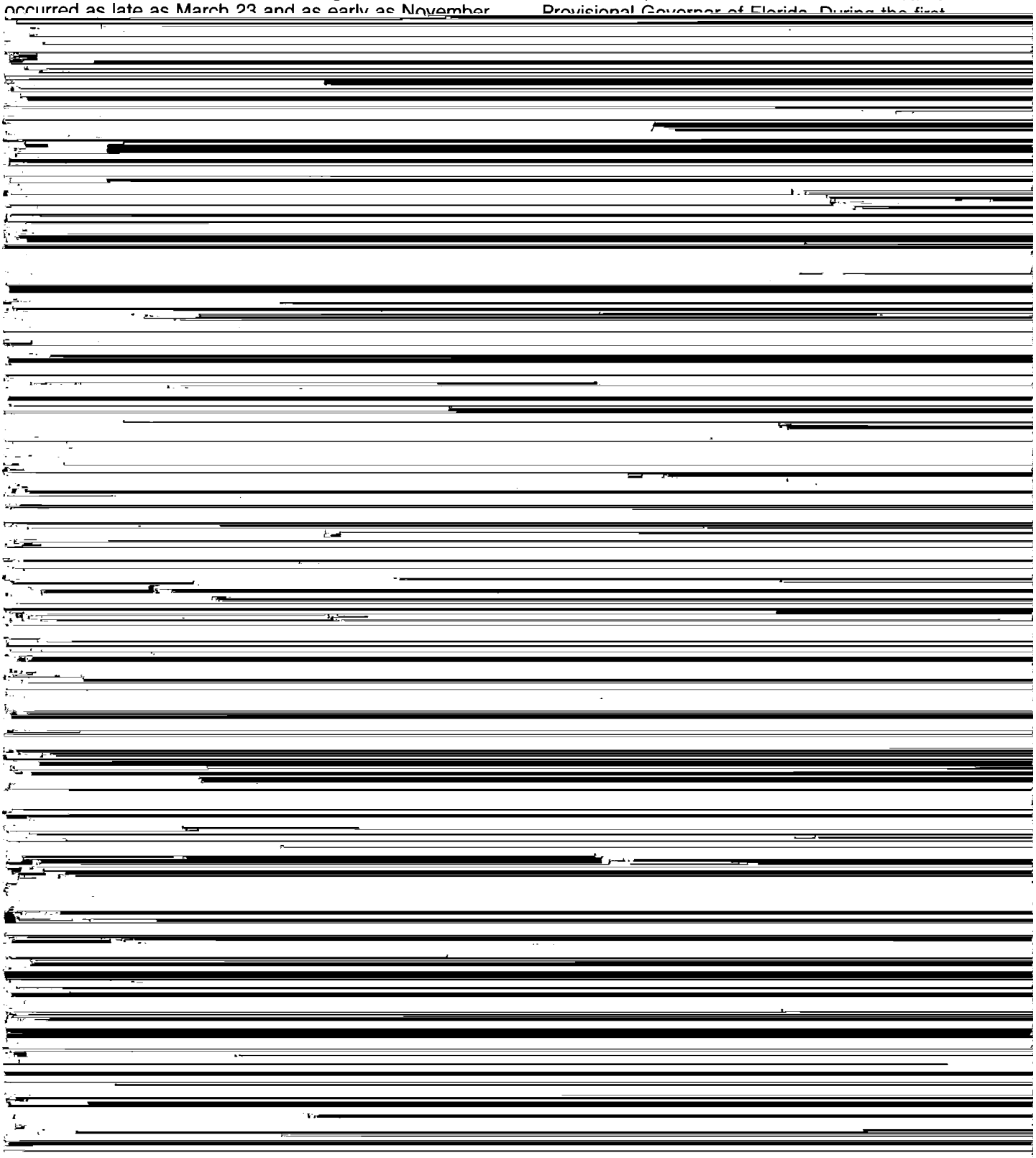
The climate of Orange County is subtropical. The temperatures are modified greatly by winds that sweep across the peninsula from the Atlantic Ocean and the Gulf of Mexico. The summers are long, warm, and humid, but thundershowers that occur almost every afternoon prevent temperatures from becoming extremely high *(38)*. Winters are short and mild; many of the days are bright and sunny, and there is little precipitation. Cold spells accompanied by cold winds can be expected only a few times during the year and last only a few days. Occasionally, thin ice forms. Generally, the cold spells are preceded by rain.

Data on climate of Orange County are given in tables 1 and 2. This information was compiled from records at the Weather Service Office, Orlando Jetport at McCoy International Airport *(37, 38, 39, 40)*.

The average annual temperature is 71.8 degrees F. (Fahrenheit). In winter the average temperature is 61.1 degrees, and in summer it is 81.1 degrees. The

temperature rarely exceeds 95 degrees, but a reading of 102 degrees has been recorded. Killing frosts have occurred as late as March 23 and as early as November

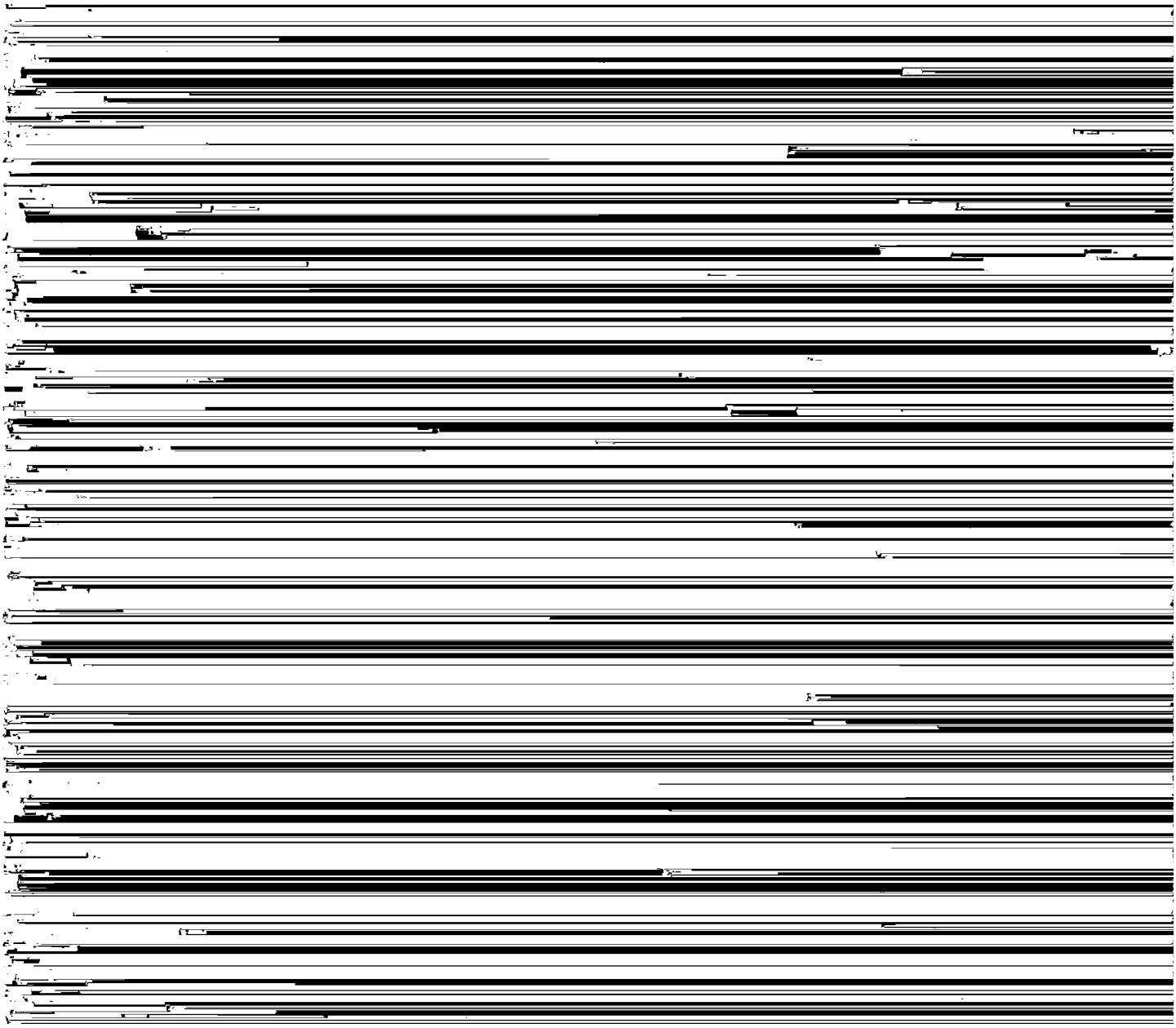
In 1820, the area was ceded to the United States. In March 1821, General Andrew Jackson became Provisional Governor of Florida. During the first



processes are the dominant forces responsible for the development of the surface features observed in the county.

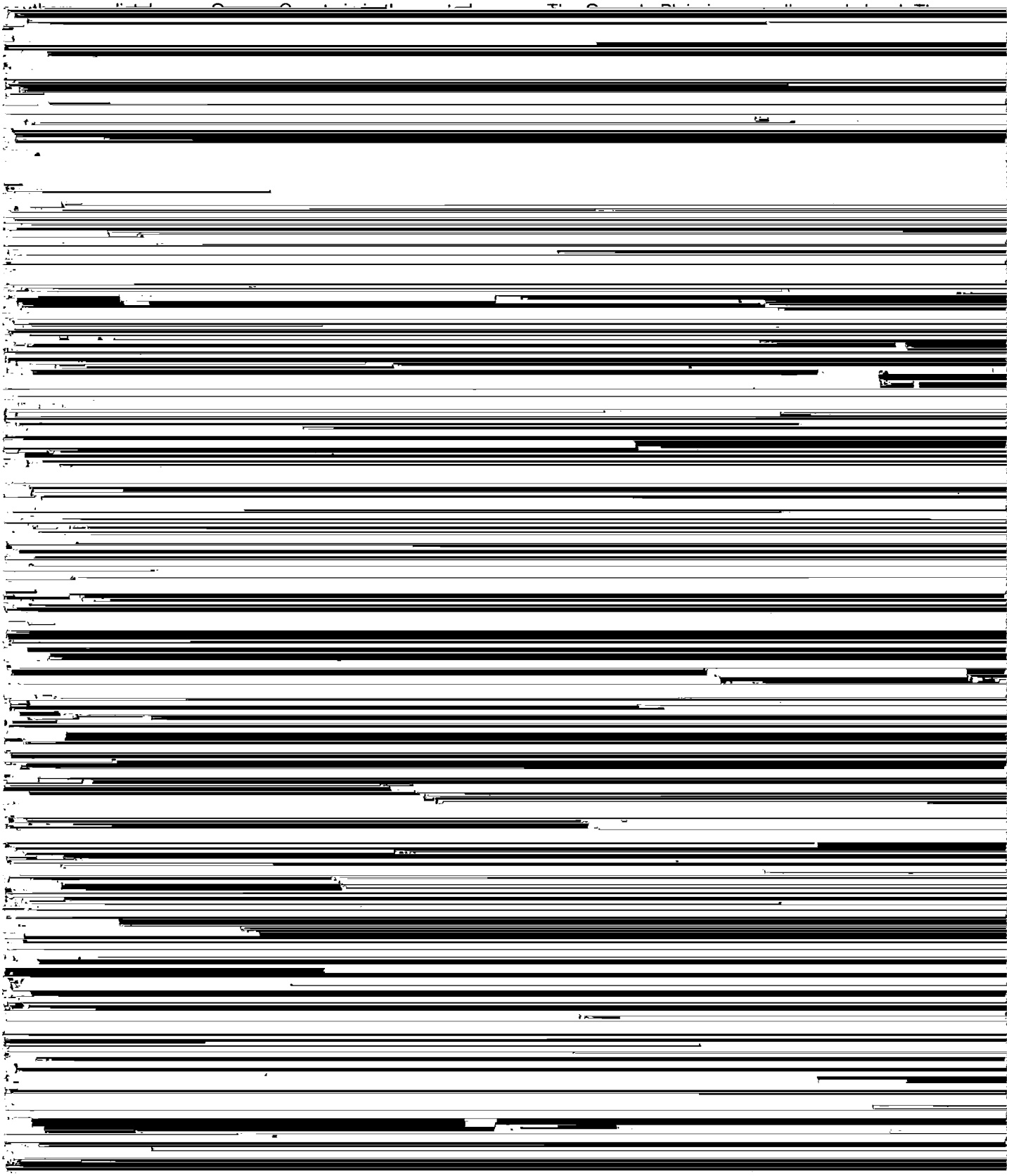
Two major, generalized physiographic divisions occur in Orange County *(19)*. They are the Central Highlands and the Coastal Lowlands. The Central Highlands form the western one-third of the county, and the Coastal Lowlands form the eastern two-thirds. The highland area includes such physiographic features as the Marion Upland; the Mount Dora Ridge, the Lake Wales Ridge, and the Orlando Ridge; and the Central Valley. The Coastal Lowlands include the Eastern Valley, the Wekiva Plain, and the Osceola Plain.

Geology



some roadcuts and in borrow pits in the western part of the county. This clayey sand sediment has been called unnamed coarse clastics, Miocene coarse clastics, Citronelle Formation, and Fort Preston Formation. The formational identity of the unit or units is still uncertain.

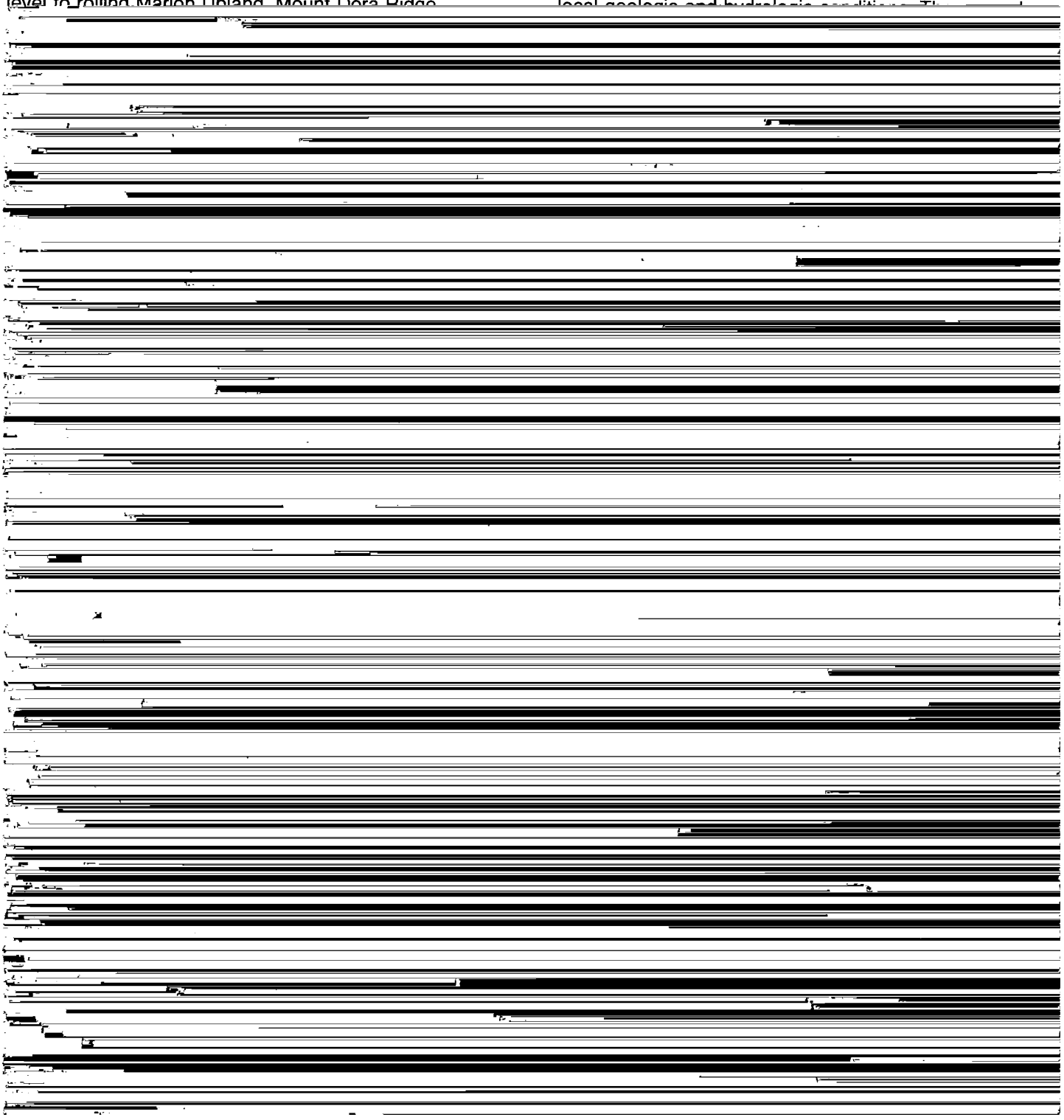
Unconsolidated sand blankets the county. This sand consists of medium to fine sand and silt and does not contain clay or shell fragments. The surface expression of this lithologic type is generally flat to slightly undulating except in areas of dune formation where the relief may be more pronounced. Formational equivalents of the sand have not been resolved. Puri and Vernon's geologic map shows them as marine and estuarine terrace deposits *(19)*. They are underlain in some areas



adjoining uplands. The south-central part of the plain drains into the canals and other tributaries of the Kissimmee River, which flows southward from the county into Lake Okeechobee.

North and west of the Osceola Plain are the nearly level to rolling Marion Upland, Mount Dora Ridge

nonartesian aquifers. In Orange County, secondary artesian aquifers provide water that is less mineralized than that of the Floridan Aquifer but provide water that is more mineralized than that of the nonartesian aquifers. The quality of the water varies with depth, location, and



unincorporated area known as Cape Orlando on the east; and around the entertainment complexes south of Orlando. Residential and tourist-related developments are the dominant urban use.

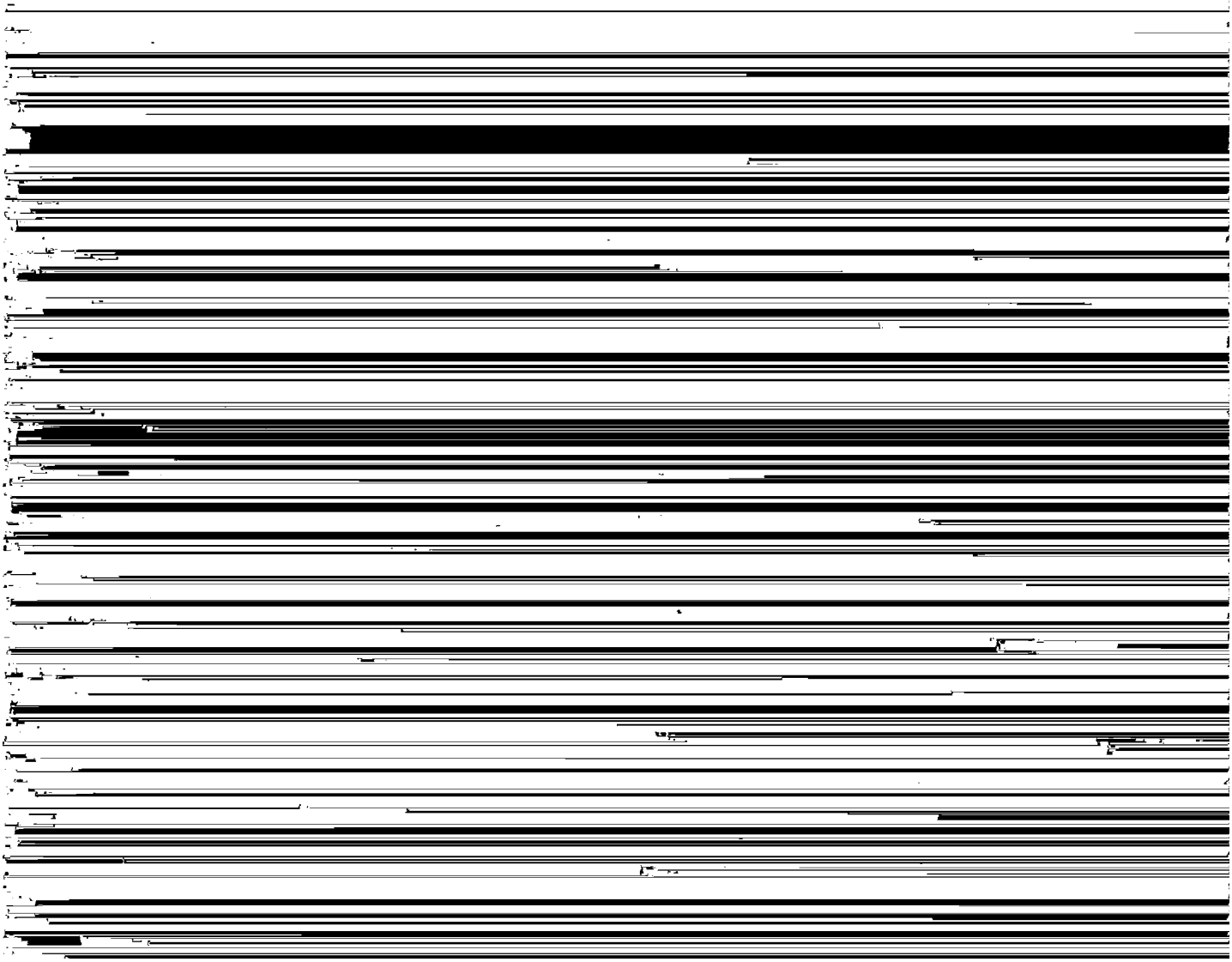
Urbanization is increasing, particularly in the areas west and north of Orlando, resulting in pressure to develop lands that are presently used for citrus. However, extensive areas of citrus remain in general soil map units 1 and 3, described in the section "General Soil Map Units." The remaining agricultural areas are the "mucklands," which are north of Lake Apopka, and the flatwoods, which are in eastern Orange County. The eastern one-third of the county is mostly used as pasture.

Riparian corridors along the St. Johns, Wekiva, and Econlockhatchee Rivers provide valuable habitat for wildlife and recreational opportunities.

Recreation

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



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.

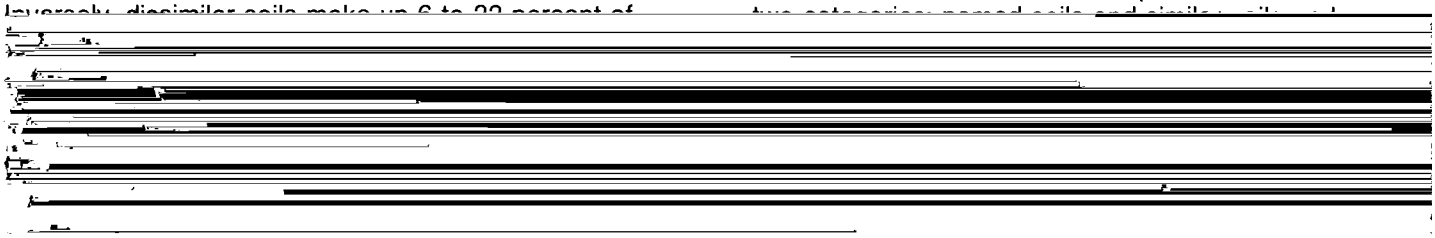
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in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

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.

Use of the Ground-Penetrating Radar

A ground-penetrating radar (GPR) system *(7, 8, 15, 21)* was used to document the type and variability of soils that occur in the detailed soil map units. The GPR system was successfully used on all soils to detect the presence, determine the variability, and measure the

characterized at an 80 percent confidence level based on the transect data. The resulting composition would read: In 80 percent of the areas mapped as Pomello fine sand, 0 to 5 percent slopes, Pomello soil and similar soils make up 78 to 94 percent of the delineation. In the remaining 20 percent of the areas of this map unit, the percentage of Pomello soil and similar soils may be higher than 94 percent or lower than 78 percent. Invasely dissimilar soils make up 6 to 22 percent of



composition will fall within the given range. The map unit is named for the taxon of the dominant soil or soils. The proportion of similar and dissimilar soils is also given. Each soil listed by name in the table is described in the section "Soil Series and Their Morphology."

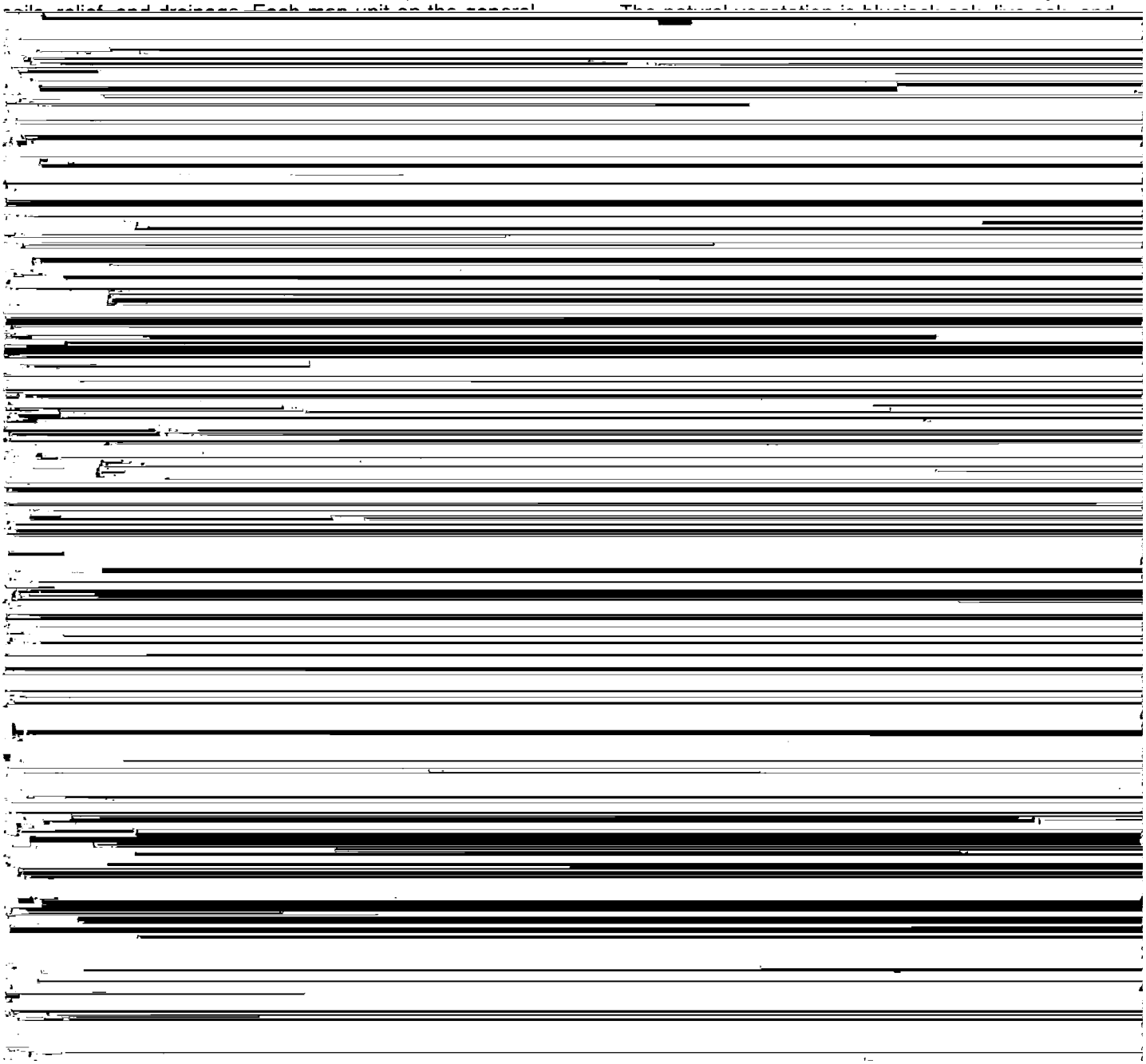
The percent composition of the map units is given in table 3. Those taxonomic units (soil series) identified on the transects of the selected map units are divided into two categories: named soils and similar soils and

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general

Lake County line to just south of the city of Lake Apopka and south of Johns Lake to the Osecola County line.

The natural vegetation is bluejack oak, live oak, and



subsurface layer, to a depth of about 67 inches, is very pale brown fine sand. The subsoil to a depth of about 80 inches is very pale brown fine sand that has thin, continuous yellowish brown loamy sand lamellae. The lamellae are about one-sixteenth to a quarter of an inch thick and from 2 to 35 inches long.

The Urban land part of this complex is covered by concrete, asphalt, buildings, or other impervious surfaces that obscure or alter the soils so that their identification is not feasible.

Typically, Tavares soils have a surface layer of dark gray fine sand about 6 inches thick. The upper part of the underlying material, to a depth of about 10 inches, is grayish brown fine sand. The middle part, to a depth of about 48 inches, is pale brown fine sand. The lower part to a depth of about 80 inches is very pale brown fine sand that has common dark brown mottles.

Of minor extent in this map unit are Apopka, Lake, Lochloosa, Millhopper, and St. Lucie soils.

Most of the acreage in this map unit is used for houses, large buildings, shopping centers, golf courses, and related urban uses (fig. 3). Part of the cities of Apopka and Orlando have been developed on the soils in this map unit. Natural vegetation thrives only in small areas scattered throughout the map unit. Farming is of little importance because of the extensive urban development. Numerous nurseries produce plants for landscaping.

3. Tavares-Zolfo-Millhopper

Nearly level to gently sloping, moderately well drained and somewhat poorly drained soils; some are sandy throughout and do not have a subsoil; some are sandy throughout and have an organic-stained subsoil; some are sandy to a depth of more than 40 inches and are loamy below

The soils in this map unit are on low ridges and knolls in the upland areas and on the flatwoods, and they are

Figure 3.—This housing development is in an area of the Candler-Urban land-Tavares map unit.

in slightly higher areas adjacent to the flatwoods. Scattered sinkholes and numerous lakes and ponds are in this map unit. These soils are extensive in the western half of Orange County on the Mount Dora Ridge, the Orlando Ridge, and Lake Wales Ridge and in scattered areas of the Osceola Plain. Tavares and Millhopper soils are nearly level to gently sloping and are moderately well drained. Tavares soils are on low ridges and knolls in upland areas. Millhopper soils are on low ridges and knolls on the flatwoods. Zolfo soils are nearly level and are somewhat poorly drained. They are in broad, slightly higher areas adjacent to the flatwoods.

The natural vegetation is bluejack oak, turkey oak, live oak, water oak, laurel oak, slash pine, and longleaf pine. The understory includes creeping bluestem, lopsided indiangrass, grassleaf goldaster, and pineland threeawn.

This map unit makes up about 12 percent of Orange County. It is about 37 percent Tavares soils and similar

4. Urban land-Tavares-Pomello

Nearly level to gently sloping, moderately well drained soils that are sandy throughout; some have an organic-stained subsoil at a depth of 30 to 50 inches; most areas have been modified for urban use

The soils in this map unit are on low ridges and knolls in the upland areas and on the flatwoods. A few short, steep slopes are near scattered sinkholes and numerous lakes, ponds, and wet areas. These soils are in the north-central part of Orange County on the Orlando Ridge. Several small areas of these soils are scattered on the Lake Wales Ridge and Osceola Plain in the western part of Orange County.

The existing natural vegetation is slash pine, bluejack oak, turkey oak, live oak, scattered sand pine, and longleaf pine. The understory includes saw palmetto, creeping bluestem, lopsided indiangrass, grassleaf

Figure 4.—Oranges are being harvested in an area of the Tavares-Zolfo-Millhopper map unit.

Soils of the Flatwoods, Low Ridges, and Knolls

This group consists of nearly level to gently sloping, poorly drained, moderately well drained, and very poorly drained soils. They are on the flatwoods and on low ridges and knolls on the flatwoods. These soils are

The soils in this map unit are in the broad flatwood areas interspersed with low ridges and knolls. Shallow depressions and poorly defined drainageways are scattered throughout some areas. These soils are scattered throughout the county but are most extensive on the Osceola Plain in an area south and east of Union Park, in an area south of Lake Pickett, and in the area of

natural vegetation is mostly longleaf pine, sand pine, and slash pine. The understory includes waxmyrtle, saw palmetto, fetterbush, creeping bluestem, chalky bluestem, pineland threeawn, and running oak.

This map unit makes up about 12 percent of Orange County. It is about 42 percent Smyrna soils, 22 percent Pomello soils, 18 percent Immokalee soils, and 18 percent soils of minor extent.

Typically, Smyrna soils have a surface layer of black fine sand about 4 inches thick. The subsurface layer, to a depth of about 17 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 22 inches, is black fine sand. The lower part, to a depth of about 27 inches, is dark brown fine sand. The upper part of the substratum, to a depth of about 53 inches, is pale brown fine sand. The lower part to a depth of about 80 inches is light gray fine sand.

Typically, Pomello soils have a surface layer of gray

threeawn, bluestem, inkberry, and running oak. In areas of Basinger soils, the natural vegetation consists of mixed stands of pondcypress, sweetgum, scattered pond pine, and black tupelo. The understory includes blue maidencane, chalky bluestem, and other water-tolerant grasses and sedges.

This map unit makes up about 31 percent of Orange County. It is 44 percent Smyrna soils, 12 percent Basinger soils, 12 percent St. Johns soils, and 32 percent soils of minor extent.

Typically, Smyrna soils have a surface layer of black fine sand about 4 inches thick. The subsurface layer, to a depth of about 17 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 22 inches, is black fine sand. The lower part, to a depth of about 27 inches, is dark brown fine sand. The upper part of the substratum, to a depth of about 53 inches, is pale brown

Figure 5.—The soils in the Smyrna-Basinger-St. Johns map unit are mainly used as pasture. Smyrna and St. Johns soils are in the broad flatwood areas, and Basinger soils are in the ponded depressions.

scattered throughout the western half of the county on the Osceola Plain. Smyrna soils are nearly level and are poorly drained. They are on the broad flatwoods. Pomello soils are nearly level to gently sloping and are moderately well drained. They are on low ridges and knolls on the flatwoods.

The existing natural vegetation is longleaf pine and slash pine. The understory includes saw palmetto, lopsided indiangrass, creeping bluestem, pineland threeawn, inkberry, and running oak.

This map unit makes up about 7 percent of Orange County. It is about 33 percent Urban land, 28 percent Smyrna soils, 10 percent Pomello soils, and 29 percent soils of minor extent.

The Urban land part of this complex is covered by

that obscure or alter the soils so that their identification is not feasible.

Typically, Smyrna soils have a surface layer of black fine sand about 5 inches thick. The subsurface layer, to a depth of about 18 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 22 inches, is black fine sand. The lower part, to a depth of about 28 inches, is dark brown fine sand. The upper part of the substratum, to a depth of about 50 inches, is grayish brown fine sand. The lower part to a depth of about 80 inches is pale brown fine sand.

Typically, Pomello soils have a surface layer of dark gray fine sand about 5 inches thick. The subsurface layer, to a depth of about 42 inches, is white fine sand. The upper part of the subsoil, to a depth of about 48

The substratum to a depth of about 80 inches is light gray fine sand.

Of minor extent in this map unit are Archbold, Basinger, Ona, Pompano, Samsula, Tavares, Wabasso, and Zolfo soils.

Most of the acreage in this map unit is used for houses, large buildings, shopping centers, and related urban uses (fig. 6). Most of the natural vegetation has been removed. Farming is of little importance because of the extensive urban development.

8. Malabar-Felda

Nearly level, poorly drained soils; some are sandy to a depth of more than 40 inches and are loamy below; some are sandy to a depth of 20 to 40 inches and are loamy below

The soils in this map unit are in low, broad to narrow, poorly defined drainageways on the flatwoods that are interspersed with sloughs and broad flats. These soils are dominantly in the eastern part of the county adjacent to the St. Johns River flood plain. Malabar soils are in low, narrow to broad sloughs and poorly defined

Figure 6.—The diversified recreational facilities and an ideal climate have promoted urban development throughout the county. This development is in an area of the Urban land-Smyrna-Pomello map unit.

drainageways on the flatwoods. Felda soils are in low, broad, poorly defined drainageways on the flatwoods.

The natural vegetation is slash pine and cabbage palm. The understory includes saw palmetto, waxmyrtle, pineland threeawn, sand cordgrass, blue maidencane, bluestem, low panicum, and weeds and grasses.

This map unit makes up about 5 percent of Orange County. It is about 74 percent Malabar soils, 10 percent

The natural vegetation consists of mixed stands of cypress, red maple, sweetgum, and black tupelo. The understory includes cutgrass, maidencane, Jamaica sawgrass, sedges, ferns, and other water-tolerant grasses.

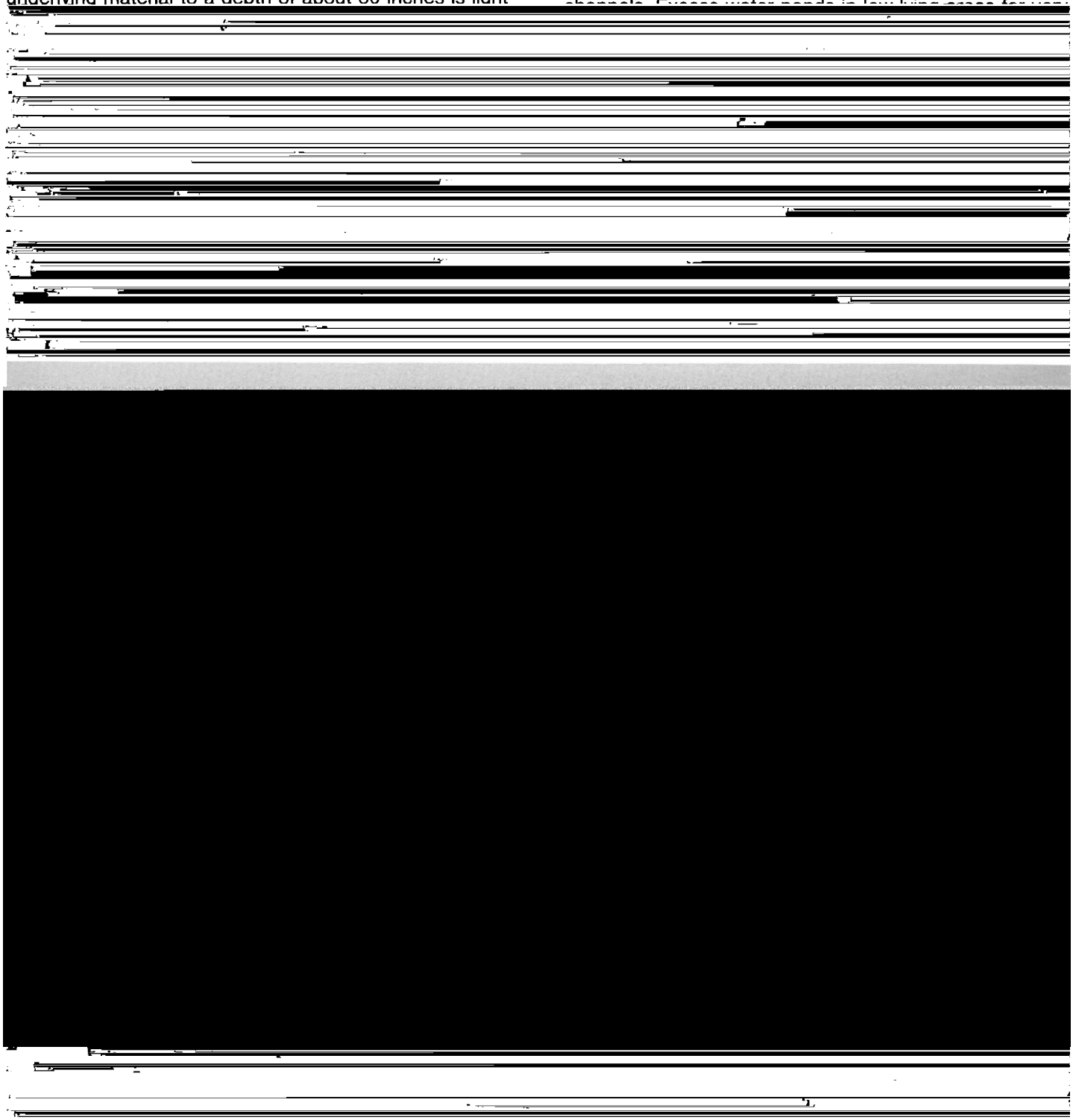
This map unit makes up about 7 percent of Orange County. It is about 45 percent Samsula soils, 26 percent Hontoon soils, 10 percent Basinger soils, and about 10

that has few to common light gray calcium carbonate accumulations.

Typically, Terra Ceia soils have a surface layer of black muck about 9 inches thick. Below that layer, to a depth of about 74 inches, is dark brown muck. The underlying material to a depth of about 80 inches is light

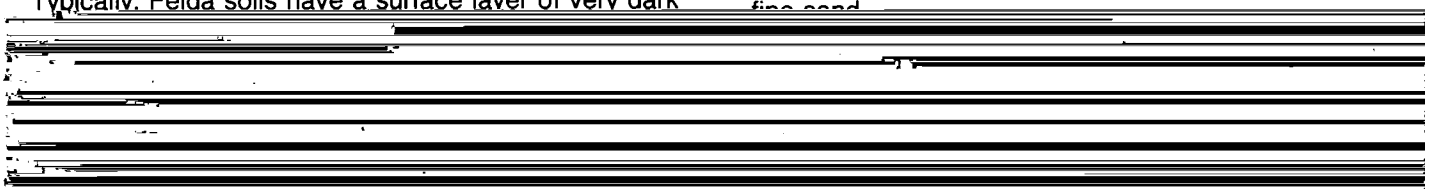
have a loamy subsoil; some are loamy throughout; most areas are subject to frequent flooding

The soils in this map unit are on the flood plains of the St. Johns and Wekiva Rivers and their major tributaries. Many areas are isolated by meandering stream



Typically, Floridana soils have a surface layer of black fine sand about 14 inches thick. The subsurface layer, to a depth of 28 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 41 inches, is dark gray sandy clay loam. The lower part, to a depth of about 53 inches, is grayish brown sandy clay loam. The substratum to a depth of about 80 inches is light gray loamy fine sand.

Typically, Felda soils have a surface layer of very dark



sandy loam. The substratum to a depth of about 80 inches is light gray fine sand.

Typically, Chobee soils have a surface layer of black fine sandy loam about 12 inches thick. The upper part of the subsoil, to a depth of about 38 inches, is dark gray sandy clay loam. The lower part, to a depth of about 56 inches, is grayish brown sandy clay loam. The substratum to a depth of about 80 inches is light gray

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. Table 3 gives the average composition of selected map units as determined by the Ground-Penetrating Radar and other transect methods. The map units in this section are based on this data and on data in the previous survey. 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

uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Samsula-Hontoon-Basinger association, depressional, is an example.

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

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

shallow depressions, swamps, and other low-lying areas above their natural ground levels during land-leveling operations; or it is used as a cover for sanitary landfills. The slopes are smooth to concave and range from 0 to 2 percent.

In many areas, this soil has a surface layer about 30 to 50 inches thick. It is very dark gray, dark gray, dark grayish brown, and yellowish brown fine sand or sand mixed with discontinuous grayish brown and light brownish gray loamy-textured fragments. Fragments and thin discontinuous lenses of a dark color sandy subsoil are also scattered throughout the matrix. Below that layer is undisturbed soil that extends to a depth of 80

Typically, this soil has a surface layer of dark gray fine sand about 2 inches thick. The underlying material to a depth of about 80 inches is white fine sand. In the mapped areas are similar soils, but they have light yellowish brown, pale brown, or brown sand or fine sand in the underlying material.

Dissimilar soils included in mapping are Pomello soils in small areas. Also included are some dissimilar soils that have a subsoil within 30 inches of the surface.

In most years, a seasonal high water table is at a depth of 42 to 60 inches for about 6 months, and it recedes to a depth of 60 to 80 inches for the rest of the year. It is at a depth of 24 to 40 inches for about 1 month to 4 months during wet periods. It recedes to a

fields. When installing a septic tank absorption field on this soil, the proximity to a stream or canal should be considered to prevent lateral seepage and ground water pollution. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. The sandy surface layer should be stabilized for recreational uses.

This soil has severe limitations for sewage lagoons, trench sanitary landfills, and shallow excavations. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The sidewalls of shallow excavations should be shored.

This Archbold soil is in capability subclass VIs. The woodland ordination symbol for this soil is 3S.

3—Basinger fine sand, depressional. This soil is nearly level and very poorly drained. It is in shallow depressions and sloughs and along the edges of

Under natural conditions, this soil is not suited to most cultivated crops or pasture because of ponding. In most areas, a drainage system is difficult to establish because suitable drainage outlets are not available. However, this soil is moderately suited to vegetable crops if a water control system is installed to remove excess water rapidly and if soil-improving measures and other management practices, such as crop rotation and seedbed preparation, are used. Seedbed preparation should include the bedding of rows. Soil-improving cover crops and crop residue should be used to protect the soil from wind erosion and maintain the content of organic matter. Fertilizer and lime should be applied according to the need of the crop.

Under natural conditions, this soil is not suited to citrus trees. It is poorly suited to this use even if intensive management practices are used and if the water control system is adequate.

This soil is fairly suited to improved pasture grasses if

Typically, this soil has a surface layer of very dark grayish brown fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 30 inches, is yellowish brown fine sand. The lower part, to a depth of about 74 inches, is brownish yellow fine sand. The subsoil to a depth of about 80 inches is yellow fine sand that has strong brown loamy sand lamellae about one-sixteenth to a quarter of an inch thick and 2 to 6 inches long. Similar soils are in the mapped areas, but these soils do not have lamellae. In some places are similar soils, but they have 5 to 10 percent silt and clay in the subsurface layer. Similar soils are also in lower positions on the landscape, but these soils are well drained.

Dissimilar soils included in mapping are Apopka and Millhopper soils in small areas. Also included are some dissimilar soils on the upper side slopes that have a sandy clay loam subsoil within 20 to 40 inches of the surface.

A seasonal high water table is at a depth of more than 80 inches. The permeability is rapid in the surface and subsurface layers, and it is rapid to moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and low in the subsoil. Natural fertility and the organic matter content are low.

In most areas, this Candler soil is used for citrus crops. In a few areas, it is used for improved pasture or for homesite and urban development. The natural vegetation is scattered slash pine, sand pine, longleaf pine, bluejack oak, Chapman oak, scrub live oak, and turkey oak. The understory includes indiangrass, chalky bluestem, hairy panicum, pineland threeawn, and annual forbs.

The sandy texture and droughtiness of this soil are very severe limitations to use for cultivated crops. Intensive management practices are needed if cultivated crops are to be grown on this soil. Droughtiness and rapid leaching of plant nutrients limit the choice of plants that can be grown and reduce the potential yield of crops. A crop-rotation system is needed to keep close-

to this soil, but yields are reduced by periodic droughtiness. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor. Irrigation improves the quality of pasture and hay.

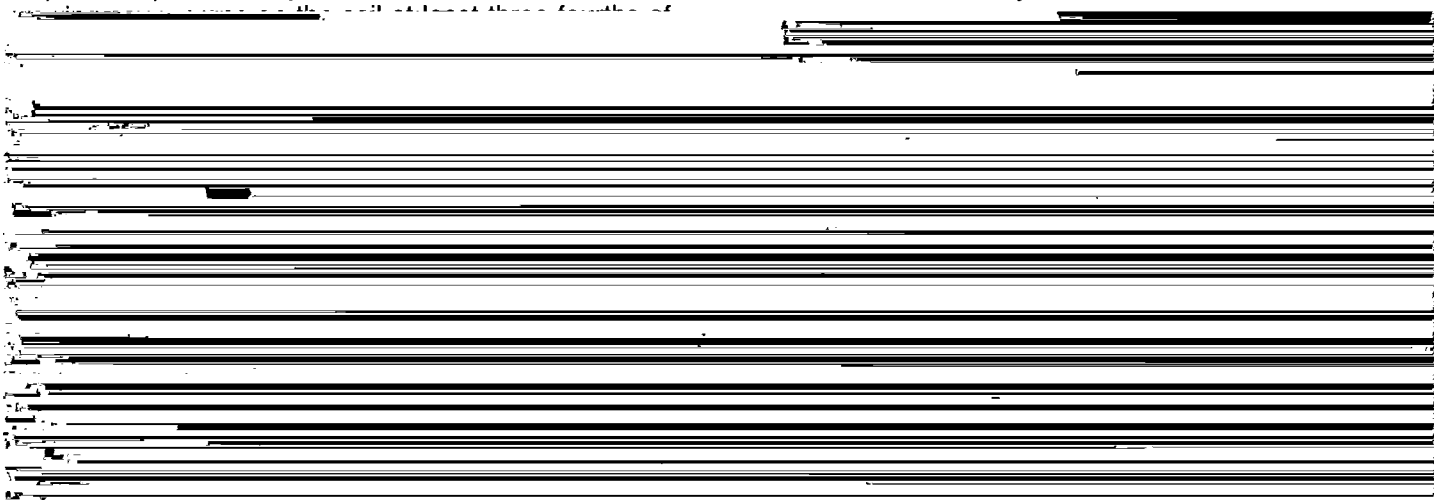
The potential of this soil for the production of pine trees is moderate. Seedling mortality, equipment use, and plant competition are the main concerns in management. The very low available water capacity adversely affects seedling survival in areas where understory plants are numerous. The sandy surface texture limits the use of equipment. Sand pine, slash pine, and longleaf pine are adapted trees to plant on this soil.

This soil has slight limitations for septic tank absorption fields, dwellings without basements, and local roads and streets. No corrective measures are needed. When installing a septic tank absorption field on this soil, the proximity to a stream or canal should be considered to prevent lateral seepage and ground water pollution. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies.

This soil has slight limitations for small commercial buildings, and land shaping may be needed in the more sloping areas.

This soil has severe limitations for recreational uses, trench sanitary landfills, sewage lagoons, and shallow excavations. The sandy surface layer should be stabilized for recreational uses, and land shaping may be needed in the more sloping areas. The sealing or lining of a trench sanitary landfill or sewage lagoon with impervious soil material can reduce excessive seepage. The sidewalls of shallow excavations should be shored. The proximity to a stream or aquifer recharge area should be considered in the placement of a trench sanitary landfill or sewage lagoon to prevent contamination of the water supplies.

This Candler soil is in capability subclass IVs. The woodland ordination symbol for this soil is 8S.



have lamellae at a depth of more than 80 inches. In some places are similar soils, but they have 5 to 10 percent silt and clay in the subsurface layer. In some parts of the landscape are some similar soils, but they are well drained.

Dissimilar soils included in mapping are Apopka, Millhopper, and Tavares soils in small areas. Also included are some dissimilar soils on the upper side slopes that have a sandy clay loam subsoil within 20 to 40 inches of the surface.

A seasonal high water table is at a depth of more than 80 inches. The permeability is rapid in the surface and subsurface layers, and it is rapid to moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers, and it is low in the subsoil. Natural fertility and the organic matter content are low.

In most areas, this Candler soil is used for citrus crops. In a few areas, it is used for improved pasture or for homesite and urban development. The natural vegetation is scattered slash pine, sand pine, longleaf pine, bluejack oak, Chapman oak, scrub live oak, and turkey oak. The understory includes indiangrass, chalky bluestem, hairy panicum, pineland threeawn, and annual forbs.

Under natural conditions, this soil is not suited to most cultivated crops because of droughtiness, rapid leaching of plant nutrients, and steepness of slope. This soil is suited to citrus trees in areas that are relatively free of freezing temperatures. A ground cover of close-growing plants between tree rows is needed to protect the soil from blowing. A specially designed and properly managed irrigation system helps to maintain optimum soil moisture and thus ensure maximum yields.

This soil is moderately suited to improved pasture grasses. Deep-rooted plants, such as Coastal bermudagrass and improved bahiagrass, are well suited to this soil, but yields are reduced by periodic droughtiness. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor. Irrigation improves the quality of pasture and hay.

The potential of this soil for the production of pine trees is moderate. Seedling mortality, equipment use, and plant competition are the main concerns in management. The very low available water capacity adversely affects seedling survival in areas where understory plants are numerous. The sandy surface texture and slope limit the use of equipment. Sand pine, slash pine, and longleaf pine are adapted trees to plant on this soil.

This soil has moderate limitations for septic tank absorption fields, dwellings without basements, and local roads and streets. Land shaping is needed in the more sloping areas. When installing a septic tank absorption field on this soil, the proximity to a stream or canal should be considered to prevent lateral seepage and ground water pollution. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies.

This soil has severe limitations for sewage lagoons, trench sanitary landfills, shallow excavations, small commercial buildings, and recreational uses because of slope, seepage, and sandy texture of the soil. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The proximity to a stream or aquifer recharge area should be considered in the placement of a trench sanitary landfill or sewage lagoon to prevent contamination of the water supplies. The sidewalls of shallow excavations should be shored. The sandy surface layer should be stabilized for recreational uses and for small commercial buildings. Land shaping is needed in the more sloping areas.

This Candler soil is in capability subclass VIs. The woodland ordination symbol for this soil is 8S.

6—Candler-Apopka fine sands, 5 to 12 percent slopes. The soils in this map unit are sloping and strongly sloping and excessively drained and well drained. These soils are on the uplands. They occur in a regular repeating pattern. Candler soil is sloping and excessively drained. It is on summits and lower side slopes. Apopka soil is strongly sloping and well drained. It is on the upper side slopes.

In 95 percent of the areas of this map unit, Candler-Apopka fine sands, 5 to 12 percent slopes, and similar soils make up 92 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 8 percent of the mapped areas. Generally, the mapped areas consist of about 66 percent Candler soil and similar soils and 31 percent Apopka soil and similar soils. The individual areas of the soils in this map unit are too mixed or too small to map separately at the scale used for the maps in the back of this publication. The proportions and patterns of Candler, Apopka, and similar soils, however, are relatively consistent in most delineations of the map unit.

Typically, the surface layer of Candler soil is very dark grayish brown fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 38 inches, is yellowish brown fine sand. The lower part, to a depth of about 69 inches, is pale brown fine sand. The subsoil to a depth of about 80 inches is light gray fine sand that has thin, discontinuous strong brown loamy sand lamellae. The lamellae are about one thirty-second to one-sixteenth of an inch thick and are 2 to 39 inches long. In the mapped areas are some similar soils, but they do not have lamellae. Also, in some places are similar soils, but they have 5 to 10 percent silt and clay in the subsurface layer. In some of the lower parts of the landscape are similar soils, but they are well drained.

Typically, the surface layer of Apopka soil is dark grayish brown fine sand about 5 inches thick. The subsurface layer, to a depth of about 69 inches, is very

pale brown fine sand. The subsoil to a depth of about 80 inches is reddish yellow sandy clay loam. In some of the lower parts of the landscape are similar soils, but they are moderately well drained. In the mapped areas are some similar soils, but they have a subsoil within 40 inches of the surface, and in some places are similar soils, but they have 5 to 10 percent silt and clay in the subsurface layer.

Dissimilar soils included in mapping are Lochloosa and Tavares soils in small areas.

A seasonal high water table is at a depth of more than 72 inches in Apopka soil and at a depth of more than 80 inches in Candler soil. The permeability of Candler soil is rapid in the surface and subsurface layers, and it is rapid to moderately rapid in the subsoil. The permeability of

texture and slope limit the use of equipment. Sand pine, slash pine, and longleaf pine are adapted trees to plant on Candler soil. Slash pine and loblolly pine are adapted trees to plant on Apopka soil.

The soils in this map unit have moderate limitations for septic tank absorption fields, dwellings without basements, and local roads and streets because of slope. When installing a septic tank absorption field on these soils, the proximity to a stream or canal should be considered to prevent lateral seepage and ground water pollution. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. Land shaping may be needed in the more sloping areas.

These soils have severe limitations for sewage

that obscure or alter the soils so that their identification is not feasible.

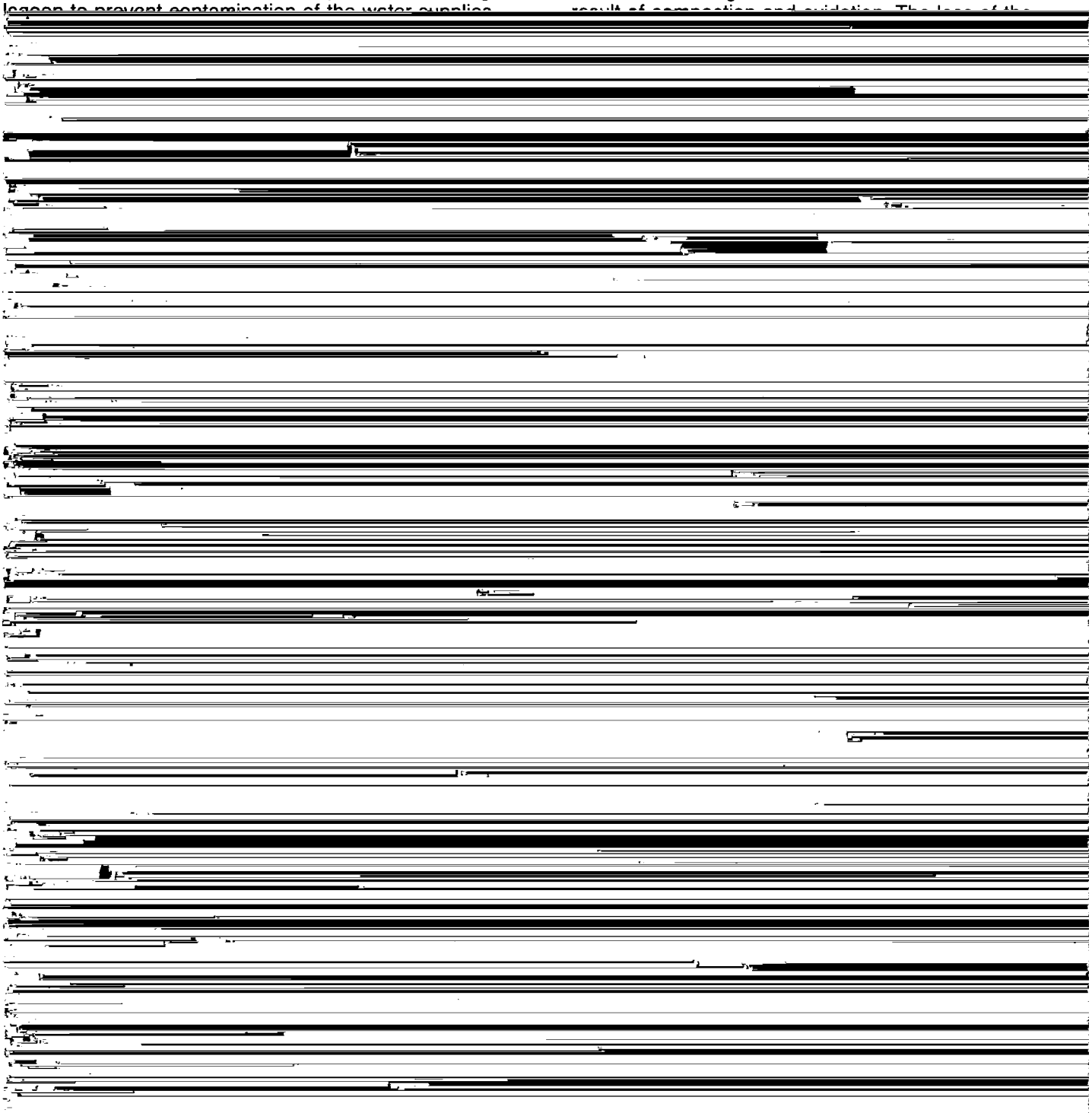
Included in mapping are small areas of Millhopper and Tavares soils. Also included are some soils that are similar to Candler soil but do not have lamellae within 80 inches, have a subsurface layer that is 5 to 10 percent silt and clay, and are well drained in some of the lower

8—Candler-Urban land complex, 5 to 12 percent slopes. This complex consists of Candler soil that is sloping and strongly sloping and excessively drained and of areas of Urban land. This complex is in the upland areas.

This map unit consists of about 53 percent Candler soil and about 40 percent Urban land. The included soils

excavations, small commercial buildings, and recreational uses because of slope, seepage, and sandy texture of the soils. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The proximity to a stream or aquifer recharge area should be considered in the placement of a trench sanitary landfill or sewage lagoon to prevent contamination of the water supplies.

areas, the soil in this map unit is artificially drained by tile drains and surface ditches. In drained areas, the water table is controlled at a depth of 10 to 36 inches, or according to the need of the crop. The water table is at or above the surface for short periods after heavy rains. If drained, the organic material, when dry, subsides to about half the original thickness. It subsides further as a result of compaction and oxidation. The loss of the



installed to remove excess surface water after heavy rains, suitability is good. Improved pangolagrass, bahiagrass, and white clover grow well if properly managed. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor.

The potential of this soil for the production of pine trees is high in areas that have adequate surface drainage. A water control system should be installed before trees are planted. Equipment use and seedling mortality are the main concerns in management. Bedding of rows helps to minimize the excessive wetness limitation. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of ponding and excess humus. Water control measures should be used to minimize the wetness limitation. Organic material should be removed and

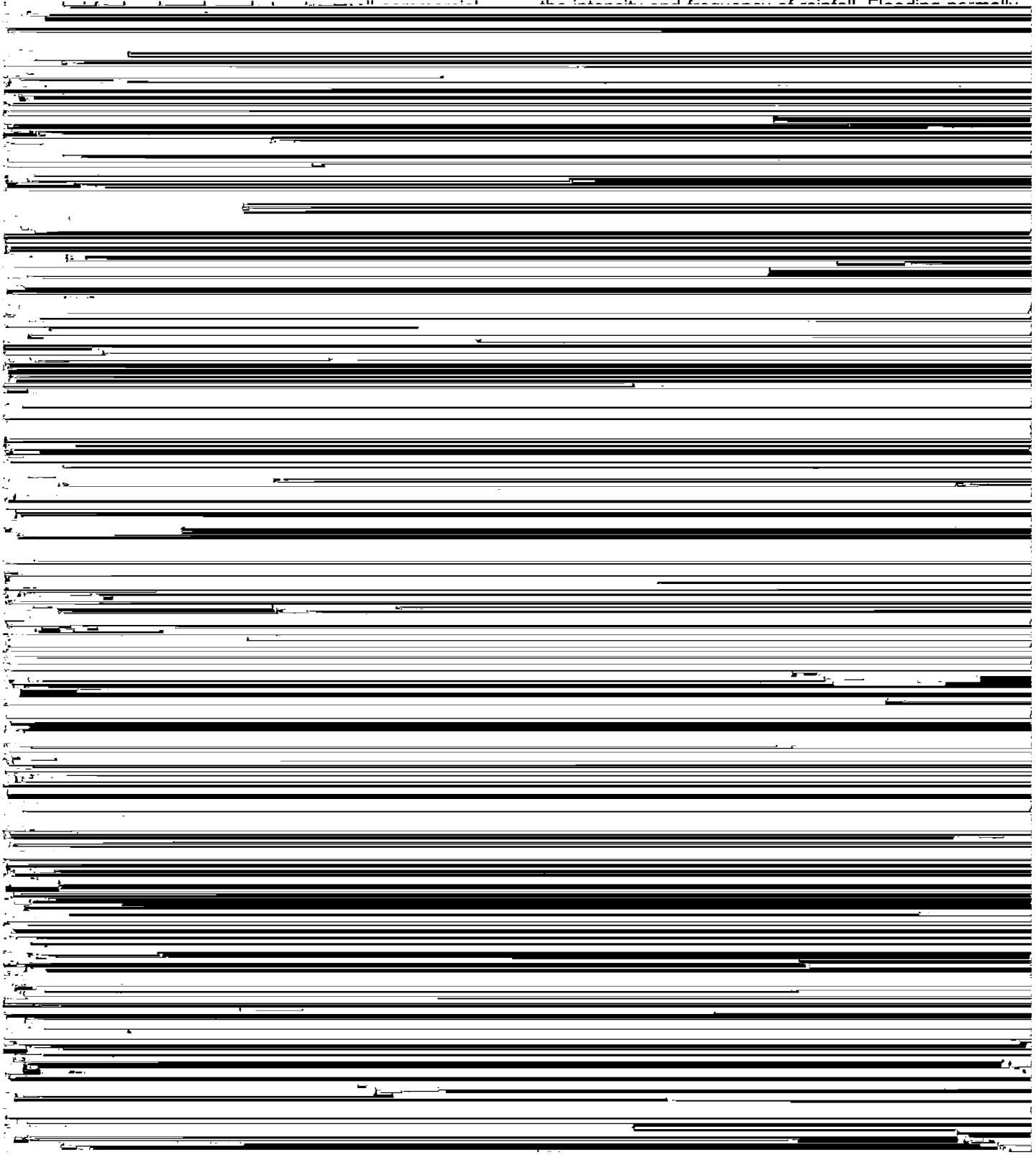
the intensity and frequency of the rains. Flooding normally lasts from 1 month to 4 months. The permeability is moderately rapid in the surface layer and substratum, and it is slow to very slow in the subsoil. The available water capacity is medium in the surface layer, high in the subsoil, and low in the substratum. Natural fertility and the content of organic matter are medium.

In most areas, this Chobee soil has been left in natural vegetation. In a few areas, it is used for improved pasture. The natural vegetation is baldcypress, Coastal Plain willow, red maple, and sweetgum. The understory includes buttonbush, maidencane, sawgrass, smartweed, sedges, and other water-tolerant grasses.

Under natural conditions, this soil is not suited to cultivated crops and citrus crops because it is subject to frequent flooding and is very poorly drained. However, if intensive management practices and soil-improving measures are used and a water control system is installed to remove excess water rapidly, this soil is fairly

considered in the placement of sanitary facilities to prevent contamination of the water supplies. Fill material

occurs frequently during rainy periods. The duration and extent of flooding are variable and are related directly to



Major flood control structures and extensive local drainage systems are needed to control flooding. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage in areas of Floridana soil. Also, the sidewalls of shallow excavations should be shored on Floridana soil. The installing of a water control system, adding fill material, and mounding the septic tank absorption fields can help minimize the excessive wetness limitation. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of the water supplies. Fill material is needed for local roads and streets, small commercial buildings, and playgrounds.

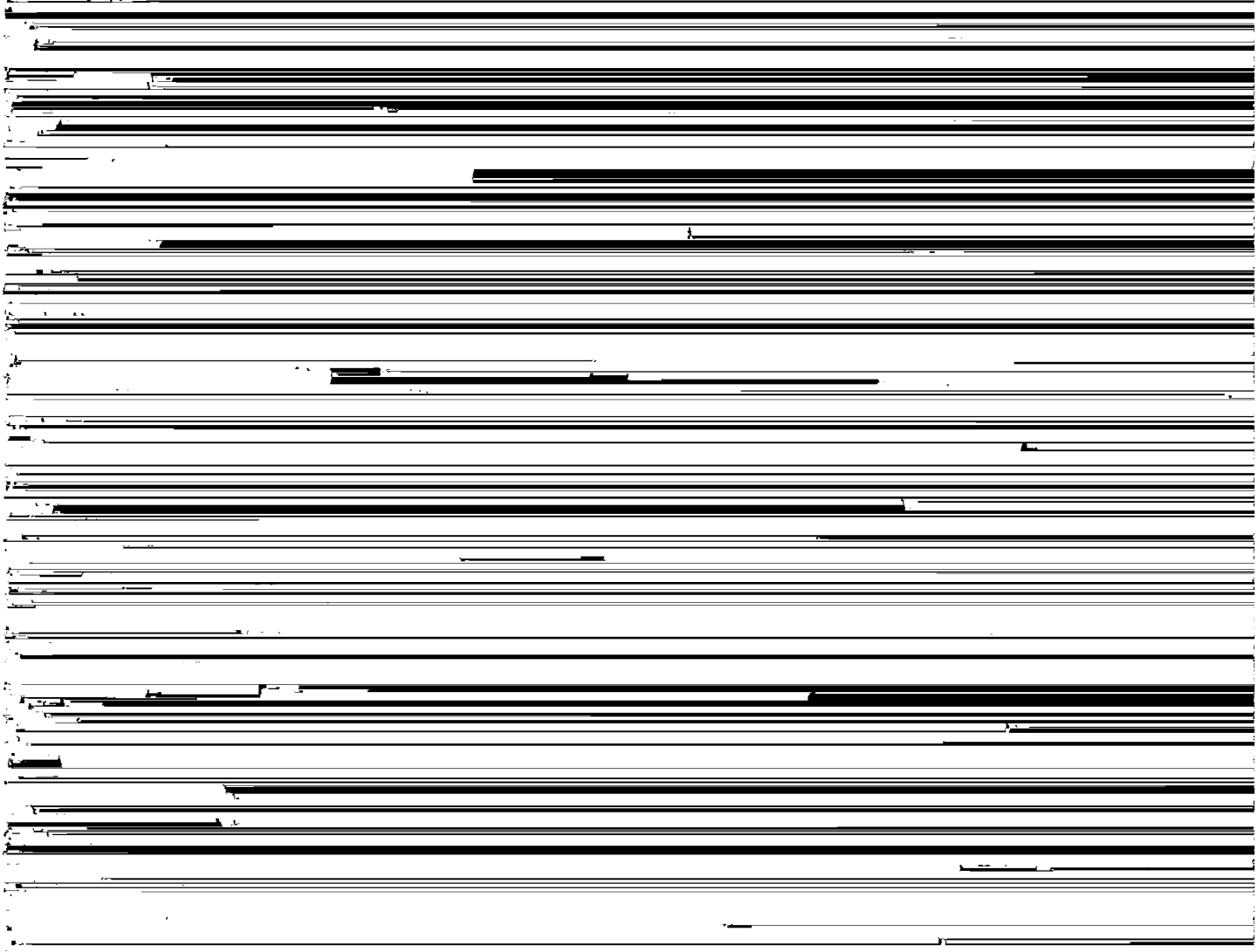
Floridana and Chobee soils are in capability subclass Vw. The woodland ordination symbol for these soils is 6W.

12—Emeralda and Holopaw fine sands, frequently flooded. The soils in this map unit are nearly level and

about 51 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 65 inches, is dark gray sandy clay loam that has dark brown mottles. The lower part, to a depth of about 71 inches, is gray sandy loam that has dark grayish brown mottles. The substratum to a depth of 80 inches is light gray loamy sand that has dark yellowish brown mottles. In the mapped areas are similar soils, but they have a subsoil within 40 inches of the surface. In some places are other similar soils, but they have a thick, dark surface layer that has a high content of organic matter.

Dissimilar soils included in mapping are Gator and Pompano soils in small areas.

In most years, a seasonal high water table is within 10 inches of the surface for 6 to 9 months in Emeralda soil and for 2 to 6 months in Holopaw soil. The permeability of Emeralda soil is rapid in the surface and subsurface layers and slow in the subsoil and substratum. The permeability of Holopaw soil is rapid in the surface and subsurface layers and in the substratum and moderate in

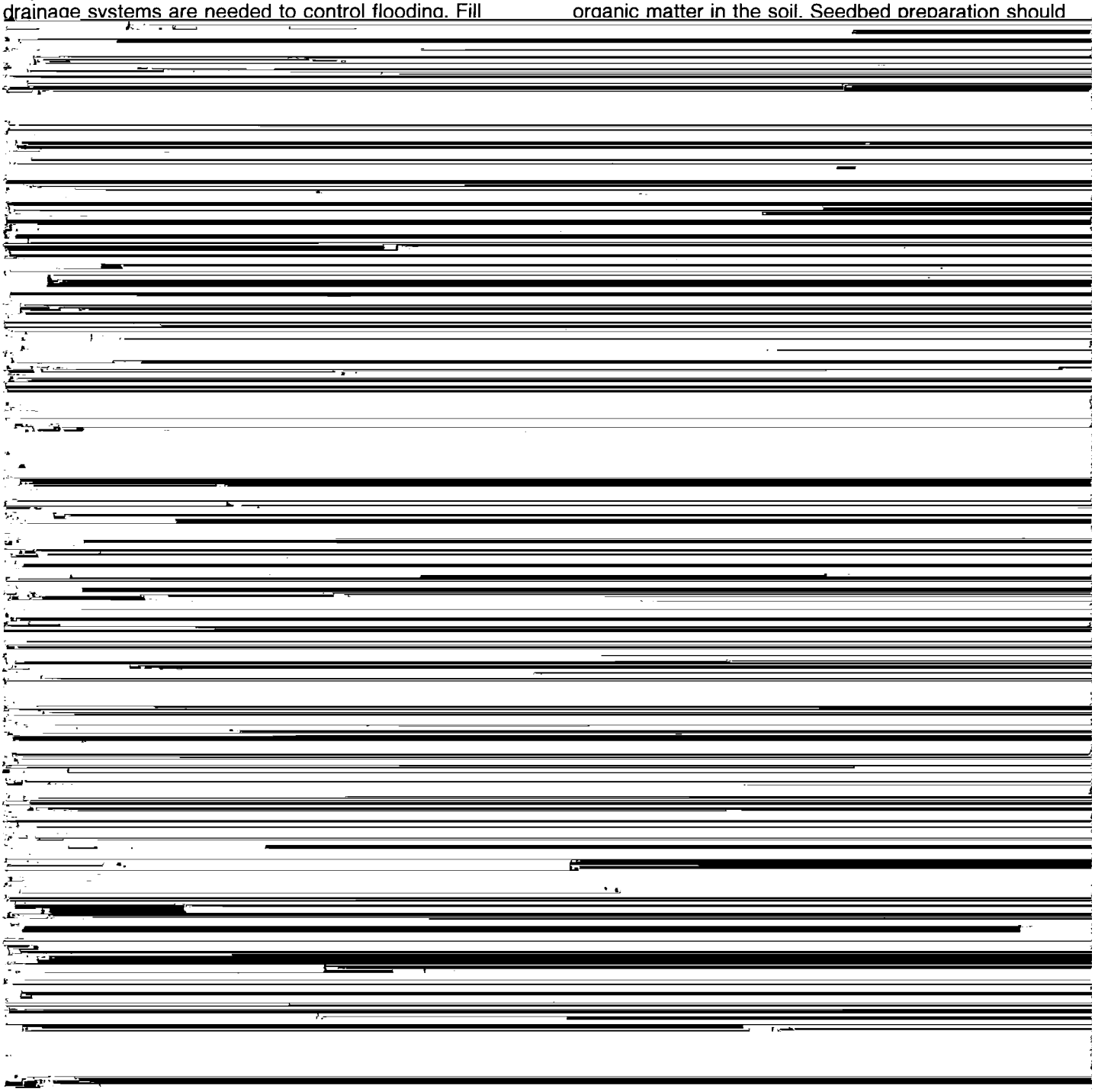


adapted tree to plant on these soils. In addition, baldcypress and hardwoods are also suitable trees to plant. Harvesting and planting operations should be scheduled during dry periods.

The soils in this map unit have severe limitations for building site development, sanitary facilities, and recreational uses because of flooding and wetness. Major flood control structures and extensive local drainage systems are needed to control flooding. Fill

sand cordgrass, blue maidencane, low panicum, and various weeds and grasses.

Under natural conditions, this soil is poorly suited to cultivated crops. However, it is fairly suited to vegetable crops if a water control system is installed to remove excess water rapidly and to provide for subsurface irrigation. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Seedbed preparation should



a depth of about 22 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 30 inches, is gray sandy clay loam that has common dark brown mottles. The lower part, to a depth of about 42 inches, is light gray sandy loam that has dark yellowish brown mottles. The substratum to a depth of about 80 inches is gray fine sand. In the mapped areas are some small areas of Holopaw soils that are similar to Felda soil. In some places are similar soils, but they have a subsoil within 20 inches of the surface, and in some areas are similar soils, but these soils have a brownish yellow or yellowish brown fine sand subsoil.

Dissimilar soils included in mapping are Wabasso soils in small areas.

In most years, a seasonal high water table is within 10 inches of the surface for 2 to 6 months. Flooding is infrequent under normal weather conditions. Duration of flooding is about 2 to 7 days. The duration and extent of flooding is directly related to the intensity and frequency of the rains. The permeability is rapid in the surface and subsurface layers and in the substratum, and it is moderate to moderately rapid in the subsoil. The

Improved bahiagrass and clover grow well if properly managed. Management practices should include controlled grazing and regular applications of fertilizer.

The potential of this soil for the production of pine trees is moderately high. A water control system is needed to remove excess surface water and reduce the hazard of flooding. Bedding of rows helps to minimize the wetness limitation. Equipment use and seedling mortality are the main concerns in management. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of flooding and wetness. Water control measures should be used and fill material is needed to minimize the excessive wetness limitation. The sandy surface layer should be stabilized for recreational uses. The sidewalls of shallow excavations should be shored.

This Felda soil is in capability subclass IIIw. The woodland ordination symbol for this soil is 10W.

15—Felda fine sand, frequently flooded. This soil is nearly level and poorly drained. It is on the flood plain of

rapid in the surface and subsurface layers and in the substratum, and it is moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and in the substratum, and is medium in the subsoil. Natural fertility and the organic matter content are low.

In most areas, this Felda soil has been left in natural vegetation. In a few areas, it is used for improved pasture. The natural vegetation is red maple, scattered cabbage palm, slash pine, and sweetgum. The understory includes scattered saw palmetto, pineland threeawn, blue maidencane, and waxmyrtle.

Under natural conditions, this soil is not suited to cultivated crops, citrus crops, or improved pasture. However, if a water control system is installed to reduce the hazard of flooding, this soil is fairly suited to some

16—Floridana fine sand, frequently flooded. This soil is nearly level and very poorly drained. It is on the flood plains of the St. Johns River and its major tributaries. This soil is flooded for very long periods following prolonged, intense rains. The slopes are smooth to concave and range from 0 to 2 percent.

In 95 percent of areas mapped as Floridana fine sand, frequently flooded, Floridana soil and similar soils make up 97 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 3 percent of the mapped areas.

Typically, the upper part of the surface layer of this soil is black fine sand about 2 inches thick. The lower part, to a depth of about 17 inches, is very dark gray fine sand. The subsurface layer, to a depth of about 28 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 40 inches, is gray sandy clay loam that has light gray and very dark grayish brown

organic matter in the soil. Fertilizer and lime should be applied according to the need of the crop.

Under natural conditions, this soil is poorly suited to improved pasture grasses. However, if a water control system is installed to remove excess surface water after heavy rains, suitability is good. Pangolagrass and improved bahiagrass grow well if properly managed. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor.

The potential of this soil for the production of pine trees is moderately high. A water control system is needed to remove excess surface water for the

loam that has common light olive brown mottles. The lower part, to a depth of about 64 inches, is gray sandy clay loam. The substratum to a depth of 80 inches or more is gray sandy loam. In the mapped areas are similar soils, but they have a subsoil within 20 inches of the surface. In some places are similar soils, but these soils have a subsoil at a depth of more than 40 inches, and some have a surface layer of fine sand.

Dissimilar soils included in mapping are Felda soils in small areas.

Under natural conditions, this soil is ponded for 6 to 9 months or more each year. In most years, a seasonal

small commercial buildings, and playgrounds. The sidewalls of shallow excavations should be shored. Mounding of the septic tank absorption field may be needed.

This Floridana soil is in capability subclass VIIw. The woodland ordination symbol for this soil is 2W.

18—Gator muck. This soil is nearly level and very poorly drained. It is in freshwater swamps that are mainly north of Lake Apopka. Large ditches and canals equipped with water control structures dissect the map unit in most places. Undrained areas are ponded for 6 to

Carolina willow, primrose willow, cattail, maidencane, Jamaica sawgrass, and other water-tolerant grasses. The natural areas provide cover for deer and excellent habitat for wading birds and other wetland wildlife.

Under natural conditions, this soil is not suited to cultivated crops or citrus crops. However, if intensive management practices and soil-improving measures are used and a water control system is installed to remove excess surface water rapidly, this soil is well suited to many vegetable crops. A specially designed water control system is needed to remove excess water when crops are on the soil, to maintain the water table near

Typically, the upper part of the organic layer of this soil is black muck about 20 inches thick. The middle part, to a depth of about 49 inches, is dark reddish brown muck. The lower part to a depth of 80 inches or more is very dark brown muck. In the mapped areas are similar soils, but they have an organic surface layer that is less than 51 inches thick; and in the lower part of the profile, the texture is fine sand, loamy fine sand, sandy loam, or sandy clay loam.

[redacted]

installed to remove excess surface water after heavy rains, suitability is good. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. The water control system should maintain the water table near the surface to prevent excess subsidence of the organic material. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor.

This soil is not suited to pine trees.

substratum, and is medium in the subsoil. Natural fertility and the organic matter content are low.

In most areas, this Immokalee soil has been left in natural vegetation. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite and urban development. The natural vegetation is slash pine. The understory is saw palmetto, running oak, inkberry, fetterbush, creeping bluestem, lopsided indiangrass, pineland threeawn, chalky bluestem, and waxmyrtle.

Under natural conditions, this soil is poorly suited to cultivated crops because of wetness and the sandy texture in the root zone. However, if a water control system is installed and soil-improving measures are used, this soil is fairly suited to many vegetable crops. A water control system is needed to remove excess water in wet periods and to provide for subsurface irrigation in dry periods. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Other management practices include seedbed preparation and regular applications of fertilizer and lime. Seedbed preparation should include the bedding of rows.

The suitability of this soil for citrus trees is good in areas that are relatively free of freezing temperatures and if a water control system is installed to maintain the water table at a depth of about 4 feet. Planting the trees on beds lowers the effective depth of the water table. A close-growing cover crop between tree rows is needed to protect the soil from blowing. Regular applications of lime and fertilizers are needed.

This soil has good suitability for improved pasture grasses. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. Water control measures should be used to remove the excess surface water after heavy rains. Regular applications of lime and fertilizer are needed. Overgrazing should be prevented.

The potential of this soil for the production of pine trees is moderate. Equipment use, seedling mortality, and plant competition are the main concerns in management. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for sanitary facilities, building site development, and recreational uses. Water control measures should be used to minimize the excessive wetness limitation. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. Septic tank absorption fields may need to be enlarged because of wetness. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of the water supplies. Fill material is needed for local roads and streets, small commercial buildings, and playgrounds. The sidewalls of shallow excavations should be shored, and water control measures should be used. The sandy surface layer should be stabilized for recreational uses.

This Immokalee soil is in capability subclass IVw. The woodland ordination symbol for this soil is 8W.

21—Lake fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and excessively drained. It is on the uplands. The slopes are nearly smooth to convex.

In 95 percent of areas mapped as Lake fine sand, 0 to 5 percent slopes, Lake soil and similar soils make up 93 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 7 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 4 inches thick. The upper part of the underlying material, to a depth of about 35 inches, is yellowish brown fine sand. The lower part to a depth of 80 inches or more is brownish yellow fine sand. In the mapped areas are similar soils, but they have less than 5 percent silt and clay in the underlying material. In lower positions on the landscape are other similar soils, but these soils are well drained.

Dissimilar soils included in mapping are Tavares soils in small areas.

A seasonal high water table is at a depth of more than 72 inches. The permeability is rapid. The available water capacity is very low to low. Natural fertility and the organic matter content are low.

In most areas, this Lake soil is used for citrus crops. In a few areas, it is used for improved pasture or for homesite and urban development. The natural vegetation is slash pine, longleaf pine, bluejack oak, Chapman oak, scrub live oak, live oak, and turkey oak. The understory includes scattered saw palmetto, running oak, lopsided indiangrass, pineland threeawn, bluestem, and paspalum.

The sandy texture and droughtiness of this soil are severe limitations for cultivated crops. Intensive management practices are needed if cultivated crops are to be grown on this soil. Droughtiness and rapid leaching of plant nutrients limit the choice of plants that can be grown and reduce the potential yield of crops. A crop-rotation system is needed to keep close-growing cover crops on the soil at least three-fourths of the time. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Optimum yields can be obtained from only a few crops without an irrigation system. It is generally feasible to irrigate crops if water is readily available.

This soil is suited to citrus trees in areas that are relatively free of freezing temperatures. A ground cover of close-growing plants between the tree rows is needed to protect the soil from blowing. Optimum yields can be obtained in some years without irrigation, but a specially designed irrigation system that maintains optimum soil moisture that is needed to obtain maximum yields.

This soil is moderately well suited to improved pasture grasses. Deep-rooted plants, such as Coastal bermudagrass and bahiagrass, are well suited to this

soil, but yields are reduced by periodic droughtiness. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor. Irrigation improves the quality of pasture and hay.

The potential of this soil for the production of pine trees is moderate. Seedling mortality, equipment use, and plant competition are the main concerns in management. The low available water capacity adversely affects seedling survival in areas where understory plants are numerous. The sandy surface texture limits the use of equipment. Slash pine is an adapted tree to plant on this soil.

This soil has slight limitations for septic tank absorption fields, dwellings without basements, and local roads and streets. No corrective measures are needed. When installing a septic tank absorption field on this soil, the proximity to a stream or canal should be considered to prevent lateral seepage and ground water pollution. If the density of housing is moderate to high, a community

the surface. In some places are similar soils, but these soils have a subsoil at a depth of more than 40 inches, and some that are in higher positions on the landscape are moderately well drained.

Dissimilar soils included in mapping are Wabasso soils in small areas.

In most years, a seasonal high water table is within 30 to 60 inches of the surface for 1 month to 4 months. It is at a depth of about 15 inches for 1 week to 3 weeks during periods of heavy rains. It recedes to a depth of more than 60 inches during prolonged dry periods. The permeability is moderately rapid to rapid in the surface and subsurface layers, moderate to moderately slow in the subsoil, and slow to moderately slow in the substratum. The available water capacity is low in the surface and subsurface layers and is medium to high in the subsoil and substratum. Natural fertility and the organic matter content are moderate to moderately low.

In most areas this [illegible] soil is used for [illegible]

dwellings without basements, small commercial buildings, and local roads and streets. Water control measures should be used to minimize the wetness limitation. Mounding or enlarging the septic tank absorption field may be needed because of wetness. The sandy sidewalls must be sealed or lined if this soil is used as a sewage lagoon. Water control measures should be used for trench sanitary landfills during wet periods. The sandy surface layer should be stabilized for recreational uses. The sidewalls of shallow excavation should be shored.

This Lochloosa soil is in capability subclass IIw. The woodland ordination symbol for this soil is 11A.

23—Malabar fine sand. This soil is nearly level and poorly drained. It is in low, narrow to broad sloughs and poorly defined drainageways. The slopes are smooth to concave and range from 0 to 2 percent.

In 95 percent of areas mapped as Malabar fine sand, Malabar soil and similar soils make up 90 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 10 percent of the mapped areas.

Typically, this soil has a surface layer of black fine sand about 3 inches thick. The subsurface layer, to a depth of about 18 inches, is grayish brown fine sand. The upper part of the subsoil, to a depth of about 30 inches, is light yellowish brown fine sand. The next layer, to a depth of about 42 inches, is light gray fine sand. The lower part, to a depth of about 58 inches, is gray fine sandy loam that has pale brown and brownish yellow mottles. The substratum to a depth of 80 inches or more is gray loamy sand. In the mapped areas are similar soils in which the lower part of the subsoil is within 40 inches of the surface, or they have a brown to dark brown weakly stained layer above the lower part of the loamy subsoil.

Dissimilar soils included in mapping are Wabasso soils in small areas.

In most years, a seasonal high water table is within 10 inches of the surface for 2 to 6 months and between depths of 10 and 40 inches for most of the year. The permeability is rapid in the surface and subsurface layers and in the upper part of the subsoil, slow to very slow in the loamy part of the subsoil, and moderately rapid in the substratum. The available water capacity is low to very low in the surface and subsurface layers and in the upper part of the subsoil, moderate in the lower part of the subsoil, and low in the substratum. Natural fertility

panicum, maidencane, and other various sedges and grasses.

Under natural conditions, this soil is poorly suited to cultivated crops. However, it is moderately well suited to vegetable crops if a water control system is installed to remove excess surface water rapidly and to provide for subsurface irrigation. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Seedbed preparation should include the bedding of rows. Fertilizer should be applied according to the need of the crop.

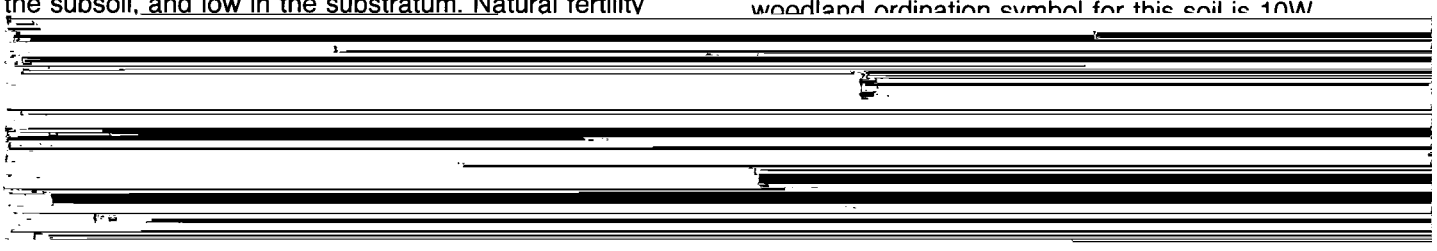
The suitability of this soil for citrus trees is good in areas that are relatively free of freezing temperatures and if a water control system is installed to maintain the water table at a depth of about 4 feet. Planting the trees on beds provides good surface drainage. A close-growing cover crop between tree rows is needed to protect the soil from blowing. Regular applications of fertilizer are needed.

The suitability of this soil for pasture and hay crops is good. Pangolagrass, improved bahiagrass, and clover grow well if properly managed. Management practices should include a water control system to remove excess surface water after heavy rains, regular applications of fertilizer and lime, and controlled grazing.

The potential of this soil for the production of pine trees is moderately high. Slash pine is an adapted tree to plant on this soil. A water control system is needed to remove excess surface water. Equipment use and seedling mortality are the main concerns in management.

This soil has severe limitations for building site development, sanitary facilities, and recreational uses. Water control measures should be used and fill material is needed to minimize the excessive wetness limitation. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. Mounding of the septic tank absorption field may be needed. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of the water supplies. Fill material is needed for local roads and streets, small commercial buildings, and playgrounds. The sidewalls of shallow excavations should be shored, and water control measures should be used. The sandy surface layer should be stabilized for recreational uses.

This Malabar soil is in capability subclass IVw. The woodland ordination symbol for this soil is 10W.



make up about 7 percent of the map unit. The proportions and the patterns of the Millhopper soil and Urban land are relatively consistent in most delineations of the map unit. The individual areas of the soils in this map unit are too mixed or too small to map separately at the scale used for the maps in the back of this publication.

Typically, the surface layer of Millhopper soil is dark gray fine sand about 5 inches thick. The upper part of

lawns, shrubs, trees, and vegetable gardens. The soils need to be mulched, irrigated, fertilized, and limed to establish and maintain lawn grasses and other landscape vegetation.

The soils in this map unit have moderate limitations for septic tank absorption fields because of the depth of the water table during wet periods. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. The

The permeability is rapid in the organic layers, and it is moderately rapid to moderately slow in the underlying material. The available water capacity is very high in the organic layers and is very low to medium in the underlying material. Natural fertility and the organic matter content are high.

In most areas, this Okeelanta soil is used mainly for

This Okeelanta soil is in capability subclass IIIw, but it has not been assigned to a woodland group.

26—Ona fine sand. This soil is nearly level and poorly drained. It is in broad areas on the flatwoods. The slopes are smooth and range from 0 to 2 percent.

In 95 percent of areas mapped as Ona fine sand, Ona

This soil has good suitability for improved pasture grasses. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. Water control measures should be used to remove the excess water after heavy rains. Regular applications of lime and fertilizer are needed. Overgrazing should be prevented.

The potential of this soil for the production of pine trees is moderately high. Equipment use, seedling mortality, and plant competition are the main concerns in management. Bedding of rows helps to minimize the wetness limitation. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for sanitary facilities, building site development, and recreational uses. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. If

seasonal high water table is within 10 inches of the surface for 1 month to 2 months. Drainage systems have been established in most areas. Depth to the high water table is dependent upon the functioning of the drainage system. The permeability of Ona soil is rapid in the surface layer and in the substratum and is moderate in the subsoil. The available water capacity is moderate in the surface layer and in the subsoil and is low in the substratum.

The soils in this map unit are not used for cultivated crops, citrus crops, improved pasture, or commercial trees. Ona soil in the Urban land part of this complex is used for lawns, vacant lots, or playgrounds, or it is left as open space. The Urban land part of this complex is used mostly for houses, streets, driveways, parking lots, or other similar uses.

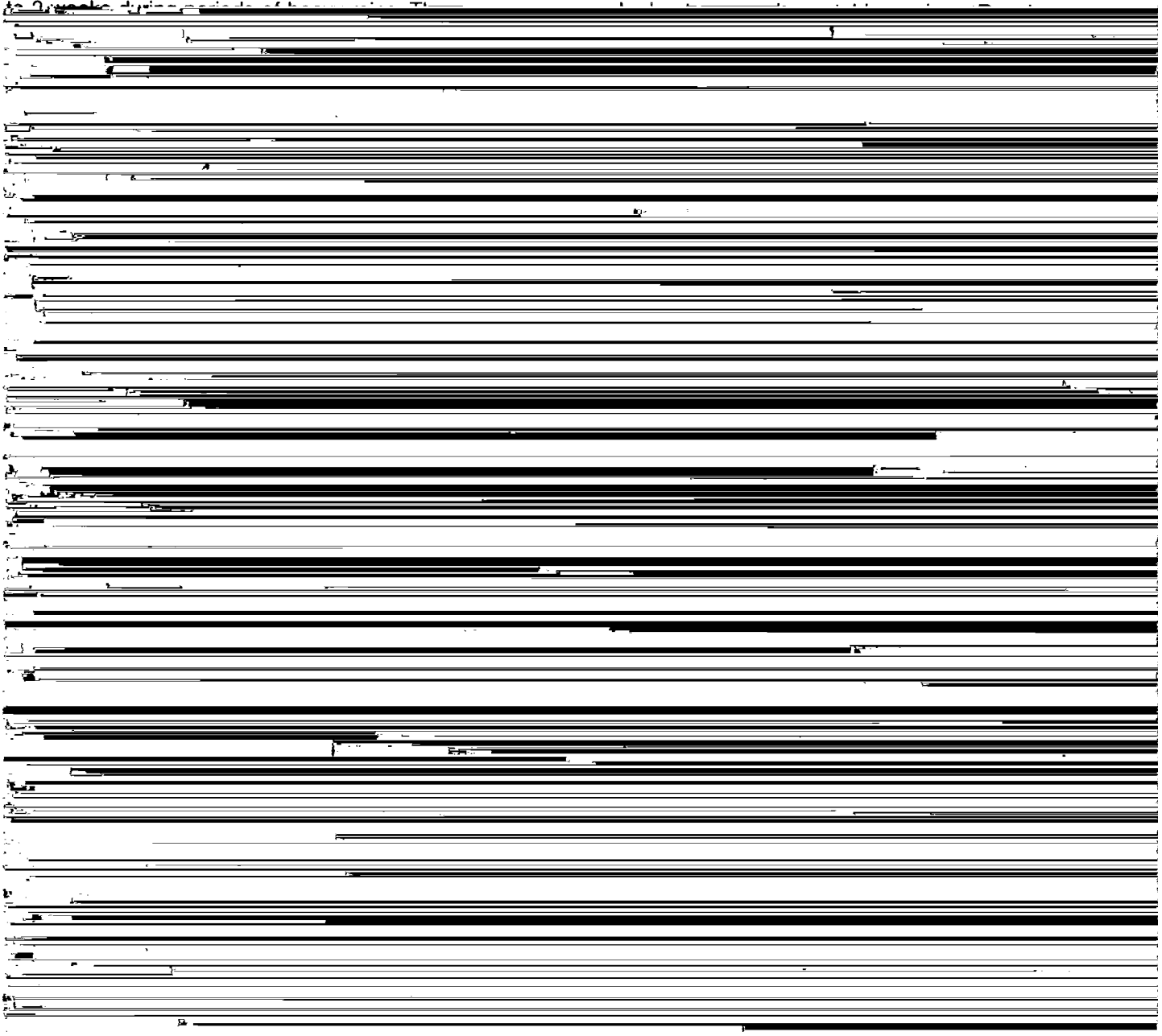
The soils in this map unit have severe limitations for

about 80 inches is light yellowish brown fine sand. In the mapped areas are similar soils that have a weakly cemented subsoil at a depth of more than 40 inches. In some places are similar soils that have a surface layer that is less than 10 inches thick and some similar soils in higher positions on the landscape that are well drained.

Dissimilar soils included in mapping are Candler and Seffner soils in small areas.

In most years, a seasonal high water table is at a depth of 48 to 72 inches for 4 to 6 months and recedes to a depth of 72 inches or more during extended dry periods. It is within 30 to 48 inches of the surface for up

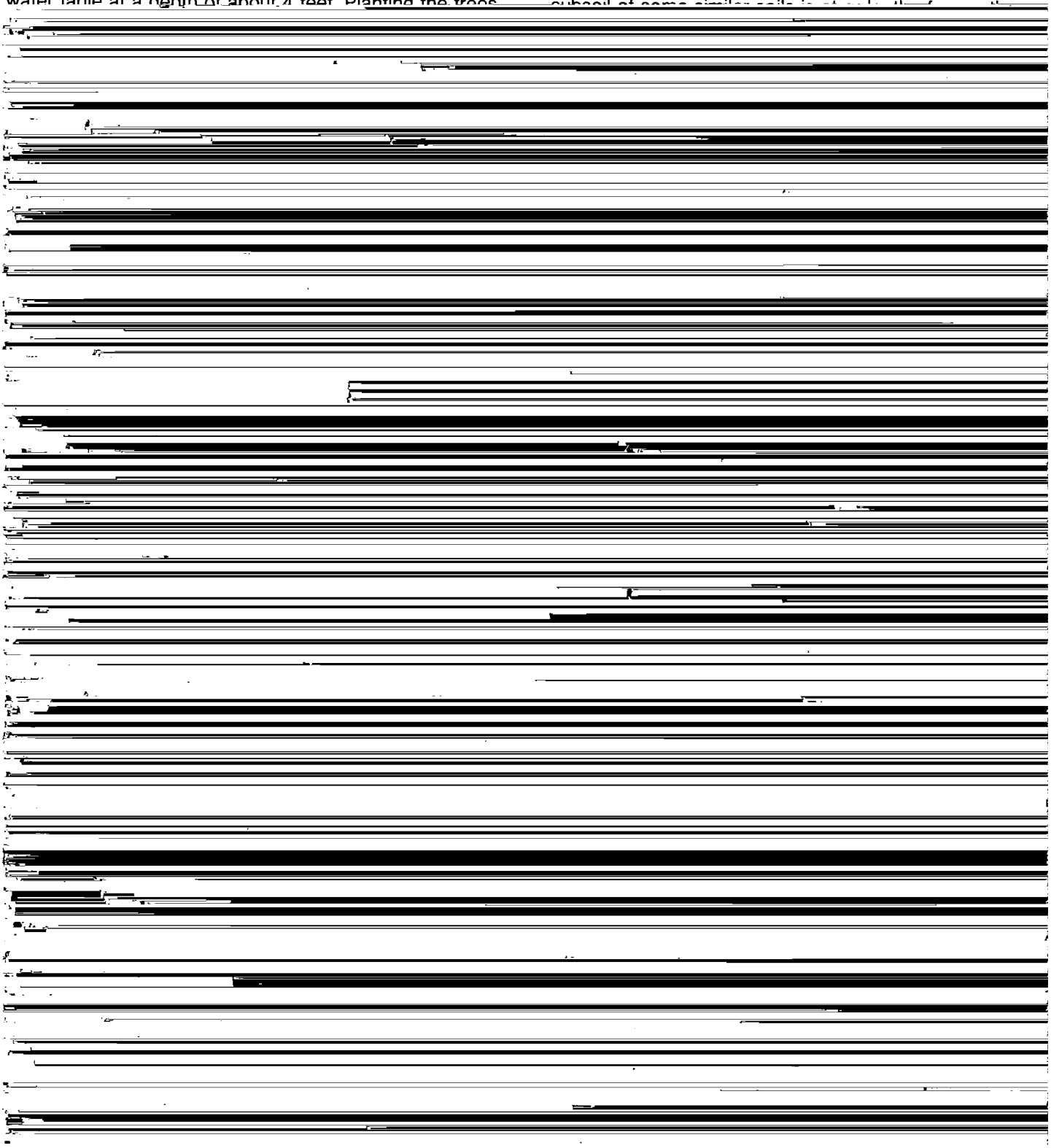
This soil has severe limitations for sewage lagoons, sanitary landfills, shallow excavations, and recreational uses. Water control measures should be used to minimize the wetness limitation in undrained areas. In addition, the sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. Water control measures should be used to minimize the excessive wetness limitation. The sidewalls of shallow excavations should be shored. The sandy surface layer should be stabilized for recreational uses. Droughtiness is a problem during extended dry periods. The selection of drought-tolerant vegetation is critical for the establishment of lawns,



Included in mapping are small areas of Candler and The soils in this map unit have not been assigned to a

The suitability of this soil for citrus trees is good in areas that are relatively free of freezing temperatures and if a water control system is installed to maintain the water table at a depth of about 4 feet. Planting the trees

inches or more is light gray fine sandy loam. In the mapped areas are similar soils, but they have a subsoil within 20 inches of the surface, and the lower part of the



This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of flooding and wetness. Major flood control structures and extensive local drainage systems are needed to control flooding. The limitations of this soil for septic tank absorption fields are severe. The installing of a water control system, adding fill material, and mounding the septic tank absorption field can help to minimize the excessive wetness limitation. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of the water supplies. Fill material is needed for local roads and streets, small commercial buildings, and playgrounds.

This Pineda soil is in capability subclass Vw. The woodland ordination symbol for this soil is 10W.

32—Pinellas fine sand. This soil is nearly level and poorly drained. It is in areas that border sloughs and shallow depressions. The slopes are smooth to slightly

inkberry, hairy panicum, pineland threeawn, and waxmyrtle.

Under natural conditions, this soil is poorly suited to vegetable crops because of wetness. However, if a water control system is installed to remove excess surface water rapidly and to provide for subsurface irrigation, this soil is well suited to most vegetable crops. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Seedbed preparation should include the bedding of rows. Fertilizer should be applied according to the need of the crop.

The suitability of this soil for citrus trees is good in areas that are relatively free of freezing temperatures and if a water control system is installed to maintain the water table at a depth of about 4 feet. Planting the trees on beds provides good surface drainage. A close-growing cover crop between tree rows is needed to protect the soil from blowing. Regular applications of fertilizer are needed.

small areas of spoil or stockpiles of variable soil and geologic material around the edges of the pits. Pits, locally called borrow pits, are from 5 to 40 feet deep. Some of the pit bottoms are seasonally ponded. Other areas are filled with water year round and are shown as water on the soil map.

In most areas, Pits remain idle. Smoothing, shaping, and filling with heavy machinery is necessary for any agricultural or urban use. These areas have a high potential for wildlife habitat if they are reshaped and revegetated to conform with existing landscapes. Areas that are filled with water have a high potential for fish if they are stocked and managed properly. Onsite investigation is necessary to determine the potential for any use.

Pits has not been assigned to a capability subclass or to a woodland group.

34—Pomello fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is on low ridges and knolls on the flatwoods. The slopes are smooth to convex.

In 80 percent of areas mapped as Pomello fine sand, 0 to 5 percent slopes, Pomello soil and similar soils make up 78 to 94 percent of the mapped areas. Dissimilar soils make up 6 to 22 percent of the mapped areas.

Typically, this soil has a surface layer of gray fine sand about 3 inches thick. The subsurface layer, to a depth of about 40 inches, is white fine sand. The upper part of the subsoil, to a depth of about 48 inches, is black fine sand. The lower part, to a depth of about 55 inches, is dark reddish brown fine sand. The substratum to a depth of about 80 inches is pale brown fine sand. In the mapped areas are similar soils, but they have a subsoil within 30 inches of the surface. In some places are similar soils, but they have a subsoil at a depth of more than 50 inches, and in lower positions on the landscape are similar soils, but they are somewhat poorly drained.

Dissimilar soils included in mapping are Archbold, Pompano, and Smyrna soils in small areas. Also included are some soils that have a subsoil within 30 inches of the surface.

In most years, a seasonal high water table is at a depth of 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods. The permeability is very rapid in the surface and subsurface layers, moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. Natural fertility and the organic matter content are very low.

sand pine, and slash pine. The understory includes creeping bluestem, lopsided indiangrass, running oak, saw palmetto, and pineland threeawn.

This soil is poorly suited to cultivated crops, but if intensive management practices are used, a few special crops can be grown. The adapted crops that can be grown are limited. For maximum yields, an irrigation system is needed and fertilizer and lime should be applied according to the need of the crop. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil.

This soil is poorly suited to citrus trees. Only fair yields can be obtained if the level of management is high. A water control system is necessary to maintain the water table at a depth of about 4 feet during wet periods and to provide water for irrigation during periods of low rainfall. Regular applications of fertilizer and lime are needed to obtain maximum yields. A suitable cover crop should be maintained between tree rows to protect the soil from blowing.

The suitability of this soil for improved pasture grasses is fair. Deep-rooted plants, such as Coastal bermudagrass and bahiagrass, are better suited to this soil than other grasses. Droughtiness is the main limitation except during wet periods. Regular applications of lime and fertilizer are needed. Overgrazing should be prevented.

The potential of this soil for the production of pine trees is moderate. Seedling mortality, plant competition, and equipment use are the main concerns in management. Slash pine and sand pine are adapted trees to plant.

This soil has severe limitations for sanitary facilities, building site development, and recreational uses. It has moderate limitations for dwellings without basements and small commercial buildings. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. The rapid permeability of this soil can cause ground water pollution in areas of septic tank absorption fields. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. Water control measures should be used to minimize the wetness limitation. In addition, the sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The sandy surface layer should be stabilized for recreational uses. Water control measures should be used for shallow excavations. The sidewalls of shallow excavations should be shored. The proximity to a stream or aquifer

35—Pomello-Urban land complex, 0 to 5 percent slopes. This complex consists of Pomello soil that is nearly level to gently sloping and moderately well drained and of areas of Urban land. This complex is on low ridges and knolls on the flatwoods.

This map unit consists of about 53 percent Pomello soil and about 40 percent Urban land. The included soils make up about 7 percent of this map unit. The proportions and the patterns of Pomello soil and Urban land are relatively consistent in most delineations of the map unit. The individual areas of the soils in this map unit are too mixed or too small to map separately at the scale used for the maps in the back of this publication.

Typically, the surface layer of Pomello soil is dark gray fine sand about 5 inches thick. The subsurface layer, to a depth of about 42 inches, is white fine sand. The upper part of the subsoil, to a depth of about 48 inches, is dark reddish brown fine sand. The lower part, to a depth of about 54 inches, is dark brown fine sand. The substratum to a depth of about 80 inches is light gray fine sand.

The Urban land part of this complex is covered by concrete, asphalt, buildings, or other impervious surfaces that obscure or alter the soils so that their identification is not feasible.

Included in mapping are small areas of Archbold, Pompano, and Smyrna soils. Also included are some soils that are similar to Pomello soil but have a subsoil within 30 inches of the surface, some soils that have a subsoil at a depth of more than 50 inches, and some soils that are somewhat poorly drained in some of the lower parts of the landscape.

In most years, a seasonal high water table is at a depth of 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods.

[redacted]

absorption fields may need to be enlarged because of wetness. The rapid permeability of the soils in this map unit can cause ground water pollution in areas of septic tank absorption fields. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. Water control measures should be used to minimize the wetness limitation. In addition, the sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of water supplies. The sandy surface layer should be stabilized for recreational uses. Droughtiness is a problem during extended dry periods. The selection of drought-tolerant vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Regular applications of fertilizer are needed to maintain lawn grasses and landscape vegetation. For shallow excavations, water control measures should be used to minimize wetness. The sidewalls of shallow excavations should be shored.

The soils in this map unit have not been assigned to a capability subclass or to a woodland group.

36—Pompano fine sand. This soil is nearly level and poorly drained. It is on broad, low flats and in poorly defined drainageways on the flatwoods. The slopes are smooth to concave and range from 0 to 2 percent.

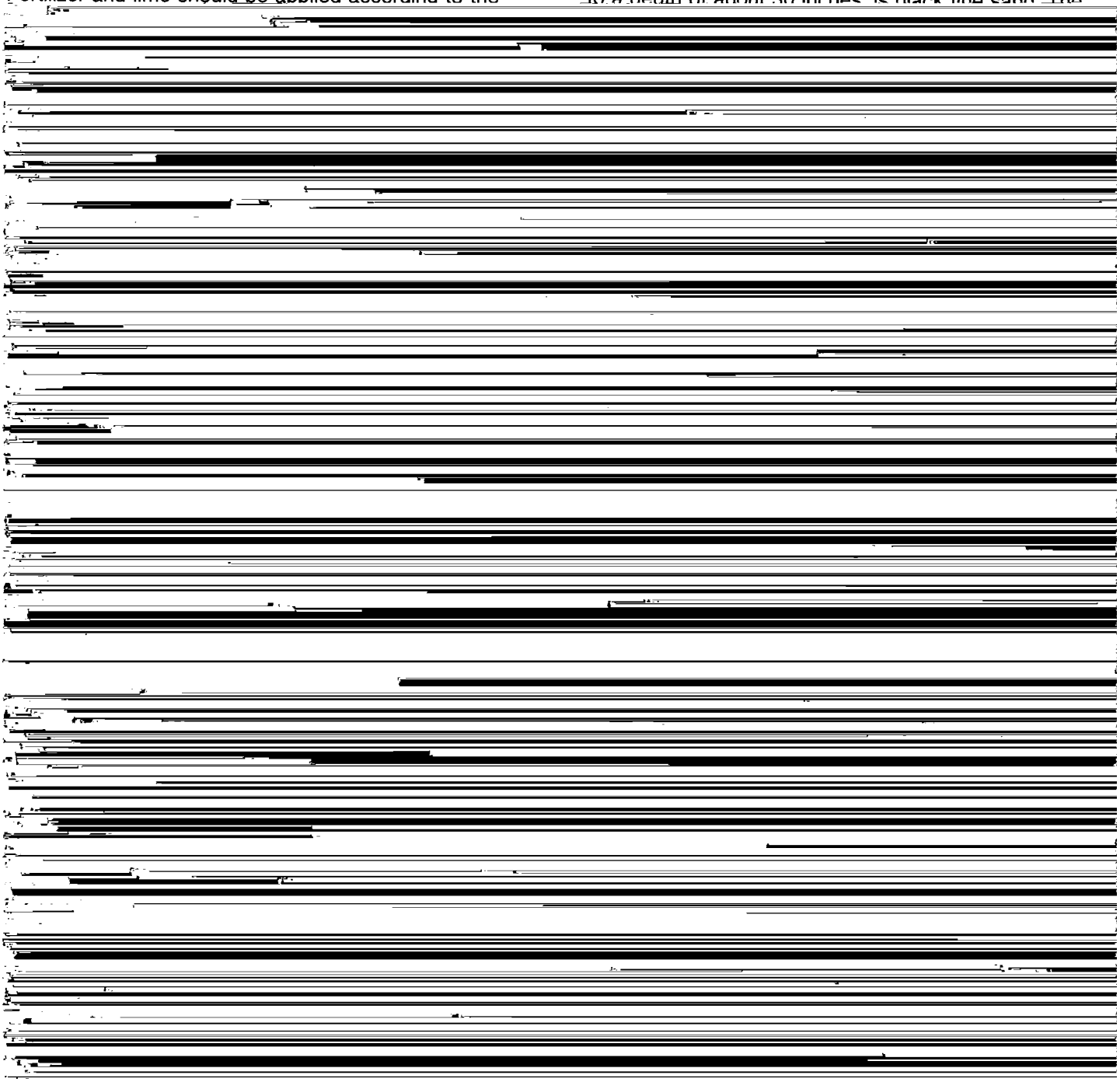
In 80 percent of areas mapped as Pompano fine sand, Pompano soil makes up 77 to 95 percent of the mapped areas. Dissimilar soils make up 5 to 23 percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 4 inches thick. The upper part of the

texture. Adapted crops that can be grown on this soil are limited if very intensive management practices are not used. If proper management practices are used, this soil is fairly suited to cropland. A water control system to remove excess water rapidly and to provide for subsurface irrigation is necessary. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Seedbed preparation should include the bedding of rows. Fertilizer and lime should be applied according to the

In 80 percent of areas mapped as St. Johns fine sand, St. Johns soil and similar soils make up 81 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 19 percent of the mapped areas.

Typically, the upper part of the surface layer of this soil is black fine sand about 7 inches thick. The lower part, to a depth of about 12 inches, is very dark gray fine sand. The subsurface layer, to a depth of about 24 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 30 inches, is black fine sand. The



the bedding of rows. Fertilizer and lime should be applied according to the need of the crop.

This soil has good suitability for improved pasture grasses and hay crops. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. Management practices should include a water control system to remove excess water after heavy rains, regular applications of fertilizer and lime, and controlled grazing.

The potential of this soil for the production of pine trees is moderately high. Equipment use and seedling mortality are the main concerns in management. A water control system is needed to remove excess surface water. Bedding the tree rows helps to minimize the wetness limitation. Slash pine is an adapted tree to

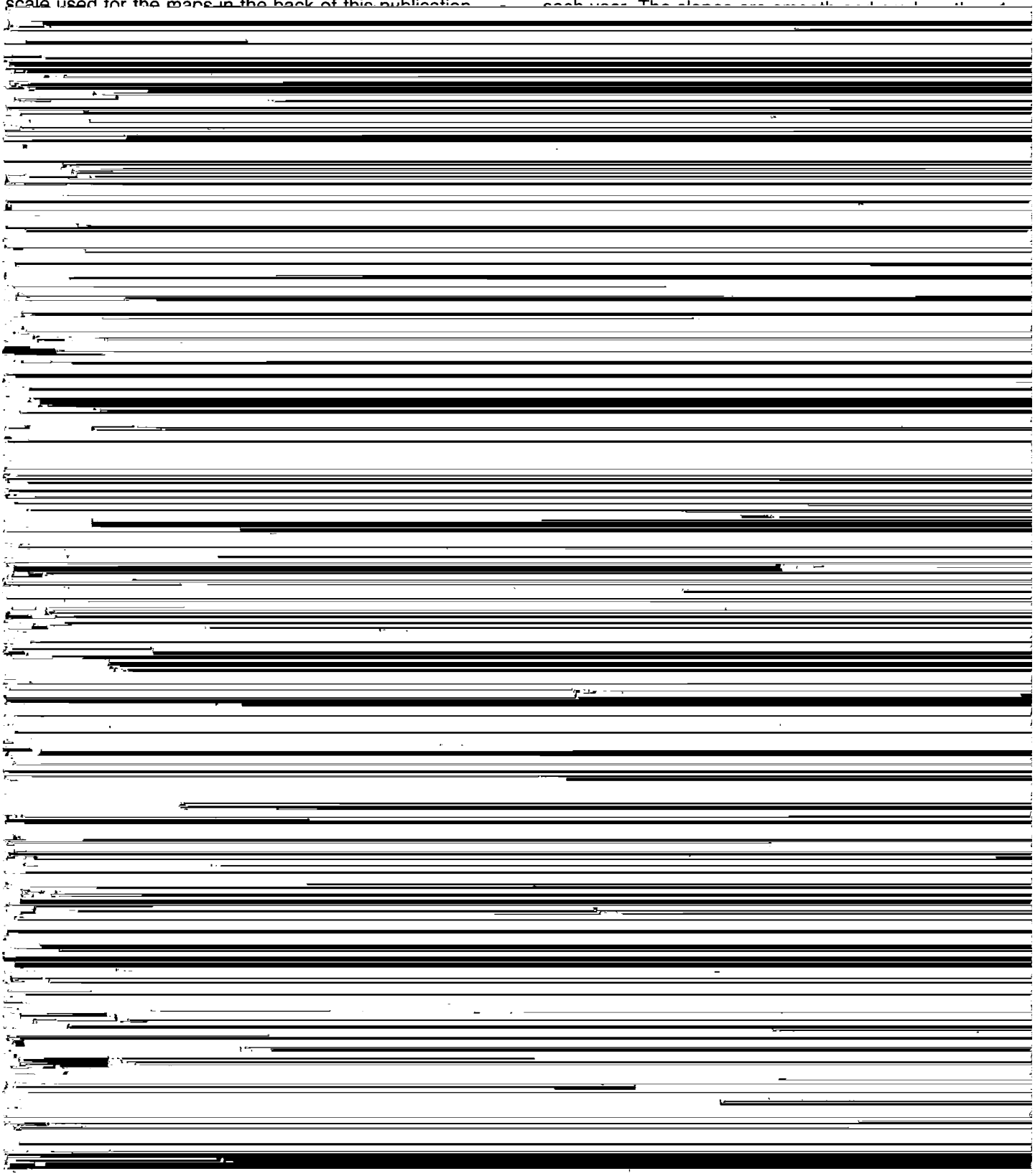
In most areas, this St. Lucie soil has been left in natural vegetation. In a few areas, it is used for improved pasture or for homesite and urban development. The natural vegetation includes sand pine, Chapman oak, scrub live oak, and sand live oak. The understory is scattered saw palmetto, pricklypear cactus, goldleaf goldaster, deermoss, bluestem, and pineland threeawn.

Under natural conditions, this soil is not suited to cultivated crops, citrus crops, or improved pasture because it is very droughty and has low natural fertility. Response to fertilizer is low. Irrigation water moves rapidly through the soil, and little moisture is retained for plant use.

The potential of this soil for the production of pine trees is low. Equipment use and seedling mortality are

unit are too mixed or too small to map separately at the scale used for the maps in the back of this publication.

Undrained areas are ponded for 6 to 9 months or more



specially designed and properly maintained water control system will remove the excess water when crops are on the soil and will keep the soil saturated at all other times. Proper management practices include seedbed preparation and crop rotation. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Fertilizer and lime should be applied according to the need of the crop.

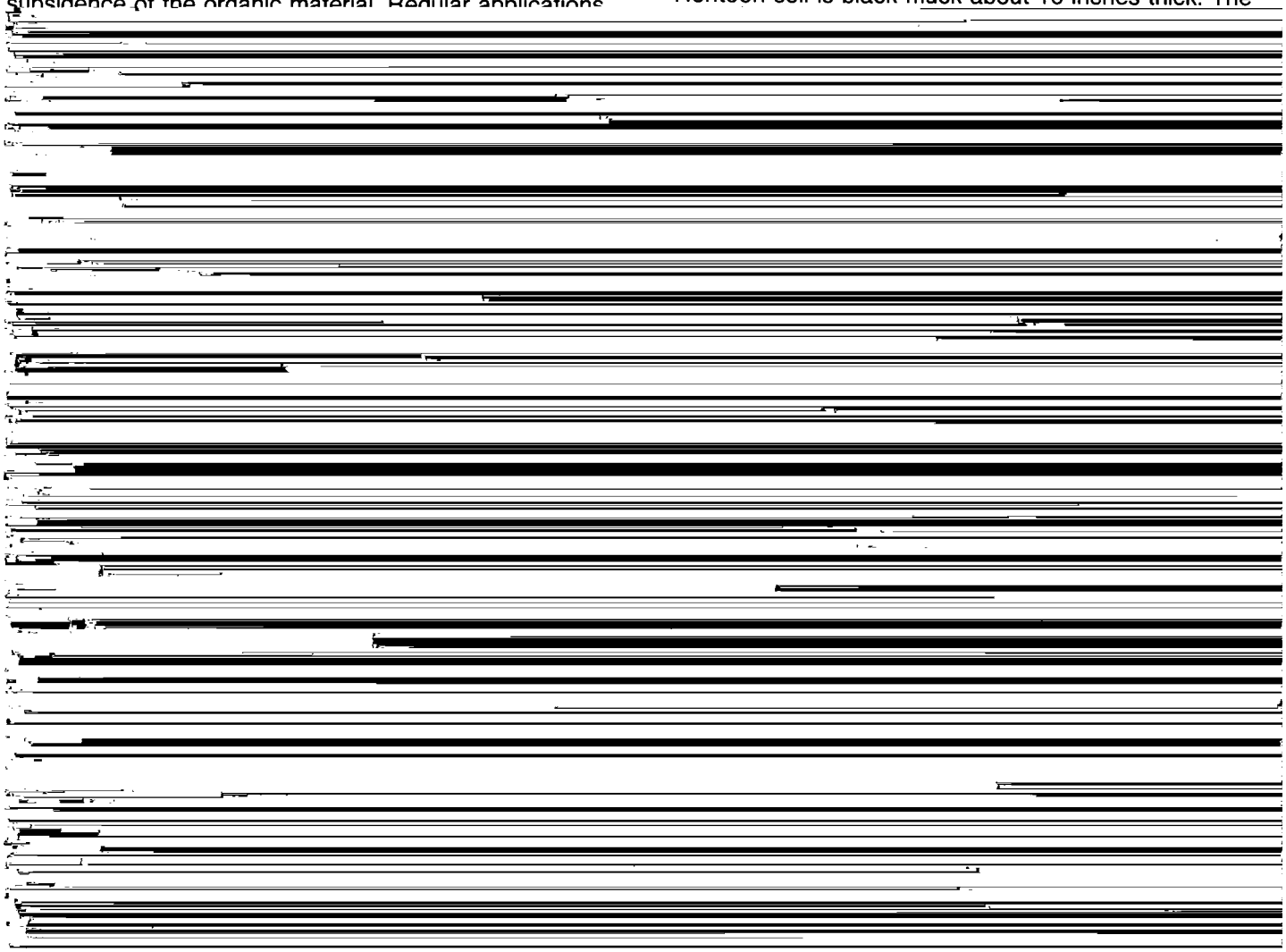
Under natural conditions, this soil is not suited to citrus trees. It is poorly suited even if intensive management practices, such as bedding of rows, are used and the water control system is adequate.

Under natural conditions, this soil is poorly suited to improved pasture grasses; however, if a water control system is installed to remove excess surface water after heavy rains, suitability is fair. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. The water control system should maintain the water table near the surface to prevent excess subsidence of the organic material. Regular applications

In 90 percent of the areas of this map unit, Samsula-Hontoon-Basinger association, depressional, and similar soils make up 84 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 16 percent of the mapped areas. Generally, the mapped areas consist of about 47 percent Samsula soil and similar soils, 31 percent Hontoon soil, and 14 percent Basinger soil and similar soils. The relative proportions of these soils may differ appreciably from one delineated body to another. The individual soils are generally large enough areas to be mapped separately, but in considering the present and predicted use, they were mapped as one unit.

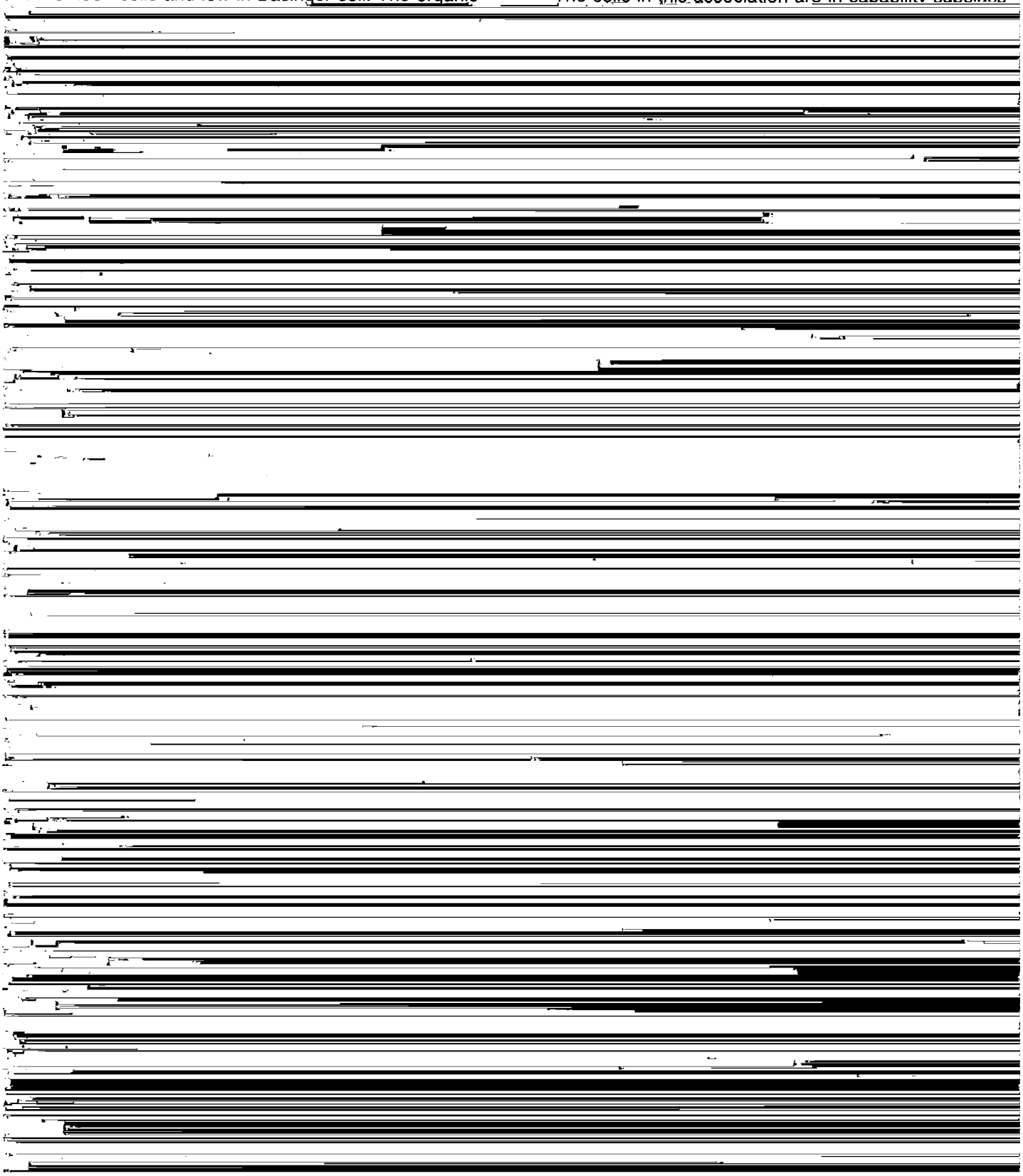
Typically, the surface layer of Samsula soil is black and dark reddish brown muck about 34 inches thick. The next layer, to a depth of about 40 inches, is black fine sand. The underlying material to a depth of about 80 inches is light gray fine sand. In the mapped areas are similar soils, but they have underlying material of fine sandy loam at a depth of 60 inches or more.

Typically, the upper part of the surface layer of Hontoon soil is black muck about 16 inches thick. The



and Hontoon soils and low in Basinger soil. The organic

The soils in this association are in capability subclass



adequate drainage system is difficult to establish because suitable drainage outlets are not available. However, if intensive management practices and soil-improving measures are used and if a water control system is installed to remove excess water rapidly, this soil is fairly suited to some vegetable crops. A specially designed and maintained water control system will remove excess water when crops are on the soil and will keep the soil saturated at all other times. Proper management practices include seedbed preparation and crop rotation. Soil-improving crops and crop residue should be used to control erosion and maintain the content of organic matter in the soil. Fertilizer and lime should be applied according to the need of the crop.

Under natural conditions, this soil is not suited to citrus trees. It is poorly suited even if intensive management

sand. The upper part of the underlying material, to a depth of about 36 inches, is grayish brown fine sand. The middle part, to a depth of about 52 inches, is light gray fine sand that has common dark brown mottles. The lower part to a depth of 80 inches or more is white fine sand that has common brown mottles. In the mapped areas are similar soils, but they have a surface layer that is less than 10 inches thick. In places are similar soils, but they have a surface layer that is more than 24 inches thick. In some higher positions on the landscape are similar soils, but they are moderately well drained.

Dissimilar soils included in mapping are Basinger and Ona soils in small areas.

In most years, a seasonal high water table is within 18 to 40 inches of the surface for 2 to 4 months and

The potential of this soil for the production of pine trees is moderately high. Equipment use, seedling mortality, and plant competition are the main concerns in management. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for sanitary facilities, shallow excavations, and recreational uses. It has moderate limitations for dwellings without basements, small commercial buildings, and local roads and streets. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. The rapid permeability of this soil can cause ground water pollution in areas of septic tank absorption fields. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. The sidewalls for shallow excavations

months. The permeability is rapid in the surface and subsurface layers and in the substratum, and it is moderate to moderately rapid in the subsoil. The available water capacity is low to very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. Natural fertility is low. The organic matter content is moderate to moderately low.

In most areas, this Smyrna soil has been left in natural vegetation. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite and urban development. The natural vegetation is longleaf pine and slash pine. The understory includes lopsided indiangrass, inkberry, saw palmetto, pineland threeawn, waxmyrtle, bluestem, panicum, and other grasses.

Under natural conditions, this soil is poorly suited to cultivated crops because of wetness and the sandy texture in the root zone. However, if a water control

facilities to prevent contamination of the water supplies. Fill material is needed for local roads and streets, small commercial buildings, and playgrounds. The sidewalls of shallow excavations should be shored, and water control measures should be used to minimize the wetness limitation. The sandy surface layer should be stabilized for recreational uses.

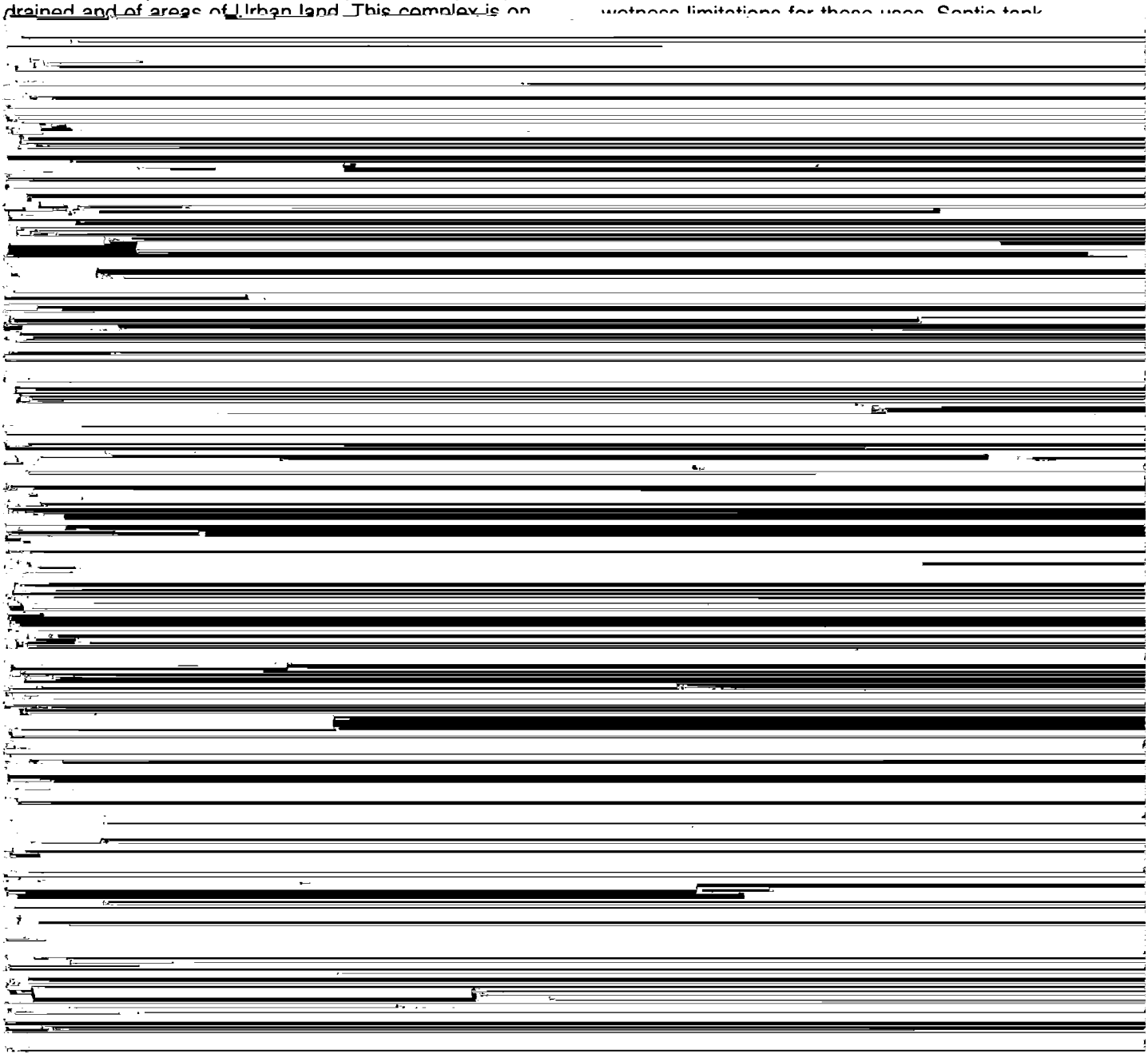
This Smyrna soil is in capability subclass IVw. The woodland ordination symbol for this soil is 10W.

45—Smyrna-Urban land complex. This complex consists of Smyrna soil that is nearly level and poorly drained and of areas of Urban land. This complex is on

low. The organic matter content is moderate to moderately low.

The soils in this map unit are not used for cultivated crops, citrus crops, improved pasture, or commercial trees. Smyrna soil in the Urban land part of this complex is used for lawns, vacant lots, or playgrounds, or it is left as open space. The Urban land part of this complex is used mostly for houses, streets, driveways, buildings, parking lots, or other similar uses.

The soils in this map unit have severe limitations for sanitary facilities and shallow excavations. Water control measures should be used to minimize the excessive wetness limitations for these uses. Septic tank



In most years, a seasonal high water table is at a depth of 40 to 80 inches for more than 6 months, and it recedes to a depth of more than 80 inches during extended dry periods. The permeability is very rapid throughout. The available water capacity is very low. Natural fertility and the organic matter content are very

This Tavares soil is in capability subclass IIIs. The woodland ordination symbol for this soil is 10S.

47—Tavares-Millhopper fine sands, 0 to 5 percent slopes. The soils in this map unit are nearly level to gently sloping and moderately well drained. These soils

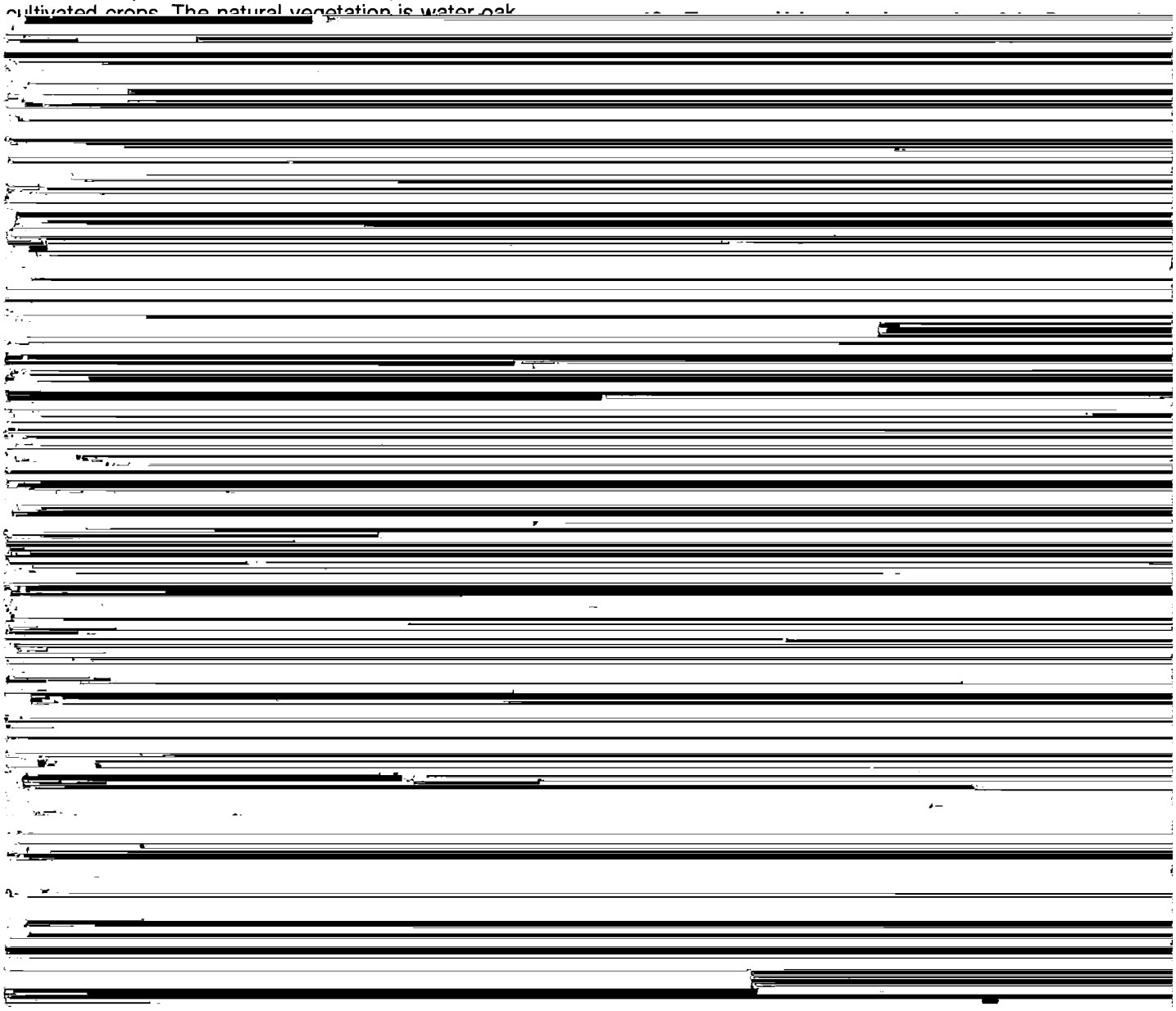
rainfall, the water table is at a depth of 30 to 40 inches for cumulative periods of 1 week to 3 weeks. The permeability of Tavares soil is very rapid. The permeability of Millhopper soil is rapid in the surface and subsurface layers and moderately rapid or moderate in the subsoil. The available water capacity of Tavares soil is very low. The available water capacity of Millhopper soil is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is very low in Tavares soil and low in Millhopper soil. Organic matter content is very low in Tavares soil and low or moderately low in Millhopper soil.

In most areas, the soils in this map unit are used for citrus crops or improved pasture or for homesite and urban development. In a few areas, they are used for cultivated crops. The natural vegetation is water oak

of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies.

These soils have severe limitations for sewage lagoons, trench sanitary landfills, shallow excavations, and recreational uses. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. Water control measures should be used for trench sanitary landfills. The sidewalls of shallow excavations should be shored. The sandy surface layer should be stabilized for recreational uses.

The soils in this map unit are in capability subclass IIIs. The woodland ordination symbol for this soil is 10S.



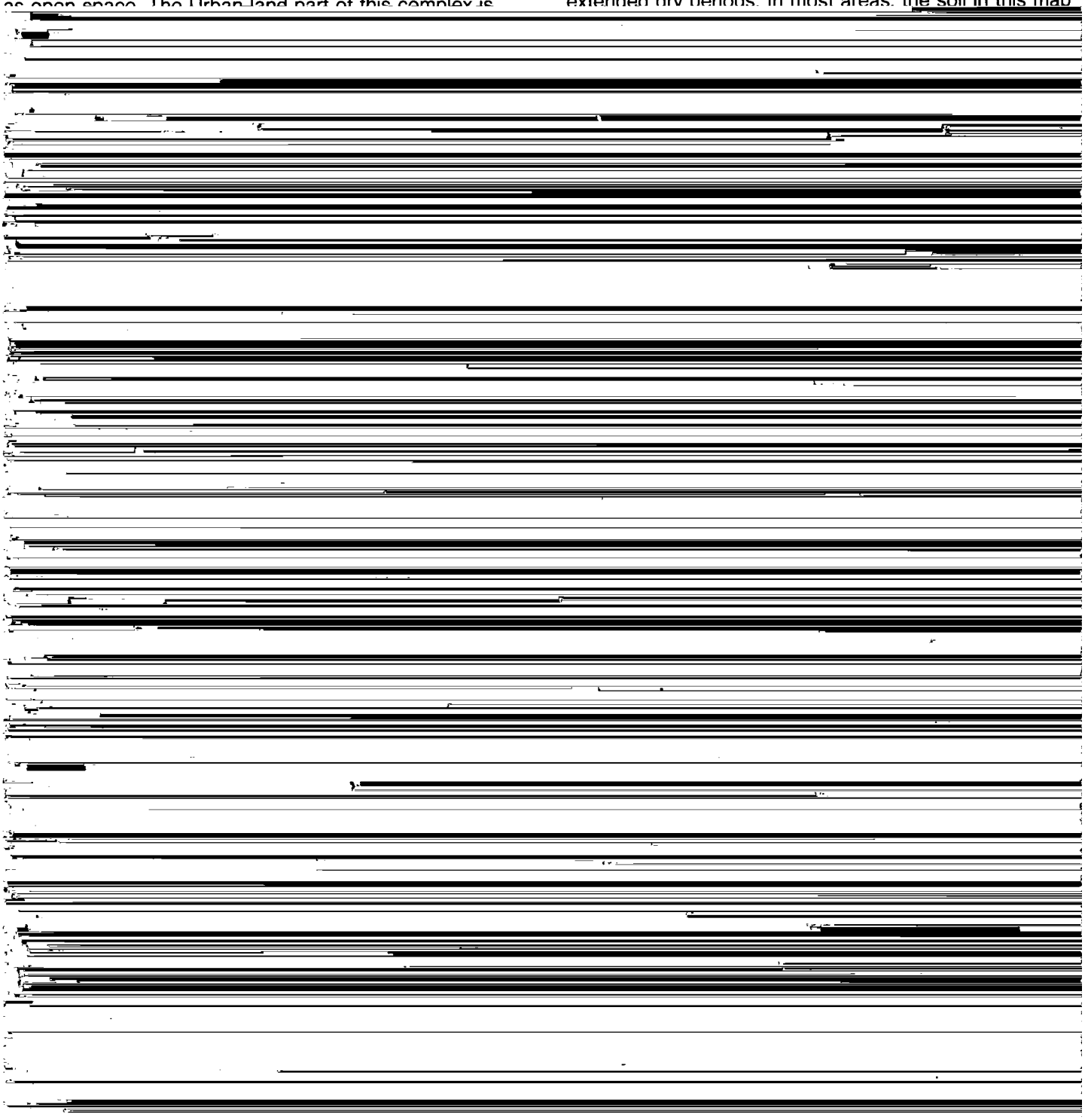
Natural fertility and the organic matter content are very low.

The soils in this map unit are not used for cultivated crops, citrus crops, improved pasture, or commercial trees. Tavares soil in the Urban land part of this complex is used for lawns, vacant lots, or playgrounds, or it is left as open space. The Urban land part of this complex is

similar soils, but they have thin layers of fibers from woody plants at a depth of 31 to 51 inches.

Dissimilar soils included in mapping are Gator and Okeelanta soils in small areas.

Under natural conditions, the water table is at or above the surface for most of the year except during extended dry periods. In most areas, the soil in this map



managed. The water control system should maintain the water table near the surface to prevent excess subsidence of the organic material. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor.

This soil is not suited to pine trees.

This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of ponding and excess humus. Water control measures should be used to minimize the excessive wetness limitation. Organic material, which has low soil strength, should be removed and backfilled with a soil material suitable for urban use. Constructing buildings on pilings can help prevent structural damage that is caused by soil subsidence. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The sidewalls of shallow excavations should be shored. Water control measures should be used to minimize the excessive wetness limitation. Mounding of septic tank absorption fields may be needed.

This Terra Ceia soil is in capability subclass IIIw and has not been assigned to a woodland group.

50—Urban land. This miscellaneous area is covered by such urban facilities as shopping centers, parking lots, industrial buildings, houses, streets, sidewalks, airports, and related urban structures. The natural soil cannot be observed. The slopes are dominantly less than 2 percent but range to 5 percent.

In areas mapped as Urban land, 85 percent or more of the surface is covered by asphalt, concrete, buildings, and other impervious surfaces that obscure or alter the soils so that their identification is not feasible.

Included in this map unit are moderately urbanized areas where structures cover 50 to 85 percent of the surface. Candler, Florahome, Millhopper, Ona, Pomello, St. Lucie, Smyrna, Tavares, and Wabasso soils mostly are used for lawns, playgrounds, parks, and open areas. These soils generally have been altered by grading and shaping or have been covered by about 12 inches of fill material. This fill material consists of sandy and loamy material that may contain fragments of limestone and shell. The individual areas of soils in this map unit are too small to map separately at the scale used for the maps in the back of this publication.

Drainage systems have been established in most areas of Urban land. Depth to the seasonal high water

In 90 percent of areas mapped as Wabasso fine sand, Wabasso soil and similar soils make up 96 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 4 percent of the mapped areas.

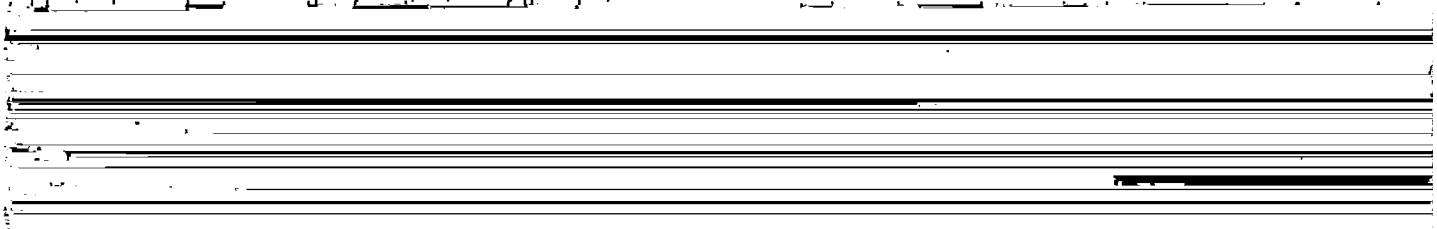
Typically, this soil has a surface layer of black fine sand about 3 inches thick. The subsurface layer, to a depth of about 18 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 21 inches, is black fine sand. The middle part, to a depth of about 45 inches, is very pale brown sandy clay loam that has common yellowish brown mottles. The lower part, to a depth of 70 inches, is light gray sandy clay loam that has common yellowish brown mottles. The substratum to a depth of 80 inches or more is light brownish gray loamy sand. In the mapped areas are similar soils, but some of these soils have a subsoil at a depth of 30 inches, in some soils the lower part of the subsoil is at a depth of more than 40 inches, and in some the upper part of the subsoil is weakly coated with colloidal organic matter.

Dissimilar soils included in mapping are Immokalee and Smyrna soils in small areas.

In most years, a seasonal high water table is at a depth of less than 10 inches for 1 month to 5 months. It recedes to a depth of more than 40 inches during extended dry periods. The permeability is rapid in the surface and subsurface layers and in the substratum. It is moderate in the sandy part of the subsoil and slow or very slow in the loamy part. The available water capacity is very low in the surface and subsurface layers, medium in the subsoil, and low in the substratum. Natural fertility is low. The organic matter content is moderate to moderately low.

In most areas, this Wabasso soil has been left in natural vegetation. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite and urban development. The natural vegetation is longleaf pine and slash pine. The understory includes lopsided indiangrass, inkberry, saw palmetto, pineland threeawn, waxmyrtle, bluestem, panicum, and other grasses.

This soil has very severe limitations for cultivated crops because of wetness and the sandy texture in the root zone. However, if a water control system is installed and soil-improving measures are used, this soil is fairly suited to many vegetable crops. A water control system is needed to remove excess water in wet periods and to provide for subsurface irrigation in dry periods. Soil-improving crops and crop residue should be used to



beds lowers the effective depth of the water table. A close-growing cover crop between tree rows is needed to protect the soil from blowing. Regular applications of lime and fertilizer are needed.

This soil has good suitability for improved pasture grasses and hay crops. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. Water control measures should be used to remove the excess surface water after heavy rains. Regular applications of fertilizer and lime are needed. Overgrazing should be prevented.

The potential of this soil for the production of pine trees is moderately high. Equipment use, seedling mortality, and plant competition are the main concerns in management. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for dwellings without basements, small commercial buildings, local roads and streets, sewage lagoons, trench sanitary landfills, septic tank absorption fields, recreational areas, and shallow excavations. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. The sealing or lining of a sewage lagoon or trench sanitary landfill can reduce excessive seepage. The sandy surface layer should be stabilized for

that obscure or alter the soils so that their identification is not feasible.

Included in mapping are small areas of Immokalee, Pineda, and Smyrna soils. Also included are some soils that are similar to Wabasso soil, but in some of these soils, the upper part of the subsoil extends to a depth of more than 30 inches, in some the lower part of the subsoil extends to a depth of more than 40 inches, and in some the upper part of the subsoil is weakly coated with colloidal organic matter.

Some areas of Wabasso-Urban land complex have been modified by grading and shaping. The sandy and loamy material from drainage ditches or fill material that is hauled in is often used to fill the low areas. In undrained areas, a seasonal high water table is at a depth of 10 to 40 inches for more than 6 months and at a depth of less than 10 inches for 1 month to 2 months. It recedes to a depth of more than 40 inches during extended dry periods. Drainage systems have been established in most areas. Depth to the high water table is dependent upon the functioning of the drainage system. The permeability of Wabasso soil is rapid in the surface and subsurface layers and in the substratum. It is moderate in the sandy part of the subsoil and slow or very slow in the loamy part. The available water capacity is very low in the surface and subsurface layers and in

The soils in this map unit have not been assigned to a capability subclass or to a woodland group.

53—Wauberg fine sand. This soil is nearly level and poorly drained. It is in low areas on the flatwoods. The slopes are nearly smooth to slightly concave and range from 0 to 2 percent.

In 95 percent of areas mapped as Wauberg fine sand, Wauberg soil and similar soils make up 87 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 13 percent of the mapped areas.

Typically, the upper part of the surface layer of this soil is black fine sand about 5 inches thick. The lower part, to a depth of about 8 inches, is very dark gray fine sand. The subsurface layer, to a depth of about 28 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 52 inches, is dark gray sandy clay loam that has common dark brown mottles. The lower part, to a depth of about 60 inches, is gray sandy clay loam that has common white mottles. The substratum to a depth of about 80 inches or more is light gray sandy clay. In the mapped areas are similar soils, but they have a surface layer that is more than 9 inches thick. In some places are similar soils, but they have a surface layer of mucky fine sand, and also other similar soils, but these soils have a subsoil within 20 inches of the surface.

Dissimilar soils included in mapping are Wabasso soils in small areas. Also included are areas of soils that have a subsoil at a depth of more than 40 inches. Other dissimilar soils included in the mapped areas have a thick, dark surface layer. These soils are in depressions.

In most years, a seasonal high water table is within 12 inches of the surface for a period of about 6 months, and it recedes to a depth of more than 40 inches during extended dry periods. The water table is above the surface for short periods after heavy rains. The permeability is rapid in the surface and subsurface layers, very slow in the upper part of the subsoil and the substratum, and moderately slow in the lower part of the subsoil. The available water capacity is low to medium in the surface layer, subsoil, and substratum. It is very low to low in the subsurface layer. Natural fertility is low. The organic matter content is moderately low to moderate.

In most areas, this Wauberg soil has been left in natural vegetation. In a few areas, it is used for improved pasture or cultivated crops. The natural vegetation is mixed stands of pondcypress, red maple, laurel oak, sweetgum, slash pine, and longleaf pine. The understory includes bulrush, waxmyrtle, sand cordgrass, creeping bluestem, chalky bluestem, maidencane, panicum, and various other weeds and grasses.

Under natural conditions, this soil is poorly suited to cultivated crops. However, it is well suited to vegetable crops if a water control system is installed to remove excess water rapidly and to provide for subsurface irrigation. Soil-improving crops and crop residue should be used to control erosion and to maintain the content of organic matter in the soil. Seedbed preparation should include the bedding of rows. Fertilizer should be applied according to the need of the crop.

Suitability of this soil for citrus trees is fair in areas that are relatively free of freezing temperatures and if a water control system is installed to maintain the water table at a depth of about 4 feet. Planting trees on beds provides good surface drainage. A close-growing cover crop between tree rows is needed to protect the soil from blowing. Regular applications of fertilizer are needed.

This soil is well suited to improved pasture grasses. Pangolagrass, improved bahiagrass, and white clover grow well if properly managed. Management practices should include a water control system to remove excess surface water after heavy rains, regular applications of fertilizer, and controlled grazing.

The potential of this soil for the production of pine trees is high. Water control measures are necessary to remove excess surface water. Bedding the tree rows helps to minimize the wetness limitation. Wetness, slow internal drainage, seedling mortality, and plant competition are the main concerns in management. Slash pine is an adapted tree to plant on this soil.

This soil has severe limitations for building site development, sanitary facilities, and recreational uses. Water control measures should be used to minimize the excessive wetness limitation. Fill material is needed in most areas for building site development. Mounding of the septic tank absorption field can help to minimize the excessive wetness limitation. Increasing the size of the absorption field can minimize the limitation caused by the slow permeability or very slow permeability of the subsoil and substratum. The sandy surface layer should be stabilized for recreational uses. The sidewalls of shallow excavations should be shored. Water control measures should be used to minimize the wetness limitation.

This Wauberg soil is in capability subclass IIIw. The woodland ordination symbol for this soil is 11W.

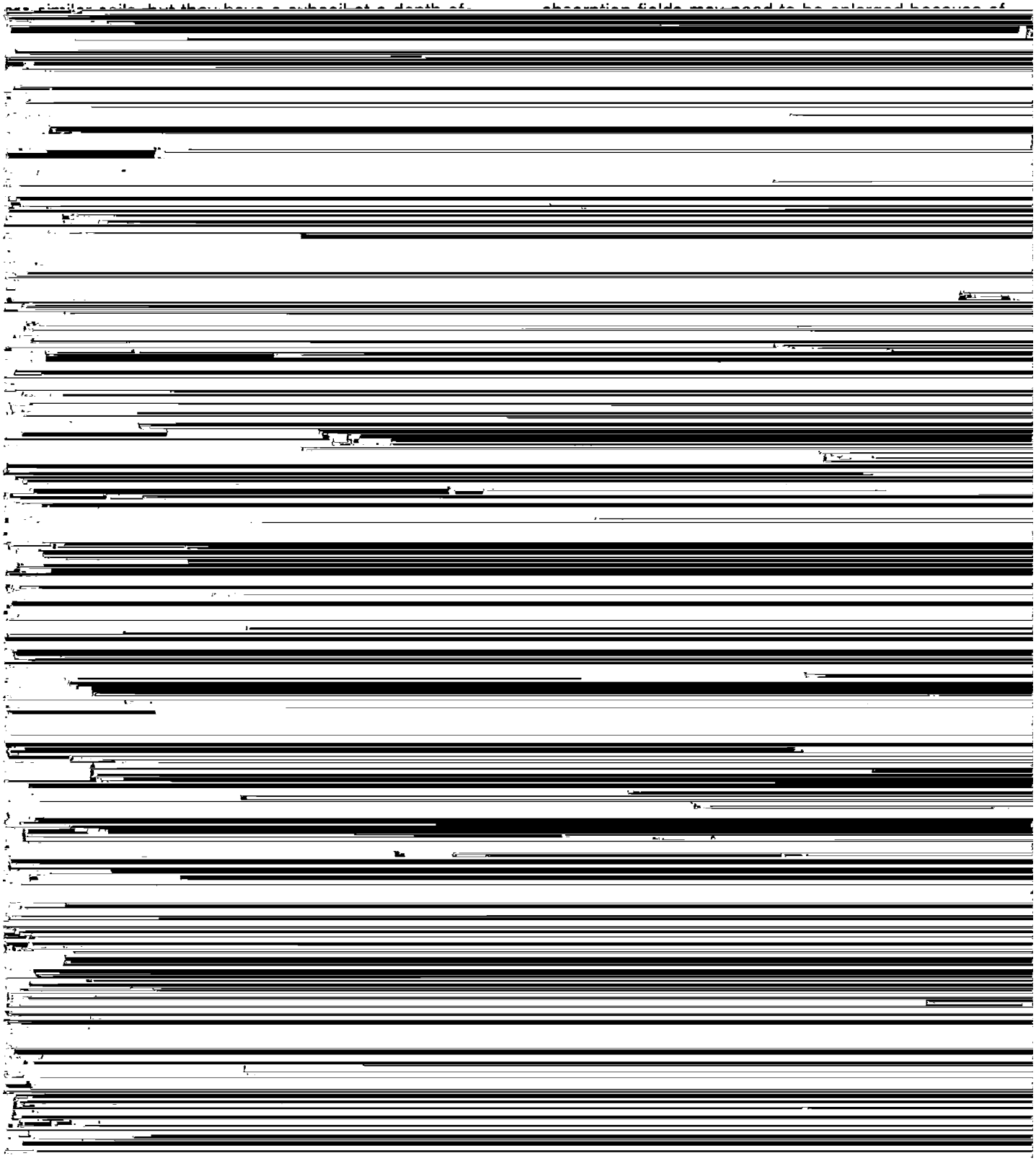
54—Zolfo fine sand. This soil is nearly level and somewhat poorly drained. It is in broad, slightly higher positions adjacent to the flatwoods. The slopes are smooth to convex and range from 0 to 2 percent.

In 90 percent of areas mapped as Zolfo fine sand, Zolfo soil and similar soils make up 77 to 93 percent of the mapped areas. Dissimilar soils make up 7 to 23 percent of the mapped areas.

Typically, this soil has a surface layer of dark grayish brown fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 23 inches, is grayish brown fine sand. The middle part, to a depth of about 38 inches, is light brownish gray fine sand that has common brownish yellow mottles. The lower part, to a depth of about 55 inches, is very pale brown fine sand that has common brownish yellow mottles. The upper part of the subsoil, to a depth of about 71 inches, is

brown fine sand. The lower part to a depth of 80 inches or more is dark brown fine sand. In the mapped areas are similar soils, but they have a subsoil at a depth of

and streets. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of



depth to the water table is dependent upon the functioning of the drainage system. In undrained areas, a seasonal high water table is at a depth of 24 to 40 inches for 2 to 6 months and is at a depth of 10 to 24 inches during periods of high rainfall. It recedes to a depth of about 60 inches during extended dry periods. The permeability of Zolfo soil is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility and the organic matter content are low.

The soils in this map unit are not used for cultivated crops, improved pasture, or commercial trees. Zolfo soil in the Urban land part of this complex is used for lawns, vacant lots, or playgrounds, or it is left as open space. The Urban land part of this complex is used mostly for houses, streets, driveways, buildings, parking lots, or other similar uses.

The soils in this map unit are well suited to dwellings without basements, small commercial buildings, and local roads and streets. Water control measures should be used to minimize the excessive wetness in undrained areas.

The soils in this map unit have severe limitations for sanitary facilities, shallow excavations, and recreational uses. Water control measures should be used to minimize the excessive wetness limitations for these uses. The rapid permeability of the soils can cause ground water pollution in areas of septic tank absorption fields. If the density of housing is moderate to high, a community sewage system can help prevent contamination of the water supplies. The sealing or lining of a sewage lagoon or trench sanitary landfill with impervious soil material can reduce excessive seepage. The proximity to a stream or aquifer recharge area should be considered in the placement of sanitary facilities to prevent contamination of the water supplies. The sidewalls of shallow excavations should be shored. The sandy surface layer should be stabilized for recreational uses. Droughtiness is a problem during extended dry periods. The selection of drought-tolerant vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Regular applications of fertilizer are needed to maintain lawns and landscape vegetation.

The soils in this map unit have not been assigned to a capability subclass or to a woodland group.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the 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 that is in harmony with nature.

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

No soils in Orange County meet the requirements for prime farmland.

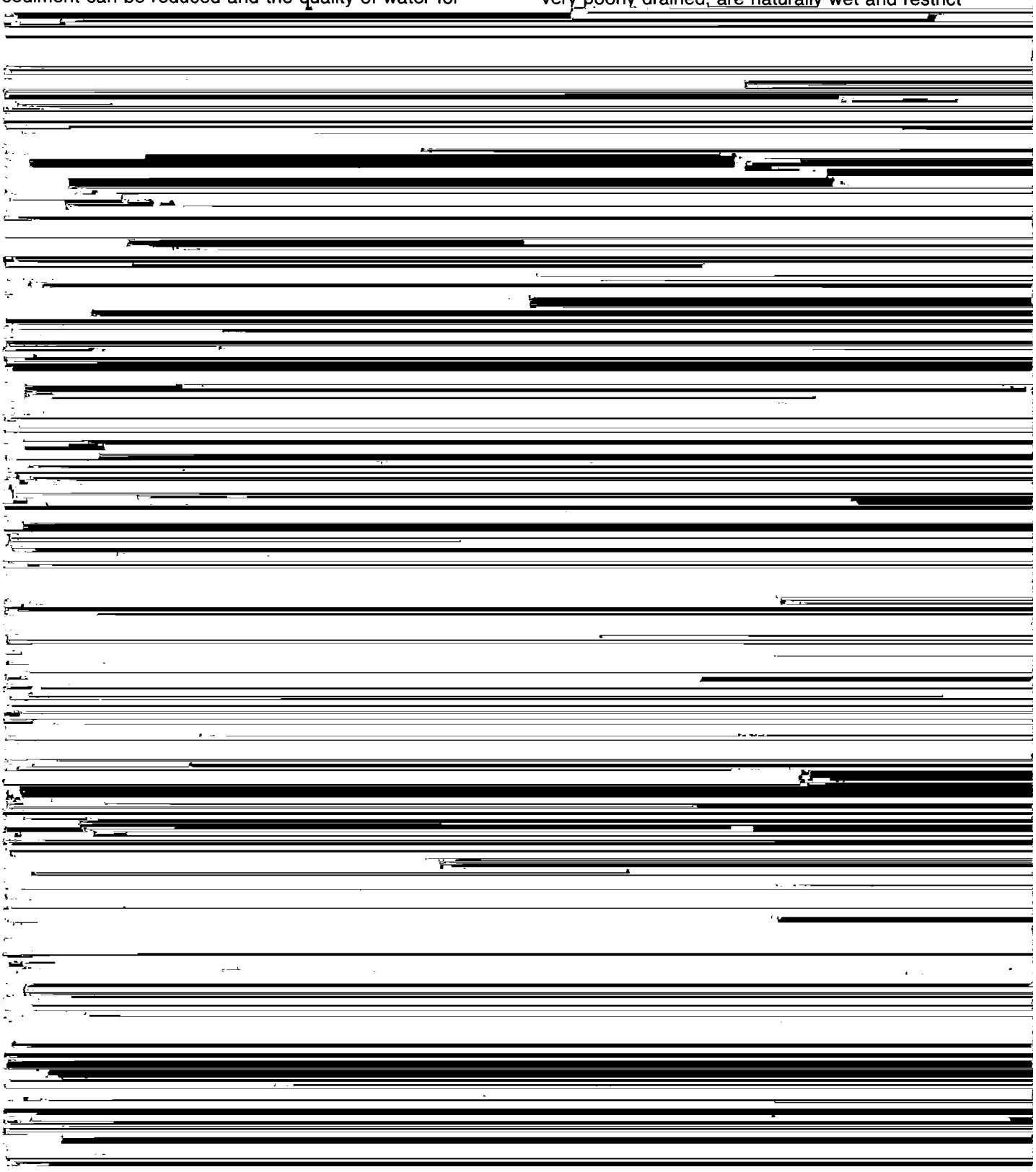
Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Orange County is experiencing rapid urbanization. Acreage in crops, pasture, and woodland has gradually decreased as more and more land is used for urban development. However, large areas of productive land remain in agricultural use. It is expected that the urbanization pressures will continue for some time, and the amount of land devoted to agriculture will continue to decline. Natural disasters, such as the severe Christmas freeze of 1983 (table 2), will also contribute to the decline of agricultural land.

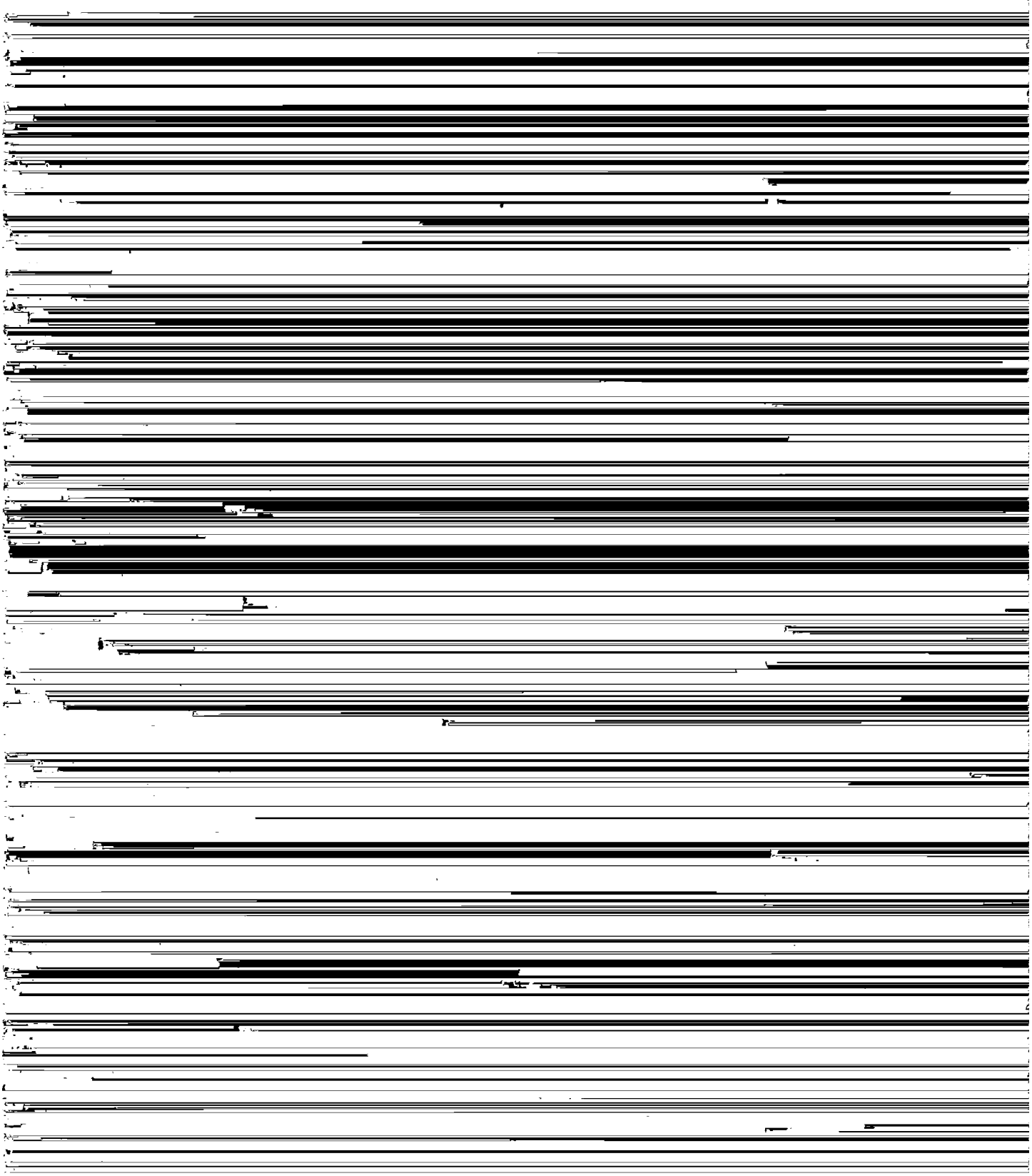
Some of the agricultural land in Orange County is classified as unique and special. Soils, such as the Gator, Okeelanta, and Terra Ceia soils that occur north of Lake Apopka, have severe limitations for urban uses. These soils on agricultural land will be protected from the pressures of urbanization by the nature of their limitations. The citrus growing areas and pasturelands

erosion is controlled, the pollution of streams by sediment can be reduced and the quality of water for

Chobee, Floridana, Hontoon, and Samsula soils that are very poorly drained, are naturally wet and restrict



used for vegetable crops. Immokalee, Ona, Pompano, and



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 *(28)* shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for 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

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production. There are no class VIII soils in Orange County.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *w* or *s,* to the class numeral, for example, IIIw. The letter *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

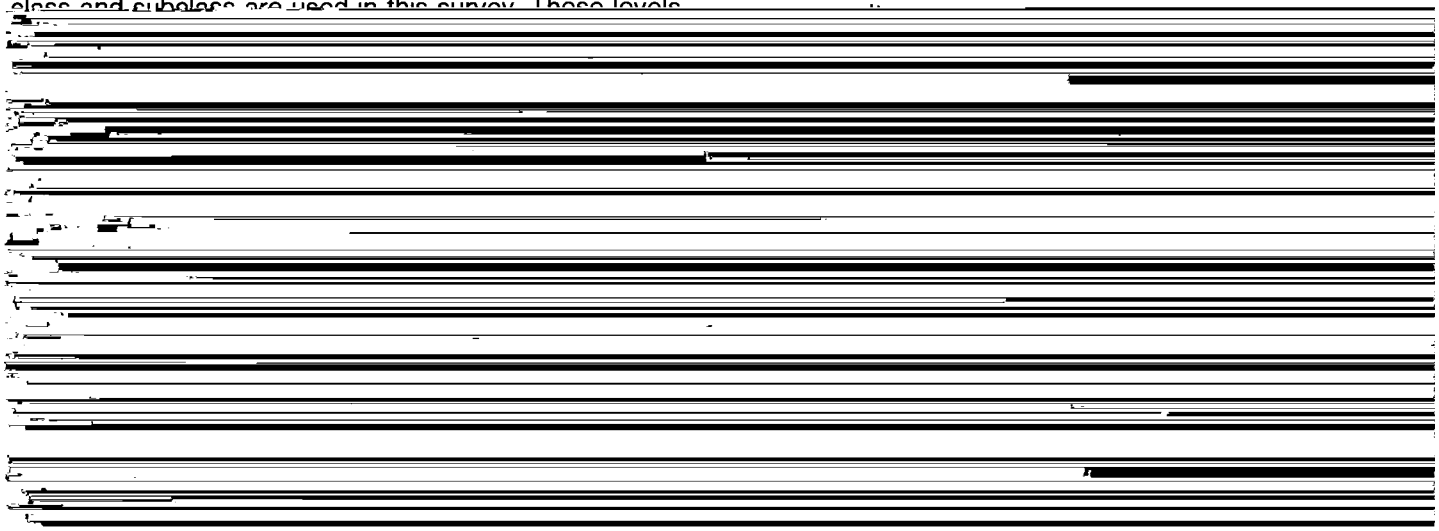
There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w* or *s*.

The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

John Koehler, Orange County forester, Division of Forestry, Florida Department of Agriculture and Consumer Service, helped to prepare this section.

According to the latest statistics, approximately 179,500 acres in Orange County is commercial forest land *(27, 34, 42)*. This represents about 29 percent of the county. Grazing is the main use of these woodlands, and timber management is a secondary, less intensive use. Countywide, native grasses are productive because of low tree densities per acre. The cattle industry thrives



red maple, sweetbay, and loblolly bay *(6, 22, 36)*. Occasionally, live oak, water oak, and laurel oak will grow on the fringes. Sound forest management practices that include hardwood management will produce trees of suitable size, quantity, and quality for timber production.

The excessively drained and well drained soils on the uplands, such as Apopka, Candler, and Lake, support sand pine, longleaf pine, and turkey oak. Bluejack oak, post oak, and Chapman oak also grow on these soils. In many of these areas, the trees were removed and the soils are now used for improved pasture and citrus crops.

Timber management in Orange County can be increased by combining resource management practices to create multiple products rather than single products. Many of the same management practices that are used

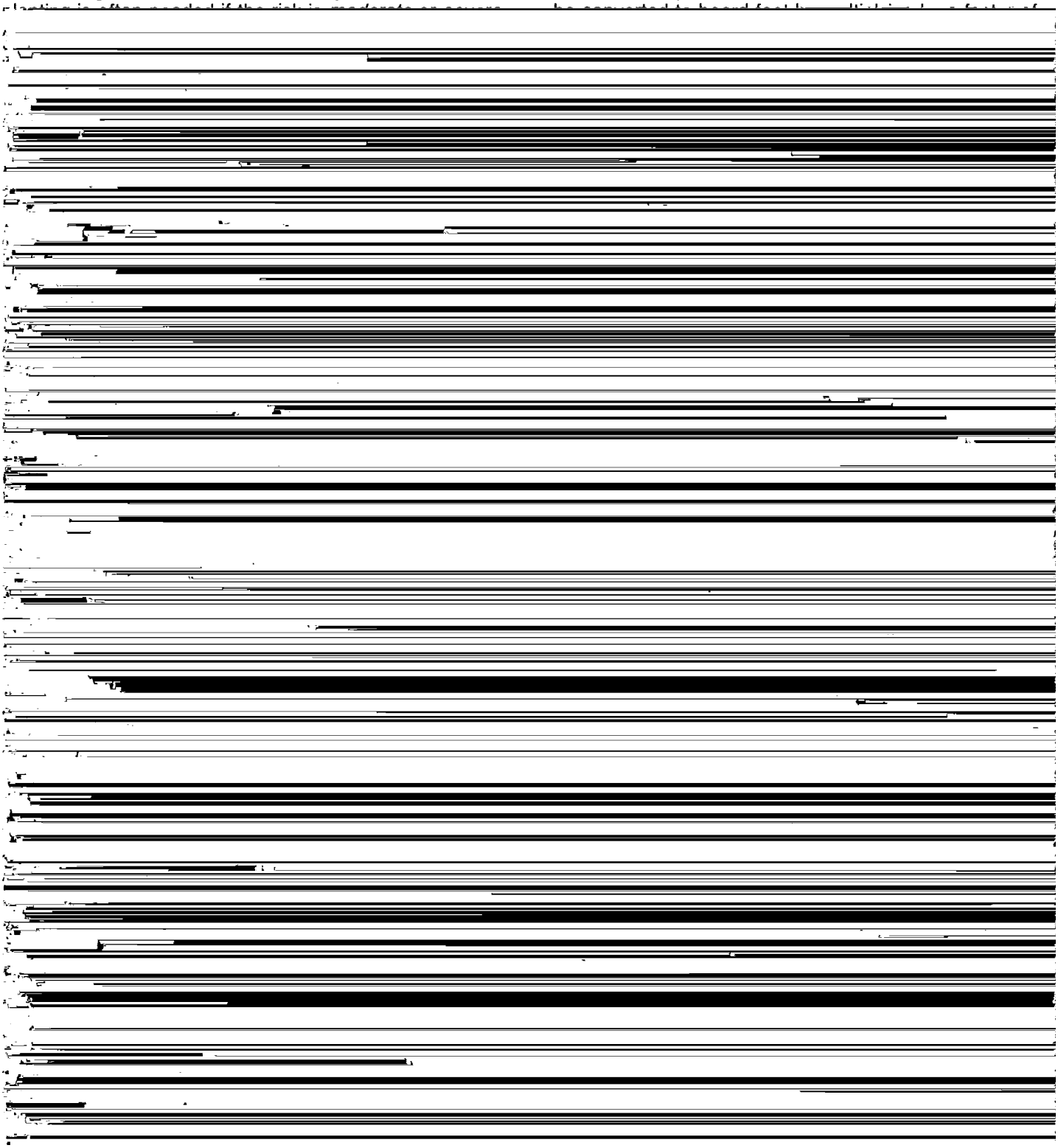
productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation for use and management. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *S* indicates a dry, sandy soil. The letter *A* indicates a soil that has no significant restrictions or limitations for forest use and management. If a soil has more than one limitation, the priority is as follows: W and S.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation activities or harvesting operations expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions.

may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing surface drainage, or providing artificial shade for seedings. Reinforcement

cubic meters per hectare per year. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. In order to convert cubic feet per acre to cords per acre, divide the cubic feet by 85. It can



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 7, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations, if any, 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 7 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

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

Wildlife Habitat

John F. Vance, biologist, Soil Conservation Service, helped to prepare this section.

Wildlife is a valuable resource of Orange County. Urban development, especially in the Orlando area, and intensive agricultural development in the Zellwood area have been detrimental to wildlife habitat, but less developed areas still support a large variety and number of wildlife.

The main game species include white-tailed deer, squirrel, turkey, feral hogs, bobwhite quail, rail, and waterfowl. Nongame species include raccoon, rabbit, armadillo, opossum, skunk, bobcat, gray and red foxes, otter, and a variety of songbirds, wading birds, shore birds, woodpeckers, reptiles, and amphibians. A wide variety of freshwater fish provides good fishing, especially in the St. Johns River.

Good habitat for wildlife is available in the Wekiwa Springs State Park, Rock Springs Runs State Preserve, and the Tosahatchee State Reserve, which are administered by the Florida Department of Natural Resources. Numerous lakes and marshes provide

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, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, grain sorghum, and browntop millet.

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, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are perennial peanut, bahiagrass, clover, and sesbania.

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, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, partridge pea, switchgrass, ragweed, pokeweed, and low panicums.

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, wild grape, cherry, sweetgum, cabbage palm, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are wild plum, hawthorn, and waxmyrtle.

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, 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, and slope. Examples of wetland plants are smartweed, wild millet, 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 wetness, 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, dove, 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, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, egrets, herons, otter, and alligators.

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet, and 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.

State and local ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this

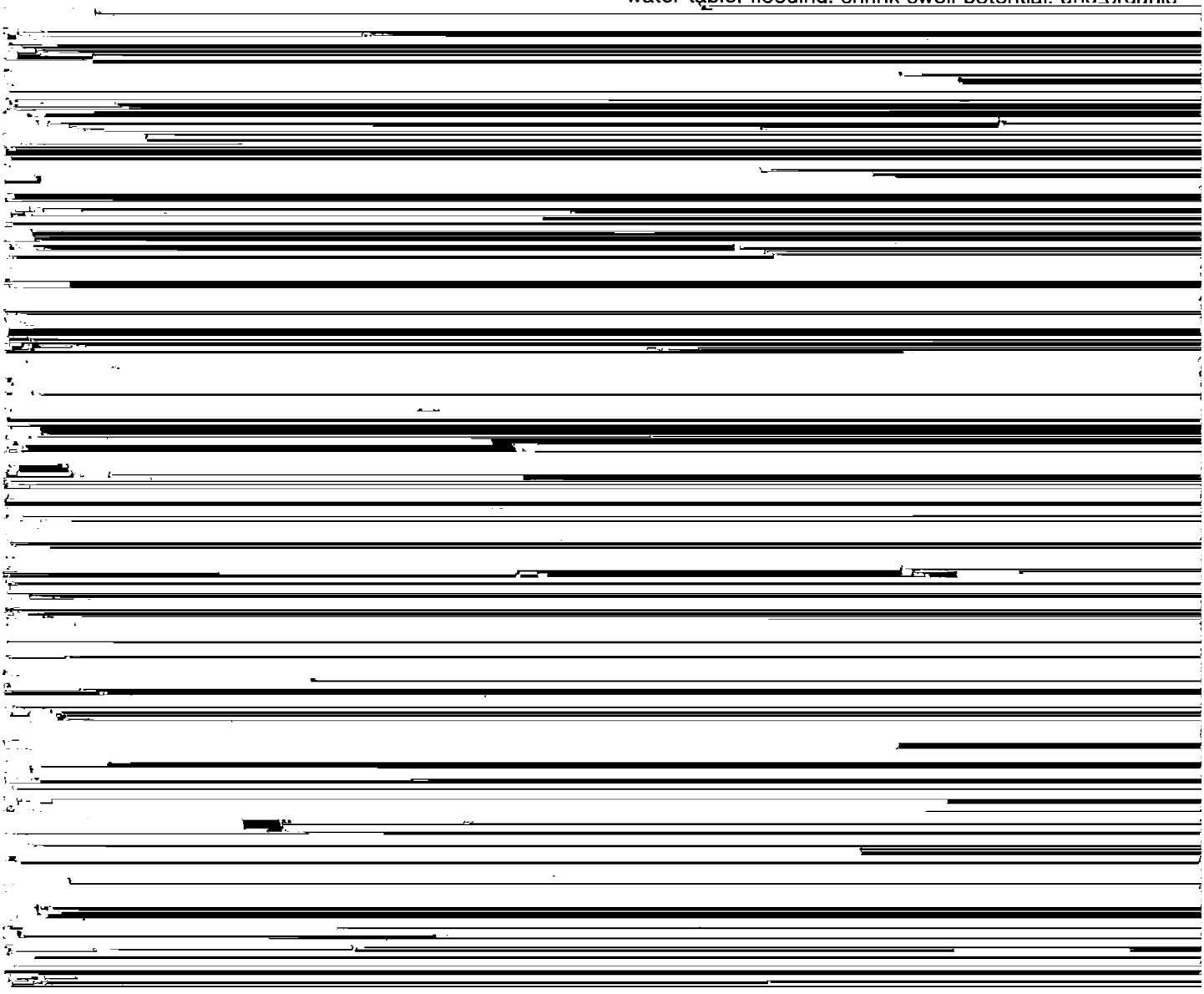
section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to: evaluate the potential of areas for residential, commercial, industrial, and

filling, and compacting is affected by depth to a cemented pan or a very firm dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and 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



or minimize the limitations; and *severe* if one or more soil property or site feature is unfavorable for the use, and if overcoming the unfavorable properties requires special design, extra maintenance, or alteration.

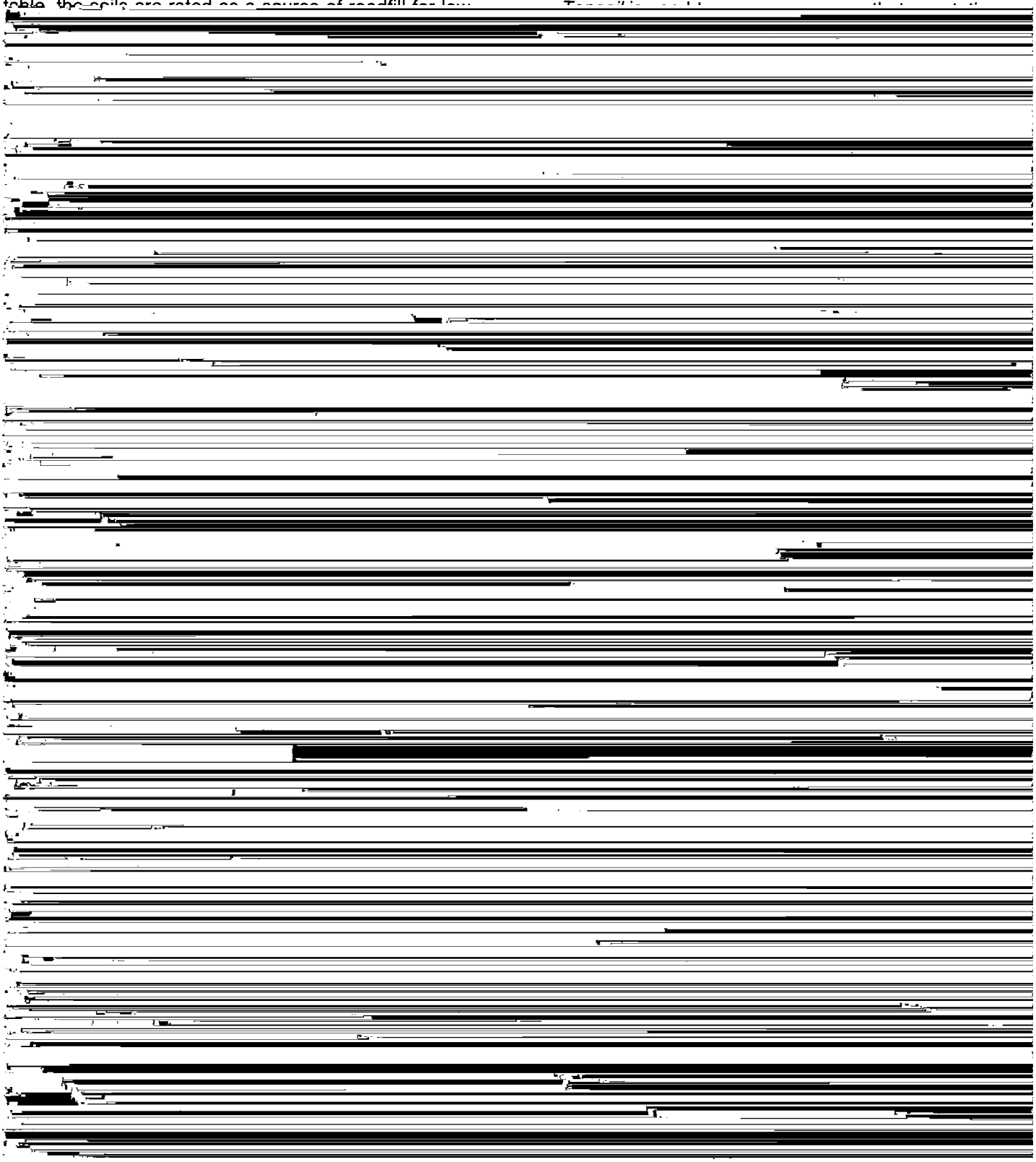
Table 10 also shows the suitability of the soils for use as daily cover for landfills. A rating of *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and

lagoon because it inhibits aerobic activity. Slope and cemented pans can cause construction problems.

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

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

source. Coarse fragments of soft bedrock, such as marl, are not considered to be sand and gravel.



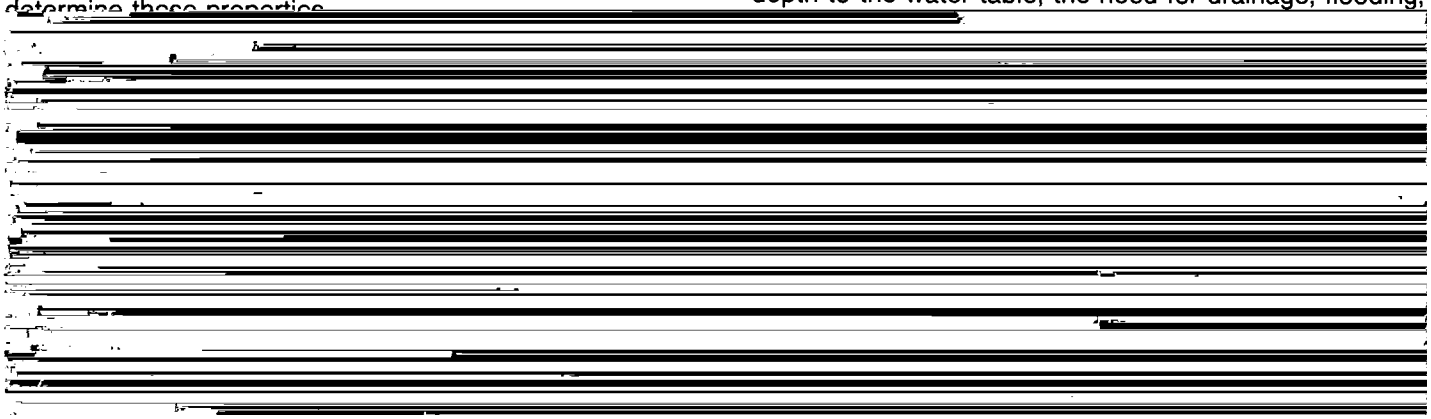
potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

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 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.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to a cemented pan or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by depth to a cemented pan, 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. 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,



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 *(24, 35)*. 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 *(1, 2, 35)*.

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 13 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.

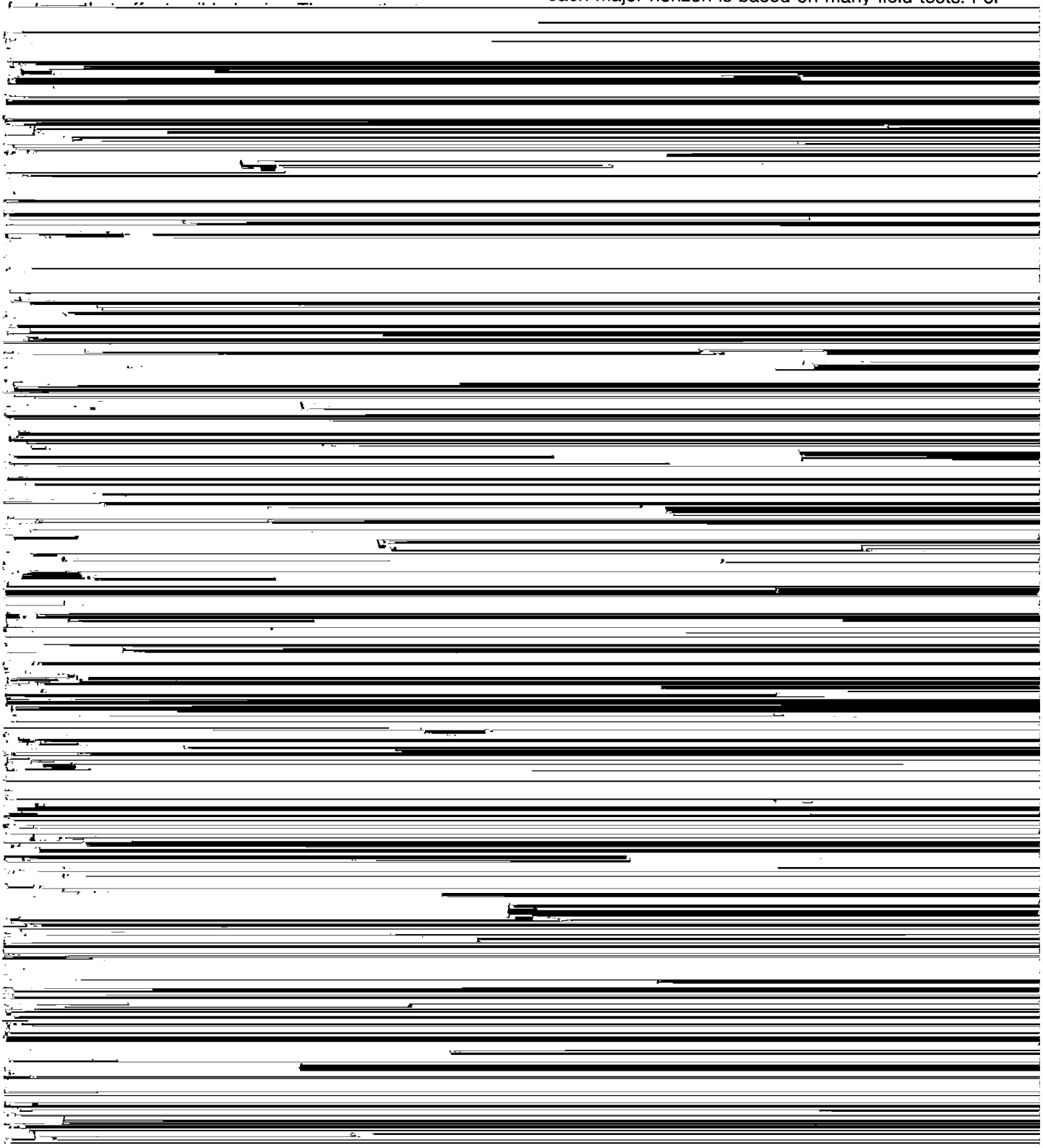
Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are 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.

Physical and Chemical Properties

Table 14 shows estimates of some characteristics and

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



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

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.

infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations *(23, 26, 29)*.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils 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

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as *none, occasional,* or *frequent. None* means that flooding is not probable. *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). Duration is expressed as *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. June-February, for example, means that flooding can occur during the period June through February. About two-

plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

Cemented pans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated, or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated, or more than 18 inches thick if discontinuous or fractured. Such a pan is

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(32)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 16 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.

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 sandy, siliceous, hyperthermic Typic Haplaquods.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface

and Tavares soils are moderately well drained. Lochloosa soils are somewhat poorly drained. Millhopper soils are moderately well drained.

Typical pedon of Apopka fine sand, in an area of Candler-Apopka fine sands, 5 to 12 percent slopes; in a field; about 1.5 miles east of Zellwood, 920 feet north and 2,000 feet west of the southeast corner of sec. 23, T. 20 S., R. 27 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) fine sand; weak fine crumb structure; few fine roots; slightly acid; clear wavy boundary.
E1—5 to 50 inches; very pale brown (10YR 7/3) fine sand; single grained; loose; few fine roots; many uncoated sand grains; medium acid; gradual wavy boundary.
E2—50 to 69 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; many fine roots; many uncoated sand grains; medium acid; abrupt wavy boundary.
Bt—69 to 80 inches; reddish yellow (7.5YR 6/6) sandy clay loam; weak fine subangular blocky structure; firm; few fine roots; few distinct red (2.5YR 5/8) clay films on faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to medium acid

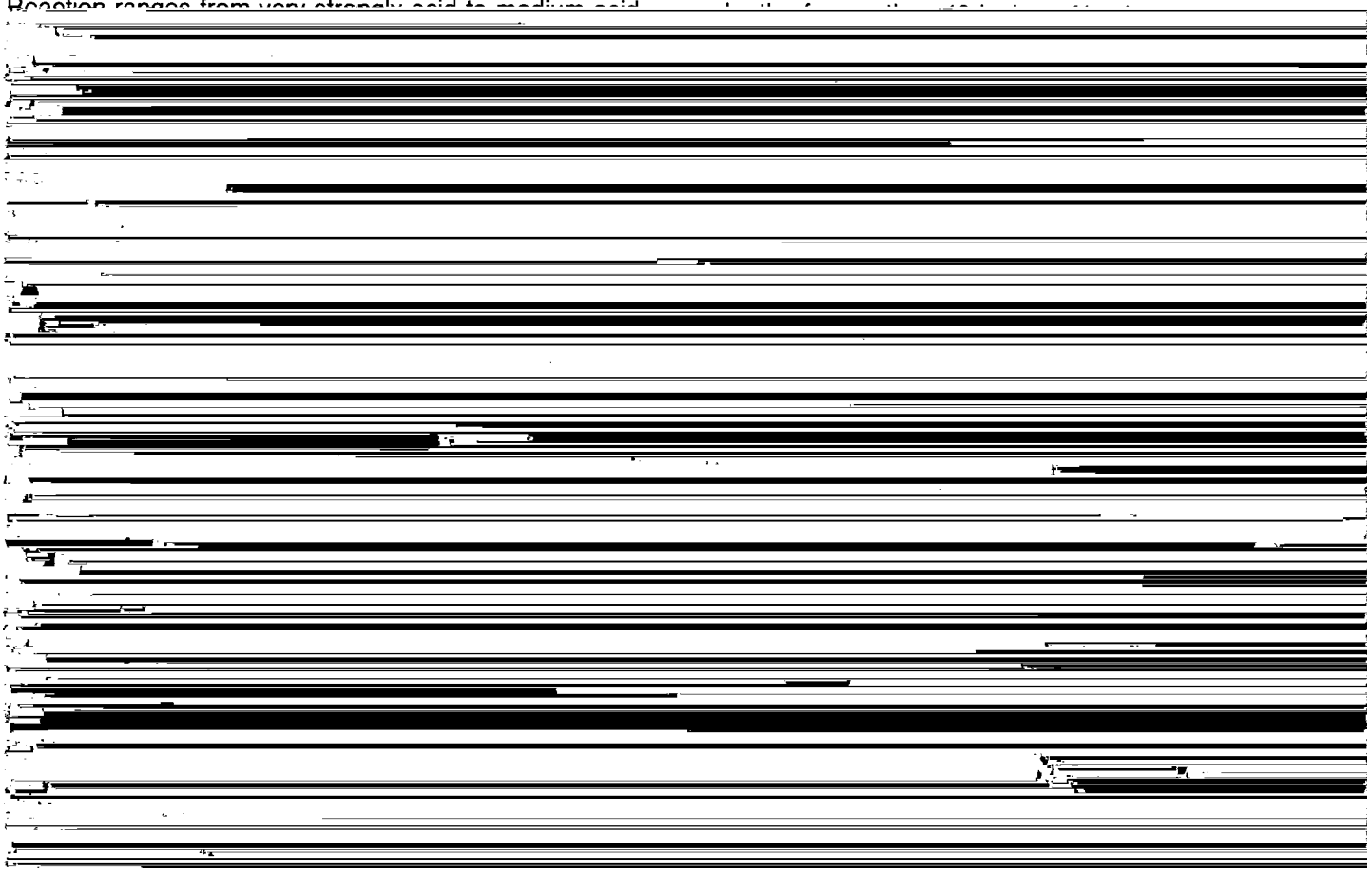
Typical pedon of Archbold fine sand, 0 to 5 percent slopes; in a wooded area; about 5 miles north and 2 miles west of Christmas, 80 feet east and 420 feet north of the center of sec. 6, T. 22 S., R. 33 E.

A—0 to 2 inches; dark gray (10YR 4/1) fine sand; single grained; loose; many fine and medium roots; mixture of uncoated sand grains and organic material, salt-and-pepper appearance; strongly acid; diffuse wavy boundary.
C—2 to 80 inches; white (10YR 8/1) fine sand; single grained; loose; few fine and medium roots, decreases with depth; strongly acid.

Reaction ranges from slightly acid to extremely acid. The texture is sand or fine sand. The content of silt and clay is 5 percent or less between depths of 10 and 40 inches.

The A or Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. Many pedons have clean white sand grains interspersed with organic matter that has a salt-and-pepper appearance. The thickness of the A horizon ranges from 2 to 5 inches.

The C horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. In some pedons, the C horizon has hue of 10YR, value of 6, and chroma of 1 or 2 at a



Bh/E—25 to 35 inches; dark reddish brown (5YR 3/3) fine sand, (Bh); grayish brown (10YR 5/2) fine sand, (E); single grained; nonsticky and nonplastic; strongly acid; gradual wavy boundary.
C—35 to 80 inches; light gray (10YR 6/1) fine sand; single grained; nonsticky and nonplastic; strongly acid.

Reaction is very strongly acid or strongly acid.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1. The texture is fine sand, sand, or mucky fine sand. The thickness of this horizon ranges from 4 to 7 inches.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. In some pedons, this horizon has dark grayish brown stains along root channels. The texture is fine sand or sand. The thickness of this horizon ranges from 15 to 28 inches.

The Bh part of the Bh/E horizon has hue of 5YR, value of 3, and chroma of 3 or 4; or hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 4 or 5, and chroma of 2. The E part has hue of 10YR, value of 5 to 8, and chroma of 1 to 2. The texture is fine sand or sand. The thickness of this horizon ranges from 9 to 18 inches.

The C horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. The texture is fine sand or sand.

Candler Series

The Candler series consists of excessively drained, very rapidly permeable soils. They formed in thick deposits of eolian or marine sand. These soils are on the uplands. The slopes range from 0 to 12 percent. Candler soils are hyperthermic, uncoated Typic Quartzipsamments.

Candler soils are associated on the landscape with Apopka, Florahome, Lake, Lochloosa, Millhopper, and Tavares soils. Apopka, Lochloosa, and Millhopper soils have an argillic horizon. Apopka soils are well drained, Lochloosa soils are somewhat poorly drained, and Millhopper soils are moderately well drained. Florahome and Tavares soils are moderately well drained. Florahome soils have an umbric epipedon. Lake soils have coated sand grains.

Typical pedon of Candler fine sand, 0 to 5 percent slopes; in a field; about 5 miles north and 1 mile west of Apopka, 310 feet east and 2,580 feet south of the northwest corner of sec. 21, T. 20 S., R. 28 E.

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sand; single grained; loose; few fine and medium roots; many uncoated sand grains; strongly acid; clear wavy boundary.
E1—5 to 30 inches; yellowish brown (10YR 5/6) fine sand; single grained; loose; few fine and medium roots; many uncoated sand grains; strongly acid; gradual wavy boundary.
E2—30 to 74 inches; brownish yellow (10YR 6/8) fine sand; single grained; loose; few fine and medium roots; many uncoated sand grains; strongly acid; clear wavy boundary.
E&Bt—74 to 80 inches; yellow (10YR 7/6) fine sand, (E); strong brown (7.5YR 5/8) loamy sand lamellae about 1/16 to 1/4 inch thick and 2 to 6 inches long, (Bt); single grained; loose; few fine roots; many uncoated sand grains; strongly acid.

The thickness of the solum is 80 or more inches. Reaction ranges from very strongly acid to medium acid.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The texture is fine sand or sand. The thickness of this horizon ranges from 4 to 8 inches.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. The texture is fine sand or sand. The thickness of this horizon ranges from 44 to 69 inches.

The E part of the E&Bt horizon has hue of 10YR, value of 7 or 8, and chroma of 1 to 3. The texture is fine sand or sand. The Bt part of this horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. The texture is fine sand to sandy loam. The individual lamellae is 1/32 to 1/2 inch thick and from 1/2 inch to 35 inches long. The abundance of lamellae increases slightly with depth. Some pedons have a continuous Bt horizon at a depth of more than 90 inches. The colors of this continuous Bt horizon are similar to those of the Bt part of the E&Bt horizon. The texture ranges from loamy sand to sandy clay loam.

Canova Series

The Canova series consists of very poorly drained soils that formed in sandy and loamy marine sediment under conditions favorable for the accumulation of organic material. These soils are in freshwater swamps and marshes. The slopes are 0 to 1 percent. Canova soils are fine-loamy, siliceous, hyperthermic Typic Glossaqualfs.

Canova soils are associated on the landscape with Felda, Gator, Okeelanta, Pompano, Sanibel, and Terra Ceia soils. Felda soils are poorly drained and do not have an organic surface layer. Gator, Okeelanta, and Terra Ceia soils are organic. Pompano and Sanibel soils do not have an argillic horizon. Pompano soils are poorly drained.

Typical pedon of Canova muck; in a cultivated field; about 3 miles south and 1 mile west of Zellwood, 900 feet west and 350 feet north of the southeast corner of sec. 5, T. 21 S., R. 27 E.

Oap—0 to 6 inches; black (10YR 2/1) muck; massive; herbaceous fiber; slightly acid; abrupt smooth boundary.

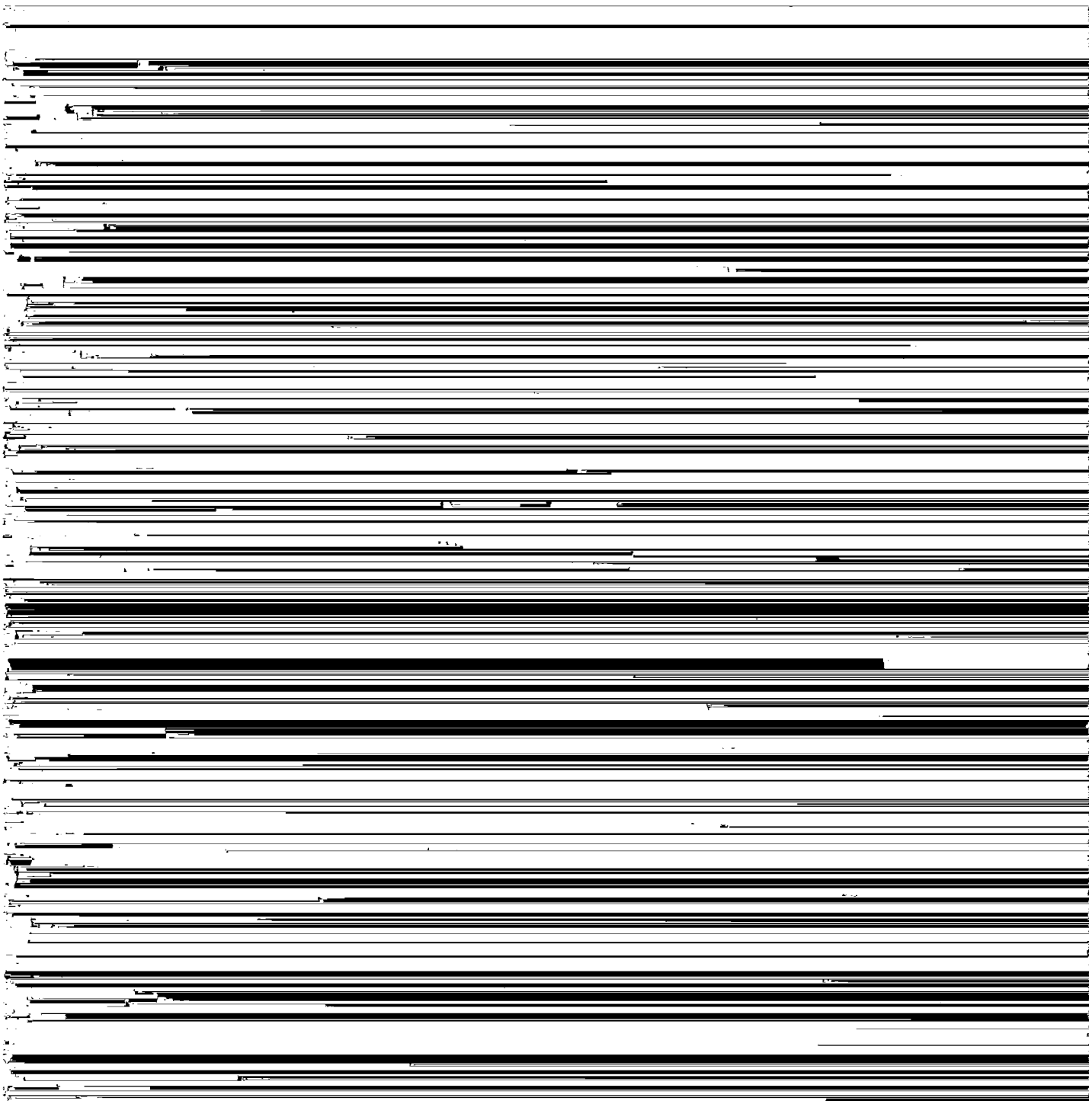
A—6 to 9 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; few fine roots; slightly acid; gradual wavy boundary.

E—9 to 16 inches; gray (10YR 6/1) fine sand; single grained; loose; few fine roots; slightly acid; abrupt irregular boundary.

Btg/E—16 to 22 inches; dark gray (N 4/0) sandy clay loam; common medium distinct gray (10YR 6/1)

Some pedons have a BCg horizon that has similar colors as the Btg horizon. The texture is sandy clay loam. In some pedons, the BCg horizon has lenses of loamy sand or sandy loam.

Some pedons have a Cg or Cgk horizon that has hue of 5Y, 5GY, or 5G, value of 5 or 6, and chroma of 1. The texture is sandy clay loam or sandy loam that has lenses of sand or loamy sand. Few to many, fine and medium.



texture is fine sandy loam. Reaction is slightly acid or neutral. The thickness of this horizon ranges from 6 to 14 inches.

The Bt horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. In some pedons, this horizon has dark brown or light gray mottles. The texture is sandy clay loam or fine sandy loam. The content of clay in the control section ranges from 18 to 35 percent. Reaction is mildly alkaline or moderately alkaline. The combined thickness of the Bt horizons ranges from 30 to 50 inches.

The thickness of the solum ranges from 40 to 70 inches.

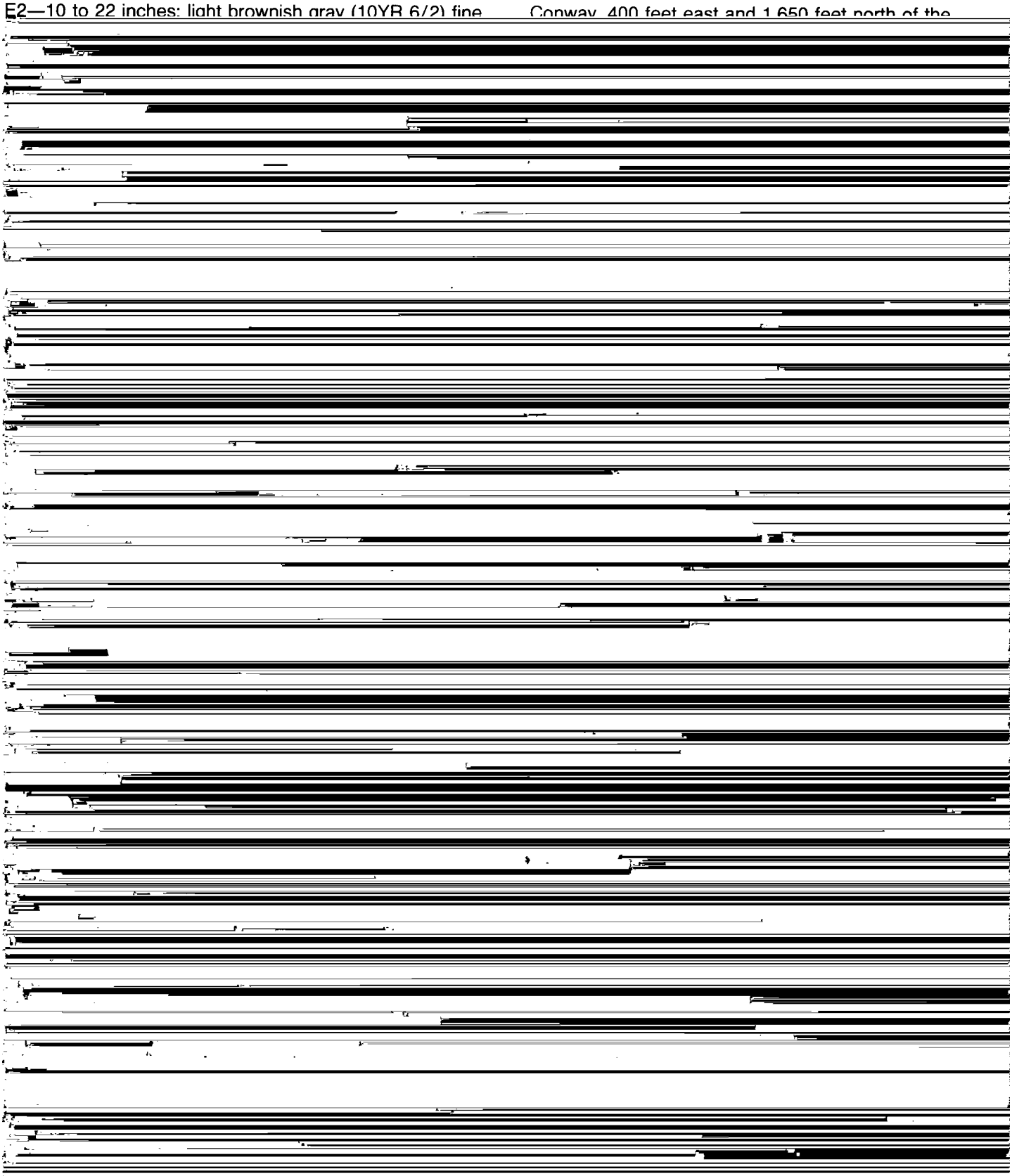
The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The texture is fine sand. Reaction ranges from strongly acid to slightly acid. The thickness of this horizon ranges from 6 to 9 inches.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. The texture is fine sand or loamy fine sand. Reaction ranges from strongly acid to slightly acid. The thickness of this horizon ranges from 5 to 8 inches.

The Btg horizon has hue of 10YR, value of 5 to 7, and

E2—10 to 22 inches; light brownish gray (10YR 6/2) fine

Conway, 400 feet east and 1,650 feet north of the



A—0 to 14 inches; black (10YR 2/1) fine sand; weak fine granular structure; friable; common fine and medium roots; slightly acid; gradual smooth boundary.

E—14 to 28 inches; gray (10YR 5/1) fine sand; single grained; nonsticky and nonplastic; medium acid; abrupt wavy boundary.

Btg1—28 to 41 inches; dark gray (10YR 4/1) sandy clay loam; common medium distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; sticky and plastic; neutral; gradual wavy

Emeralda and Holopaw soils are poorly drained. Terra Ceia soils have an organic layer more than 51 inches thick.

Typical pedon of Gator muck; in a cultivated field; about 2 miles south and 1.25 miles west of Zellwood, 300 feet west and 2,100 feet north of the southeast corner of sec. 33, T. 20 S., R. 27 E.

Oa—0 to 28 inches; black (10YR 2/1) muck; about 10 percent fiber, less than 5 percent rubbed; massive; friable; medium acid by the Hellige-Truog method

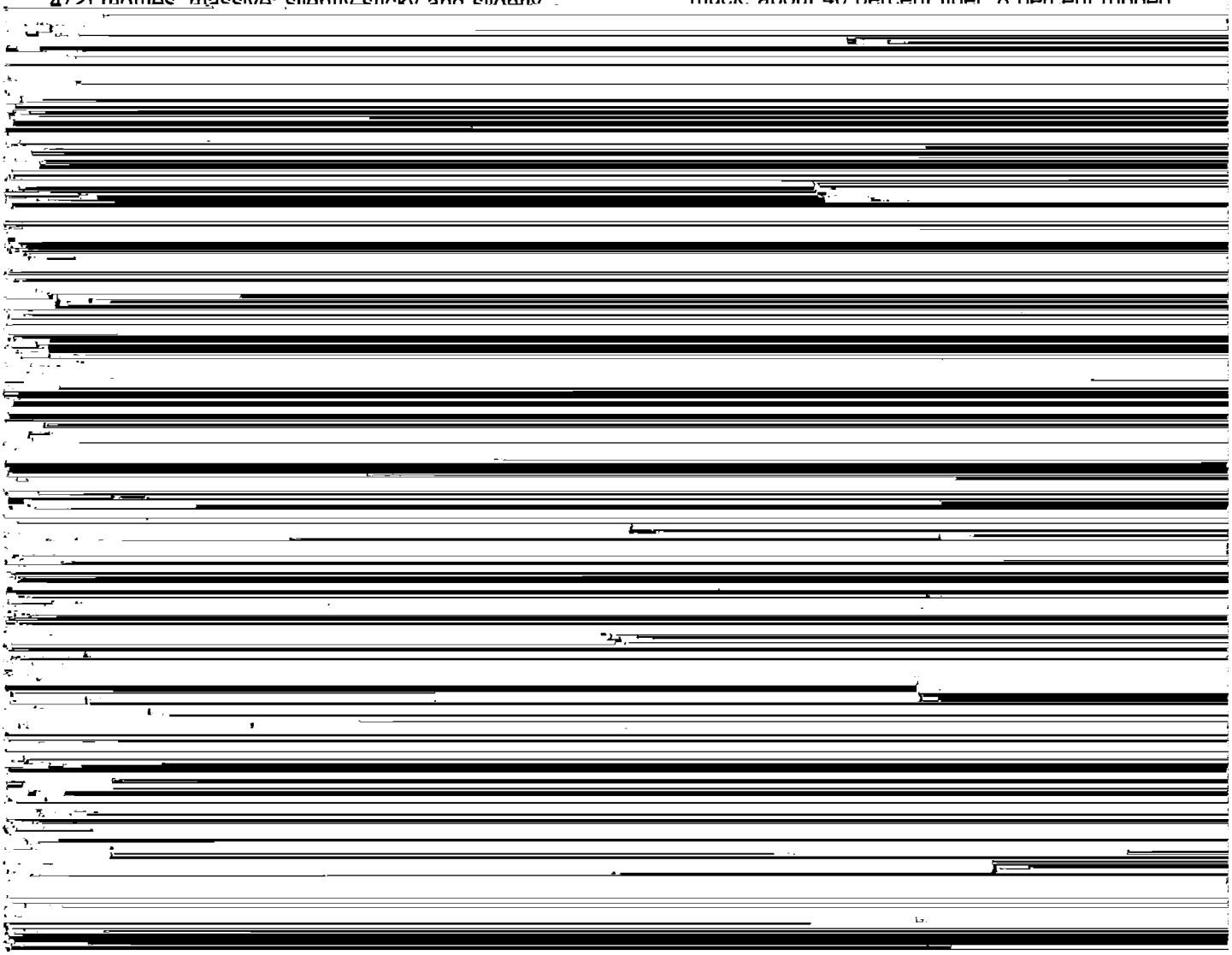
east of Apopka, 1,600 feet east and 150 feet south of the northwest corner of sec. 25, T. 20 S., R. 28 E.

A—0 to 6 inches; black (10YR 2/1) fine sand; moderate medium granular structure; friable; many fine roots; medium acid; gradual smooth boundary.
E1—6 to 25 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; many fine roots; neutral; gradual smooth boundary.
E2—25 to 51 inches; gray (10YR 6/1) fine sand; single grained; nonsticky and nonplastic; slightly acid; abrupt wavy boundary.
Btg1—51 to 65 inches; dark gray (10YR 4/1) sandy clay loam; common medium distinct brown (10YR 4/3) mottles; weak medium subangular blocky structure; slightly sticky and slightly plastic; neutral; gradual wavy boundary.
Btg2—65 to 71 inches; gray (10YR 5/1) sandy loam; common medium distinct dark grayish brown (10YR 4/2) mottles; massive; slightly sticky and slightly

soils. The associated soils are mineral except Samsula soils. Samsula soils have an organic layer less than 51 inches thick. Ona, St. Johns, and Smyrna soils have a spodic horizon and are poorly drained.

Typical pedon of Hontoon muck; in a swamp; about 3 miles south and 12.25 miles east of Taft, 1,325 feet west and 700 feet south of the northeast corner of sec. 24, T. 24 S., R. 31 E.

Oa1—0 to 20 inches; black (10YR 2/1) muck; about 80 percent fiber, 12 percent rubbed; weak fine platy structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.
Oa2—20 to 49 inches; dark reddish brown (5YR 3/2) muck; about 30 percent fiber, 10 percent rubbed; massive; nonsticky and nonplastic; common fine roots; very strongly acid; clear wavy boundary.
Oa3—49 to 80 inches; very dark brown (10YR 2/2) muck; about 40 percent fiber, 8 percent rubbed;



E1—5 to 18 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; few medium roots; very strongly acid; gradual wavy boundary.
E2—18 to 35 inches; light gray (10YR 7/1) fine sand; single grained; nonsticky and nonplastic; few medium roots; very strongly acid; abrupt smooth boundary.
Bh1—35 to 41 inches; black (10YR 2/1) fine sand; massive; nonsticky and nonplastic; very strongly acid; gradual wavy boundary.
Bh2—41 to 48 inches; dark brown (7.5YR 3/2) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.
BC—48 to 67 inches; brown (10YR 4/3) fine sand; single grained; nonsticky and nonplastic; very strongly acid; gradual wavy boundary.
C—67 to 80 inches; light brownish gray (10YR 6/2) fine sand; few fine distinct brown (10YR 4/3) mottles; single grained; nonsticky and nonplastic; very strongly acid.

The thickness of the solum is more than 42 inches. The texture is sand or fine sand. Reaction is very strongly acid or strongly acid.

The A or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Unrubbed colors often have a salt-and-pepper appearance. The thickness of this horizon ranges from 2 to 7 inches.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. In some pedons, a transitional horizon 1/2 inch to 2 inches thick is between the base of the E horizon and the Bh horizon. The thickness of the E horizon ranges from 25 to 40 inches.

Ap—0 to 4 inches; very dark gray (10YR 3/1) fine sand; weak fine crumb structure; friable; many fine and medium roots; medium acid; gradual wavy boundary.
C1—4 to 35 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; many fine roots; few uncoated sand grains; strongly acid; gradual wavy boundary.
C2—35 to 50 inches; brownish yellow (10YR 6/6) fine sand; single grained; loose; few fine roots; few uncoated sand grains; strongly acid; gradual wavy boundary.
C3—50 to 80 inches; brownish yellow (10YR 6/8) fine sand; single grained; loose; strongly acid.

Reaction is strongly acid or very strongly acid except where the A horizon has been limed.

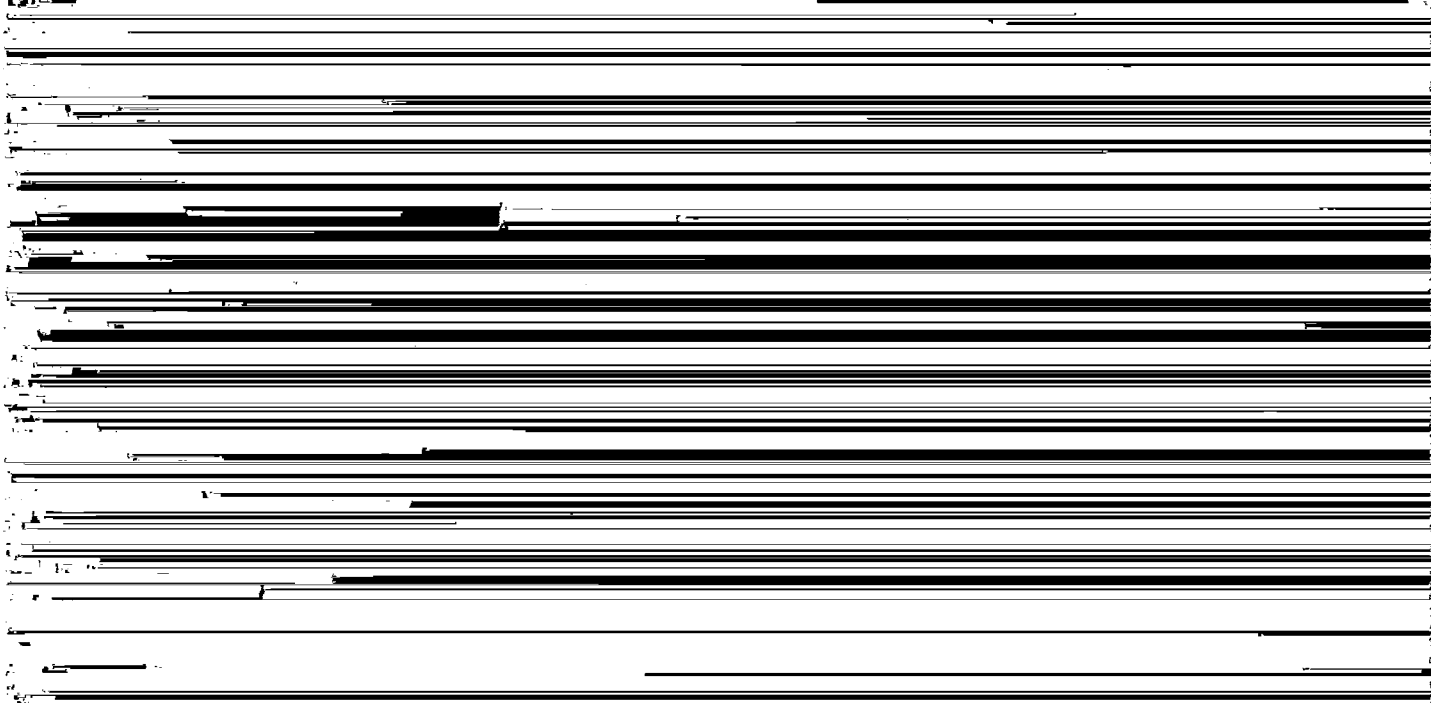
The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

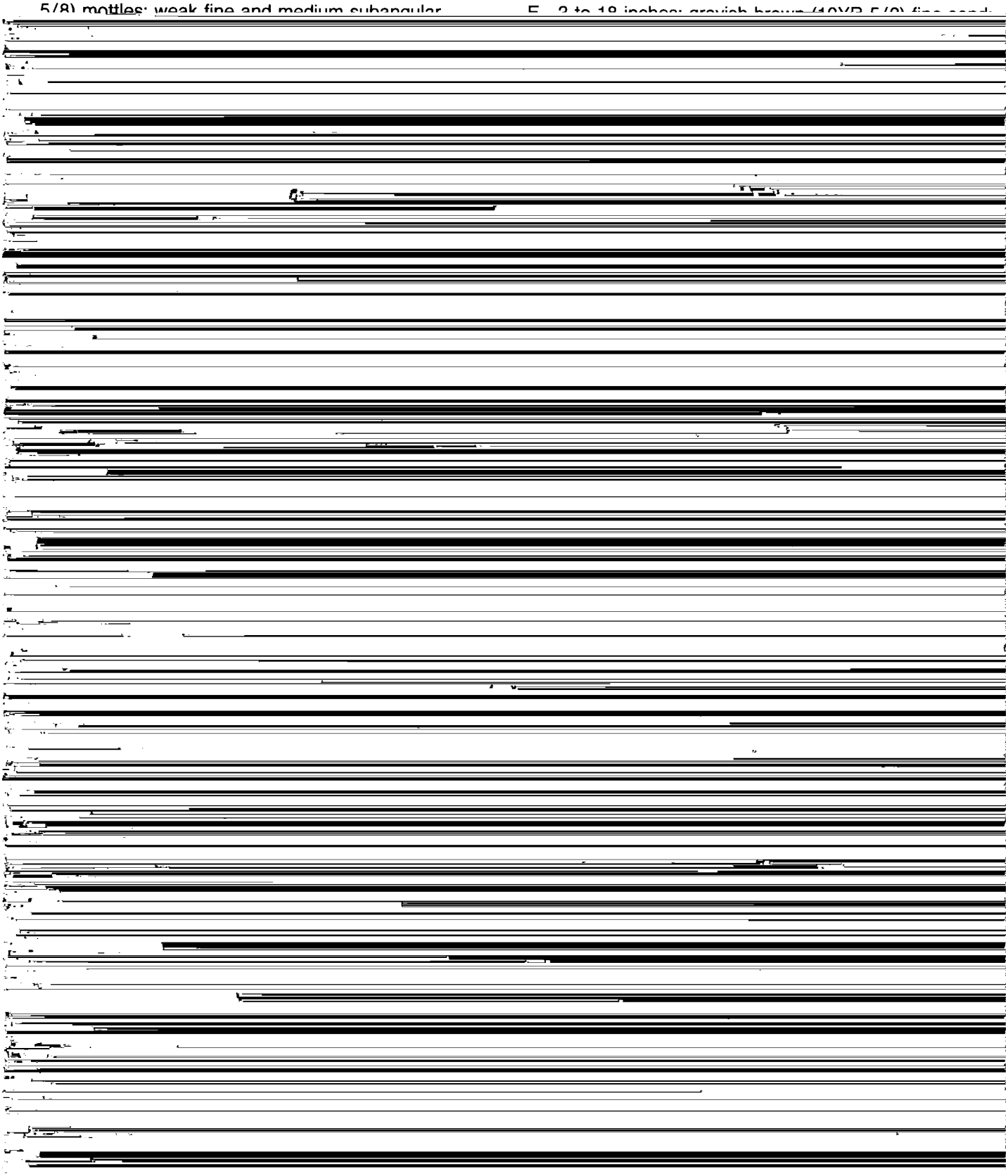
The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 3 to 8. In some pedons are streaks of small pockets of clean sand grains.

Lochloosa Series

The Lochloosa series consists of somewhat poorly drained soils that formed in sandy and loamy marine sediment. These soils are on low ridges on the flatwoods. The slopes are less than 2 percent. Lochloosa soils are loamy, siliceous, hyperthermic Aquic Arenic Paleudults.

Lochloosa soils are associated on the landscape with Apopka, Millhopper, Smyrna, and Wabasso soils. Apopka soils are well drained and have an argillic horizon at a





Millhopper soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Millhopper soils are associated on the landscape with Apopka, Candler, Lochloosa, and Tavares soils. Apopka soils are well drained. Candler and Tavares soils do not have an argillic horizon. Lochloosa soils are somewhat poorly drained and have an argillic horizon within 40 inches of the surface.

Typical pedon of Millhopper fine sand, in an area of Tavares-Millhopper fine sands, 0 to 5 percent slopes; in a citrus grove; about 2.25 miles south and 1 mile east of Plymouth, 1,600 feet east and 50 feet south of the northwest corner of sec. 17, T. 21 S., R. 28 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sand; weak medium granular structure; very friable; many fine roots; medium acid; clear wavy boundary.

E1—6 to 40 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few fine roots; slightly acid; clear wavy boundary.

E2—40 to 64 inches; very pale brown (10YR 7/3) fine sand; few fine distinct yellowish brown (10YR 5/4) mottles; single grained; loose; few fine roots; medium acid; clear wavy boundary.

Bt—64 to 76 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.

Okeelanta Series

The Okeelanta series consists of very poorly drained soils that formed in well decomposed organic matter underlain by sandy marine sediment. These soils are on broad flats. The slopes are less than 1 percent. Okeelanta soils are sandy or sandy-skeletal, siliceous, euic, hyperthermic Terric Medisaprists.

Okeelanta soils are associated on the landscape with Sanibel and Terra Ceia soils. Sanibel soils are mineral soils. Terra Ceia soils have an organic layer more than 51 inches thick.

Typical pedon of Okeelanta muck; in a cultivated field; about 1 mile south and 0.5 mile east of Zellwood, 1,850 feet west and 1,300 feet north of the southeast corner of sec. 27, T. 20 S., R. 27 E.

Oap—0 to 9 inches; black (10YR 2/1) muck; 5 percent fiber, unrubbed; weak fine granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.

Oa—9 to 25 inches; dark brown (7.5YR 3/2) muck; 30 percent fiber, unrubbed; massive; nonsticky and nonplastic; slightly acid; clear smooth boundary.

C—25 to 62 inches; light gray (10YR 6/1) fine sand; common coarse distinct dark gray (10YR 4/1) mottles; single grained; nonsticky and nonplastic; mildly alkaline; clear wavy boundary.

Johns, Smyrna, and Wabasso soils. Basinger soils do not have a spodic horizon. Hontoon and Samsula soils are organic soils. Immokalee, St. Johns, and Smyrna soils have an albic horizon and a spodic horizon at a depth of more than 10 inches. Sanibel soils are mineral soils, and they have a thin organic surface layer. Wabasso soils have an argillic horizon.

Typical pedon of Ona fine sand; in a citrus grove; about 3.25 miles south and 1 mile west of Winter Garden, 50 feet east and 1,800 feet south of the northwest corner of sec. 3, T. 23 S., R. 27 E.

Ap—0 to 6 inches; black (10YR 2/1) fine sand; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bh—6 to 15 inches; dark reddish brown (5YR 3/2) fine sand; weak coarse subangular blocky structure; firm; common fine roots; many sand grains coated with organic matter; strongly acid; clear wavy boundary.

C1—15 to 42 inches; grayish brown (10YR 5/2) fine sand; single grained; nonsticky and nonplastic; strongly acid; clear wavy boundary.

C2—42 to 60 inches; light gray (10YR 7/2) fine sand; single grained; nonsticky and nonplastic; strongly acid; gradual smooth boundary.

C3—60 to 80 inches; very pale brown (10YR 7/3) fine sand; single grained; nonsticky and nonplastic; strongly acid.

Reaction ranges from extremely acid to medium acid. The texture is sand or fine sand.

The A or Ap horizon has hue of 10YR, value of 2 or 3, 700 feet west and 100 feet north of the southeast corner of sec. 8, T. 23 S., R. 34 E.

A—0 to 5 inches; black (10YR 2/1) fine sand; single grained; loose; many fine and medium roots; medium acid; clear smooth boundary.

E—5 to 25 inches; gray (10YR 5/1) fine sand; single grained; loose; many fine and medium roots; medium acid; clear wavy boundary.

Bw1—25 to 29 inches; strong brown (7.5YR 5/6) fine sand; single grained; loose; strongly acid; clear wavy boundary.

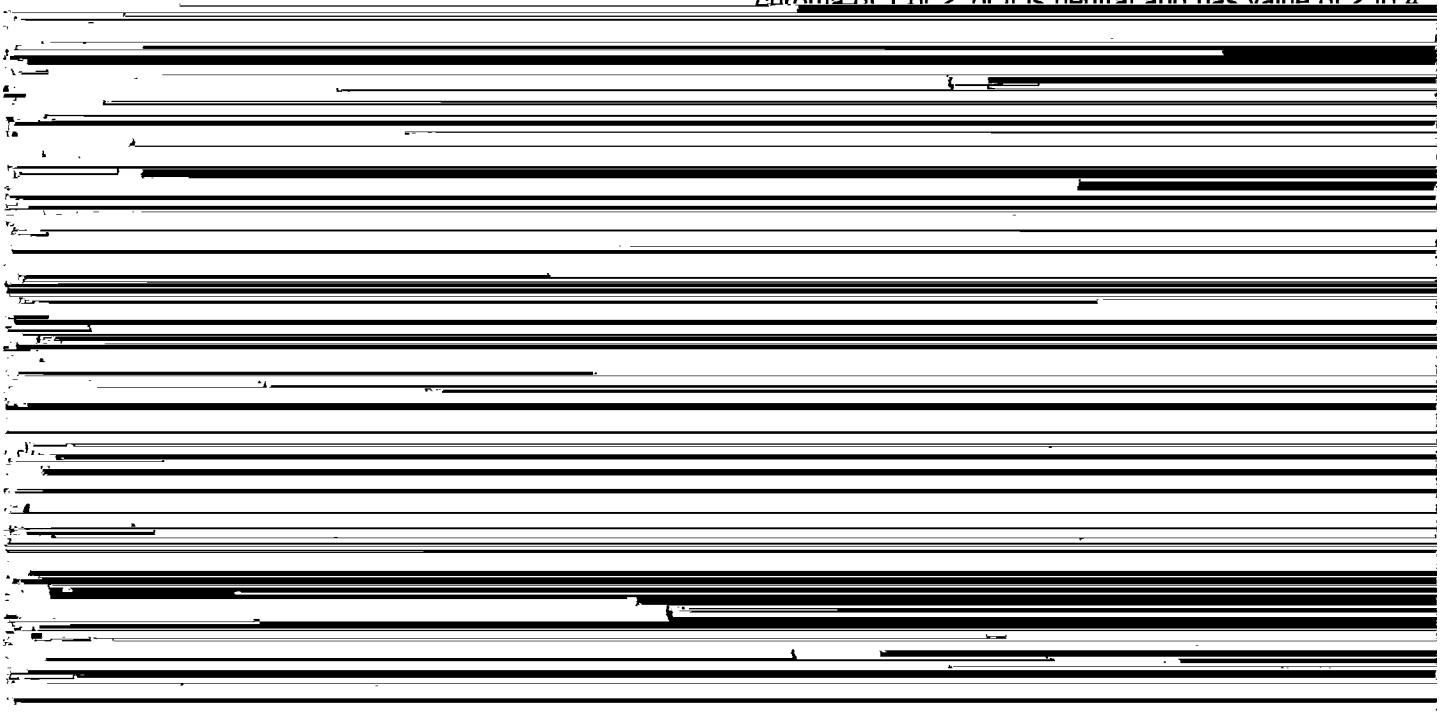
Bw2—29 to 37 inches; dark yellowish brown (10YR 4/4) fine sand; single grained; nonsticky and nonplastic; medium acid; clear wavy boundary.

Btg/E—37 to 55 inches; dark gray (5Y 4/1) sandy loam; weak fine subangular blocky structure; slightly sticky and slightly plastic, (Btg); 20 percent tongues of light gray (10YR 7/2) fine sand, 3 to 7 inches long and 1/2 inch to 2 inches wide; single grained; nonsticky and nonplastic, (E); neutral; abrupt irregular boundary.

Cg—55 to 80 inches; greenish gray (5GY 5/1) sandy loam; massive; friable; many shell fragments; moderately alkaline.

The thickness of the solum is 40 to 80 inches. Reaction ranges from strongly acid to neutral in the A, E, and Bw horizons and from neutral to moderately alkaline in the Btg/E and Cg horizons.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2; or it is neutral and has value of 2 to 4

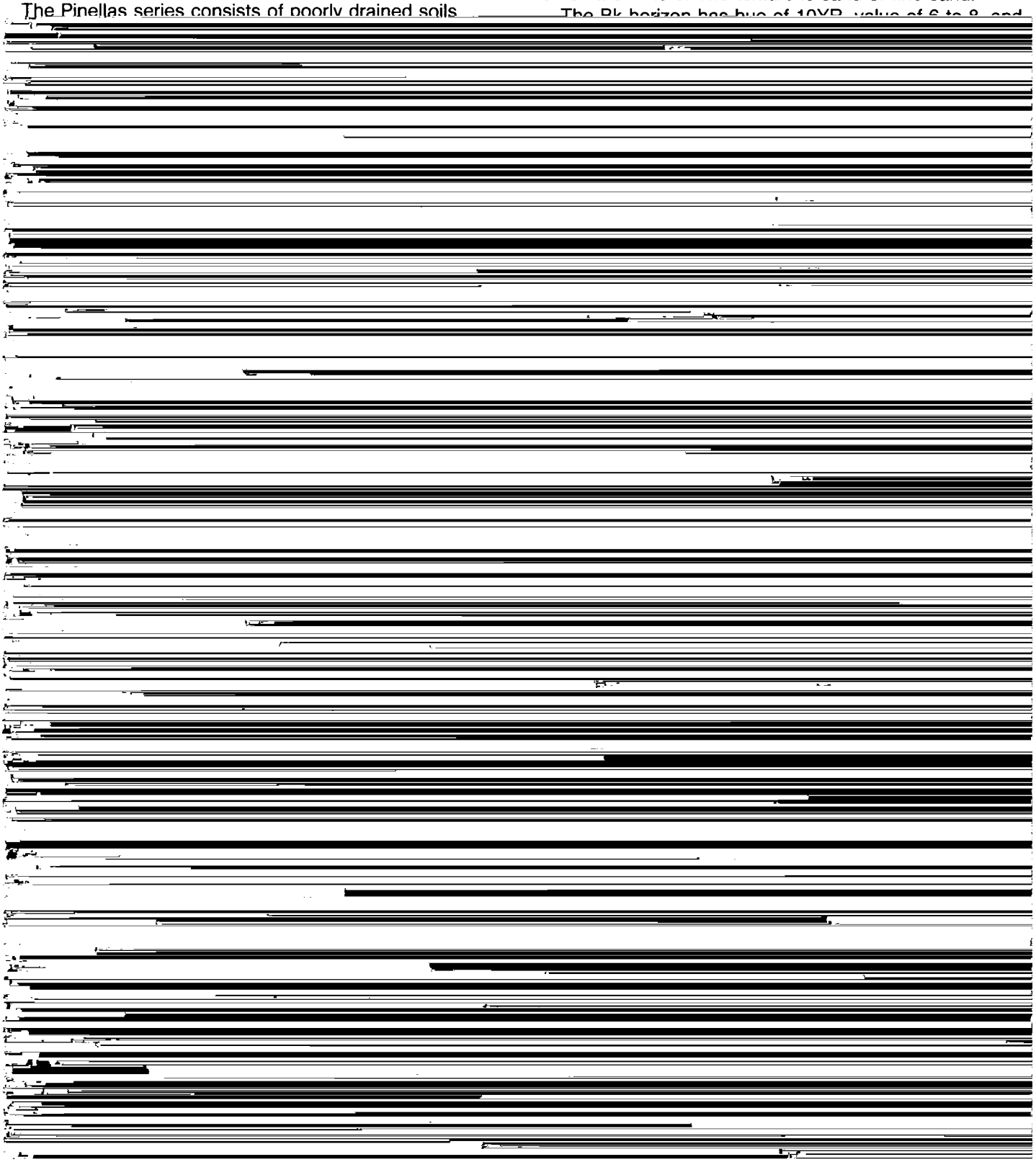


Pinellas Series

The Pinellas series consists of poorly drained soils

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 3. The texture is sand or fine sand.

The Bk horizon has hue of 10YR, value of 6 to 8, and



Depth to the spodic horizon ranges from 35 to 50 inches or more. The texture is sand or fine sand. Reaction is very strongly acid to medium acid.

The A or Ap horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. Unrubbed colors often have a salt-and-pepper appearance. The thickness of this horizon ranges from 3 to 5 inches.

The E horizon has hue of 10YR, value of 5 to 8, and

caused by uncoated sand grains or by thin coatings of colloidal organic material on sand grains.

Samsula Series

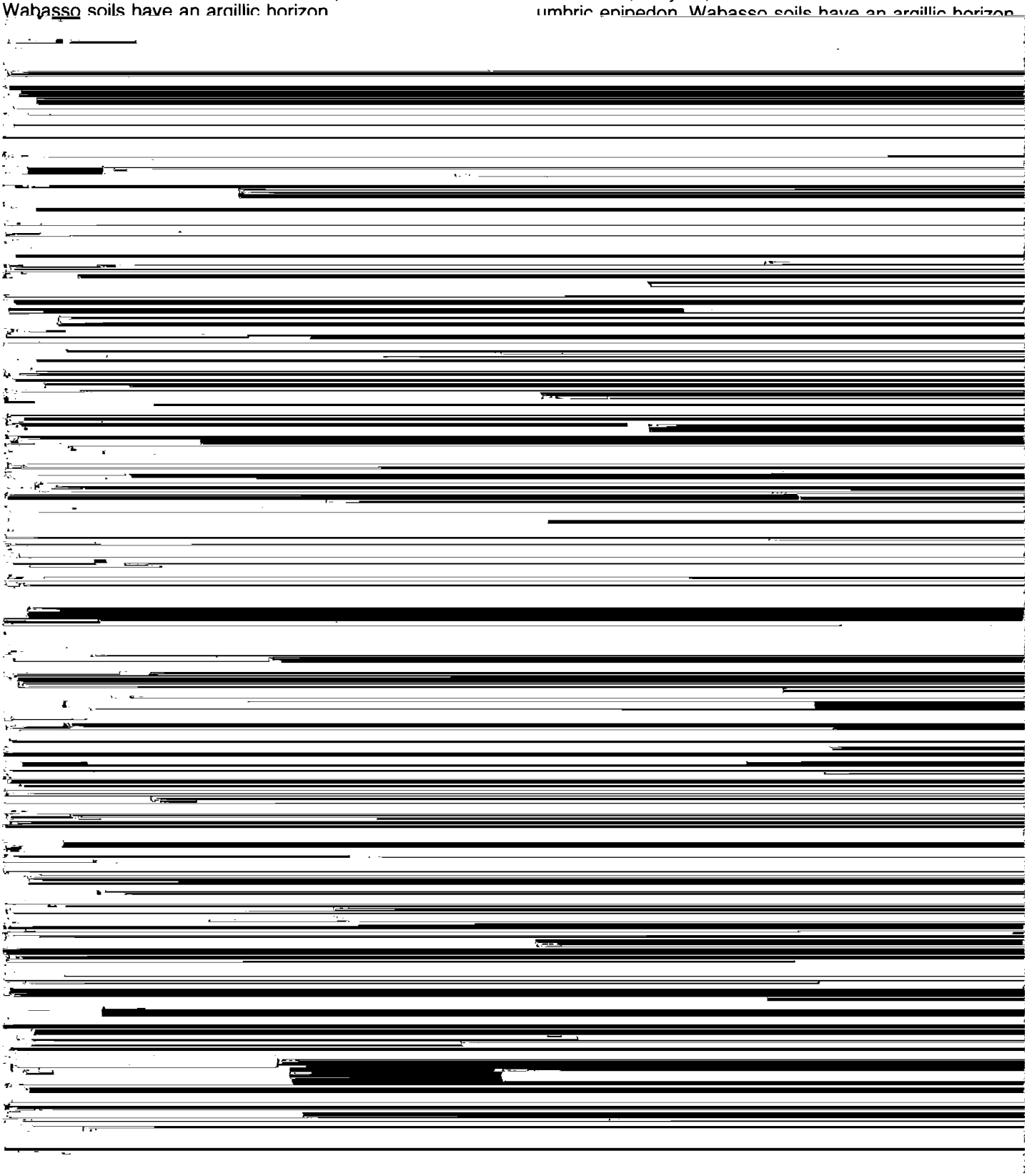
The Samsula series consists of very poorly drained soils that formed in well decomposed organic matter underlain by sandy marine sediment. These soils are in

Sanibel Series

Basinger soils are very poorly drained. Florahome soils are moderately well drained. Ona and Smyrna soils are

inches. Pompano soils do not have a spodic horizon. Wabasso soils have an argillic horizon.

Immokalee, Smyrna, and Wabasso soils do not have an umbric epipedon. Wabasso soils have an argillic horizon.



percent. St. Lucie soils are hyperthermic, uncoated Typic Quartzipsamments.

St. Lucie soils are associated on the landscape with Archbold, Candler, and Pomello soils. Archbold and Pomello soils are moderately well drained. Pomello soils have a spodic horizon. Candler soils have higher chromas in the underlying material than St. Lucie soils.

Typical pedon of St. Lucie fine sand, 0 to 5 percent slopes; in a wooded area; about 0.75 mile north and 3 miles east of Tangerine, 300 feet west and 2,450 feet south of the northeast corner of sec. 2, T. 20 S., R. 27 E.

A—0 to 2 inches; gray (10YR 5/1) fine sand; single grained; loose; common fine and medium roots; strongly acid; clear smooth boundary.
C1—2 to 6 inches; light gray (10YR 7/1) fine sand; single grained; loose; strongly acid; clear smooth boundary.
C2—6 to 80 inches; white (10YR 8/1) fine sand; single grained; loose; strongly acid.

Reaction ranges from neutral to extremely acid. The texture is sand or fine sand. The sand extends to a depth of more than 80 inches. It does not have a

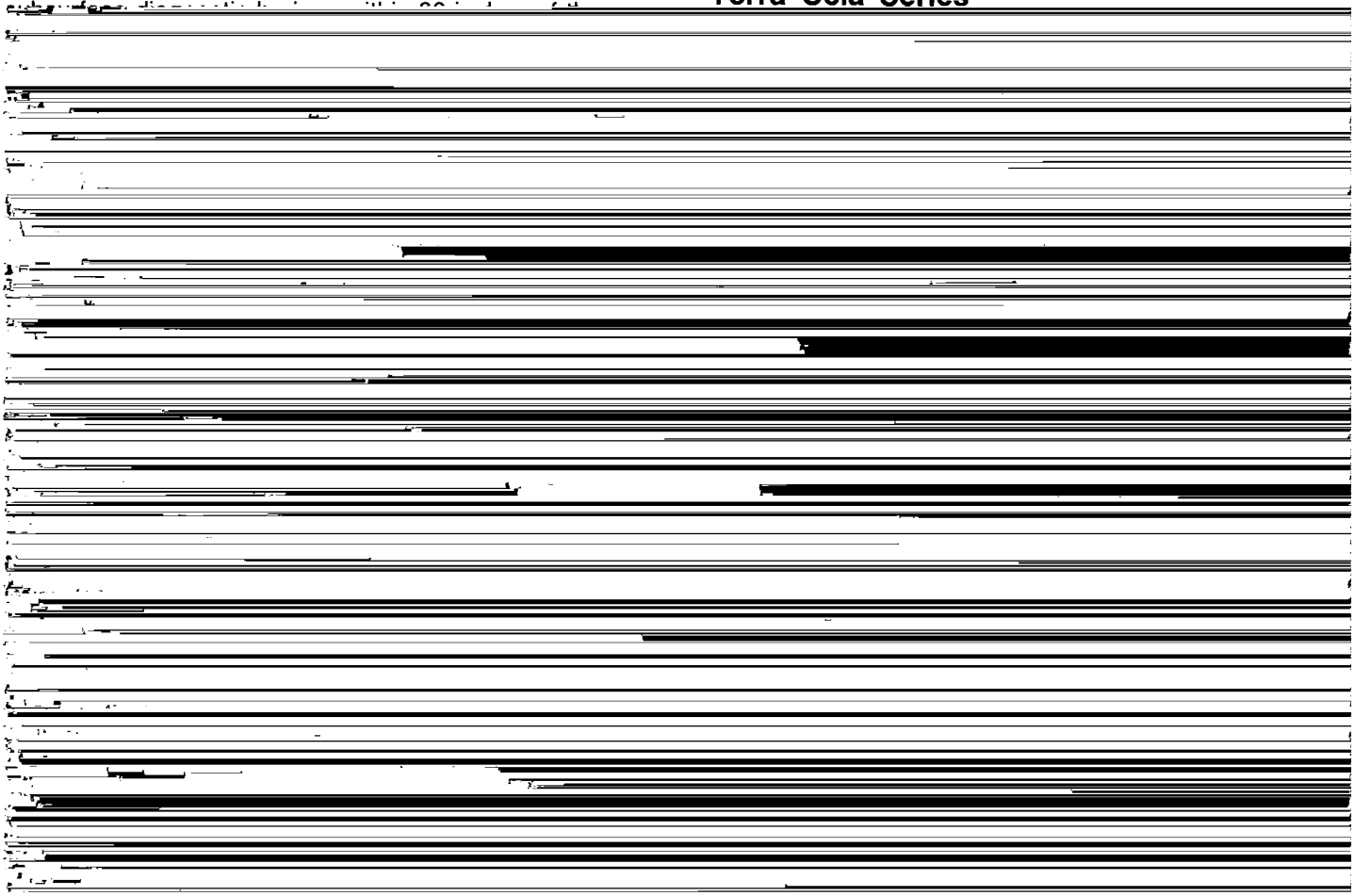
medium roots; common uncoated light gray (10YR 7/1) sand grains; strongly acid; abrupt wavy boundary.
C1—6 to 16 inches; brown (10YR 5/3) fine sand; single grained; loose; common fine roots; strongly acid; gradual wavy boundary.
C2—16 to 41 inches; pale brown (10YR 6/3) fine sand; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.
C3—41 to 80 inches; white (10YR 8/1) fine sand; single grained; loose; strongly acid.

Reaction ranges from extremely acid to medium acid. The texture is sand or fine sand. The content of silt and clay is 5 percent or less between depths of 10 and 40 inches.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The thickness of this horizon ranges from 3 to 9 inches.

The upper part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 3 or 4. The lower part has hue of 10YR, value of 6 to 8, and chroma of 1 to 4.

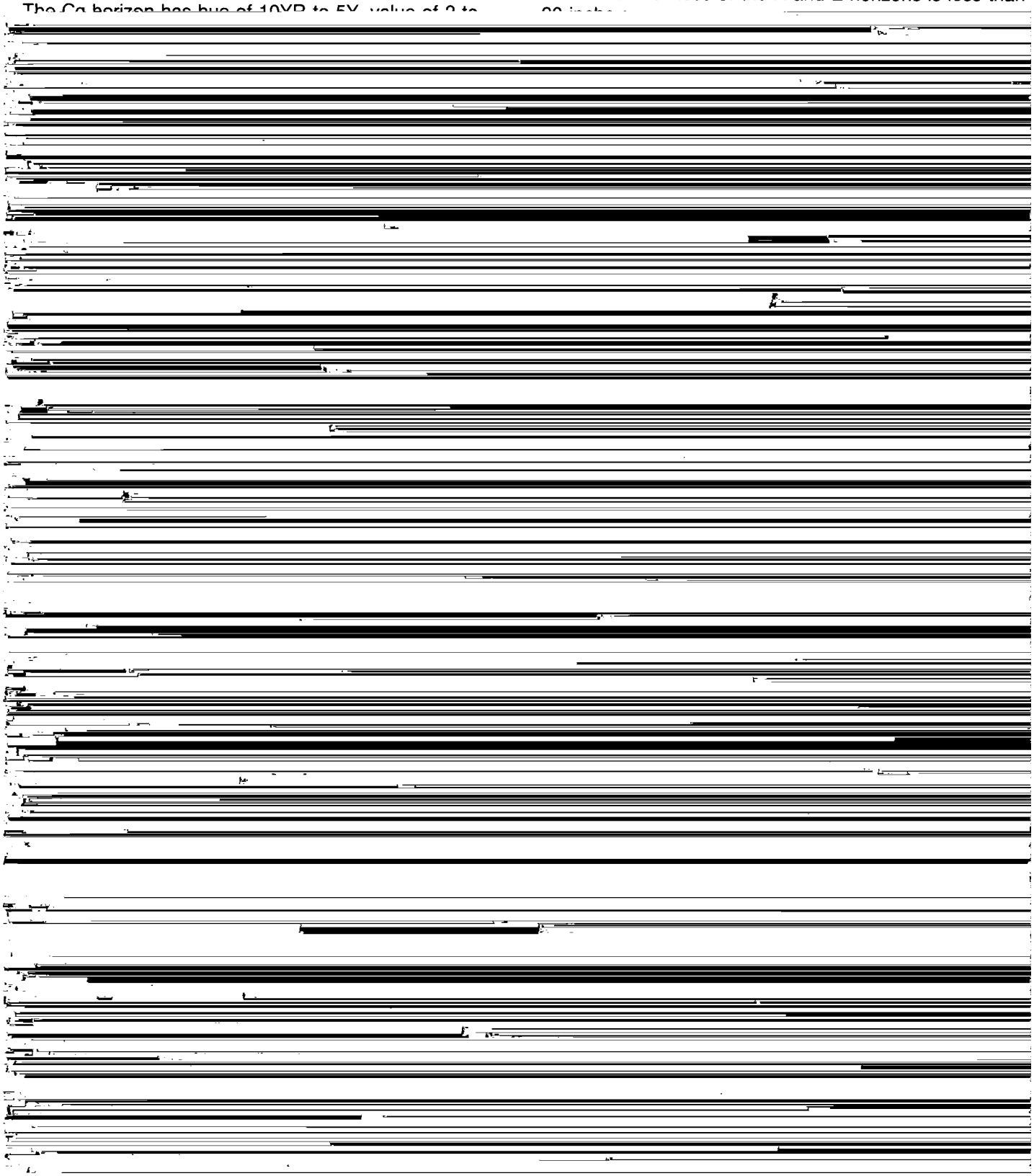
Terra Ceia Series



The Oa horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1.

The Cg horizon has hue of 10YR to 5Y, value of 2 to

to slightly acid. The texture is sand or fine sand. The combined thickness of the A and E horizons is less than



slightly sticky and plastic; very few fine roots; strongly acid; clear wavy boundary.
Btg3—52 to 60 inches; gray (10YR 6/1) sandy clay loam; common fine distinct white (10YR 8/1) mottles; massive; sticky and plastic; strongly acid; clear wavy boundary.
Cg—60 to 80 inches; light gray (5Y 6/1) sandy clay; massive; sticky and plastic; medium acid.

The thickness of the solum is 50 to 75 inches. Reaction ranges from very strongly acid to slightly acid in the A and E horizons except where the surface layer has been limed and from strongly acid to neutral in the Btg and Cg horizons.

The A or Ap horizon has hue of 10YR, value of 2 or 3, and chroma of 1; or it is neutral and has value of 2 or 3. The texture is sand or fine sand. The thickness of this horizon ranges from 5 to 9 inches.

The E horizon has hue of 10YR, value of 5 to 7, and

Typical pedon of Zolfo fine sand; in a citrus grove; at the southern end of Lake Drawdy, 1,900 feet east and 1,500 feet north of the southwest corner of sec. 9, T. 22 S., R. 23 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) fine sand; single grained; loose; many fine and medium roots; neutral; clear smooth boundary.
E1—5 to 23 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; many fine and medium roots; neutral; clear smooth boundary.
E2—23 to 38 inches; light brownish gray (10YR 6/2) fine sand; common fine distinct brownish yellow (10YR 6/8) mottles; single grained; loose; common fine and medium roots; neutral; gradual wavy boundary.
E3—38 to 55 inches; very pale brown (10YR 7/3) fine sand; common fine distinct brownish yellow (10YR 6/8) mottles; single grained; nonsticky and

Formation of the Soils

In this section, the factors of soil formation are described and related to the soils in the survey area *(14)*.

Factors of Soil Formation

The kind of soil that forms in a given area depends on five major factors. These factors are: the climate under which the soil material has existed since accumulation; the physical and mineral composition of the parent material; the living organisms, or plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that these factors of soil formation have acted on the soil material.

The five factors of soil formation are interdependent; each modifies the effects of the others. As a soil forms, it is influenced by the five factors, but one factor may have caused the major differences in the soils in some places. A variation in one or more of the factors results in the formation of a different soil.

Climate

Orange County has a subtropical climate. The soils in

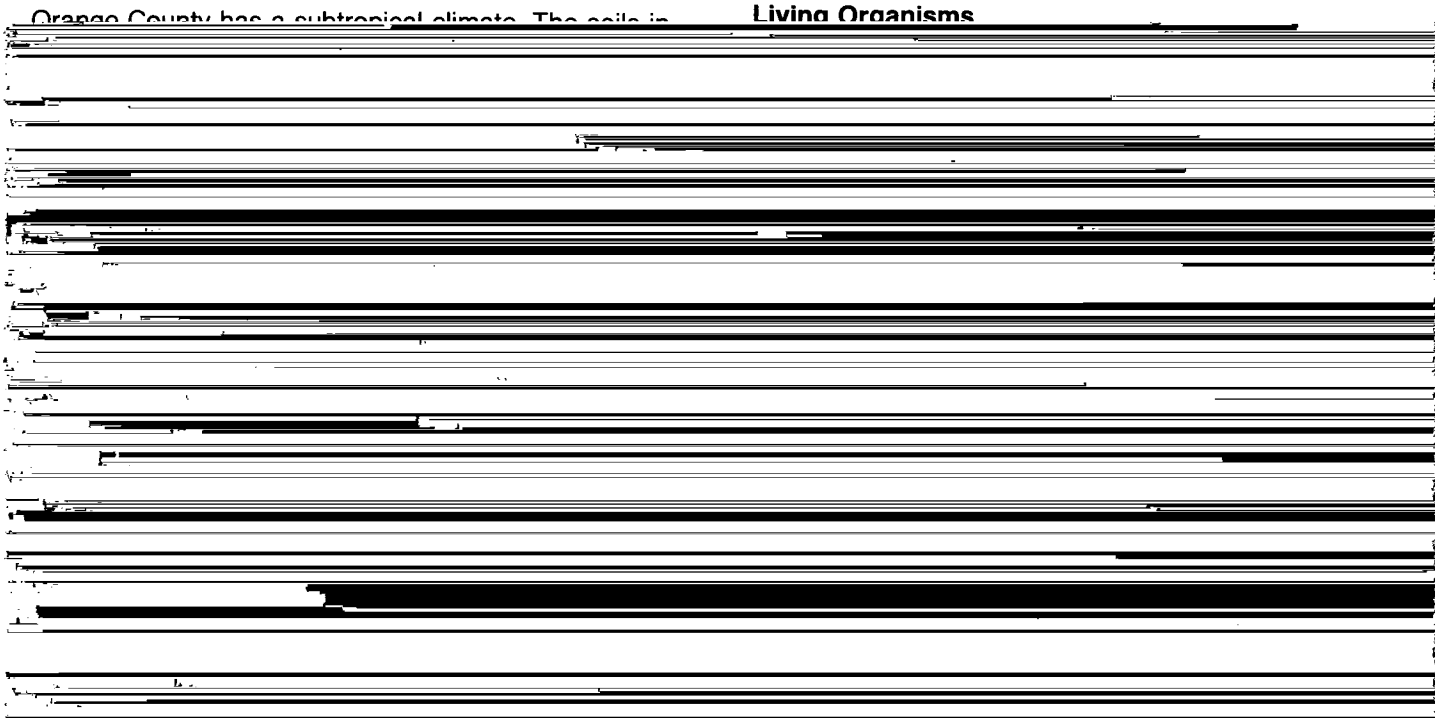
Parent Material

The parent material of the soils in Orange County consists mostly of deposits of marine origin. These deposits were mostly quartz sand and varying amounts of clay and shell fragments. Clay is more abundant in soils that formed in the sediment on marine terraces and in lagoons. Parent material was transported by sea waters that covered the area a number of times during the Pleistocene age *(5, 9, 19, 43)*.

The parent materials in Orange County differ somewhat in mineral and chemical composition and in physical constitution. The main physical differences, such as those 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 in the parent materials as they were laid down.

Some organic soils are throughout the county. They formed in partly decayed remains of wetland vegetation.

Living Organisms



natural relationship between the soil and the native plants is sometimes disturbed by human activities. Clearing, logging, and burning, for example, have disrupted the natural succession of plants in some areas.

living organisms, and relief are slow. The length of time needed to convert raw geological material into soil varies according to the nature of the geologic material and the interaction of the other factors. Some basic minerals

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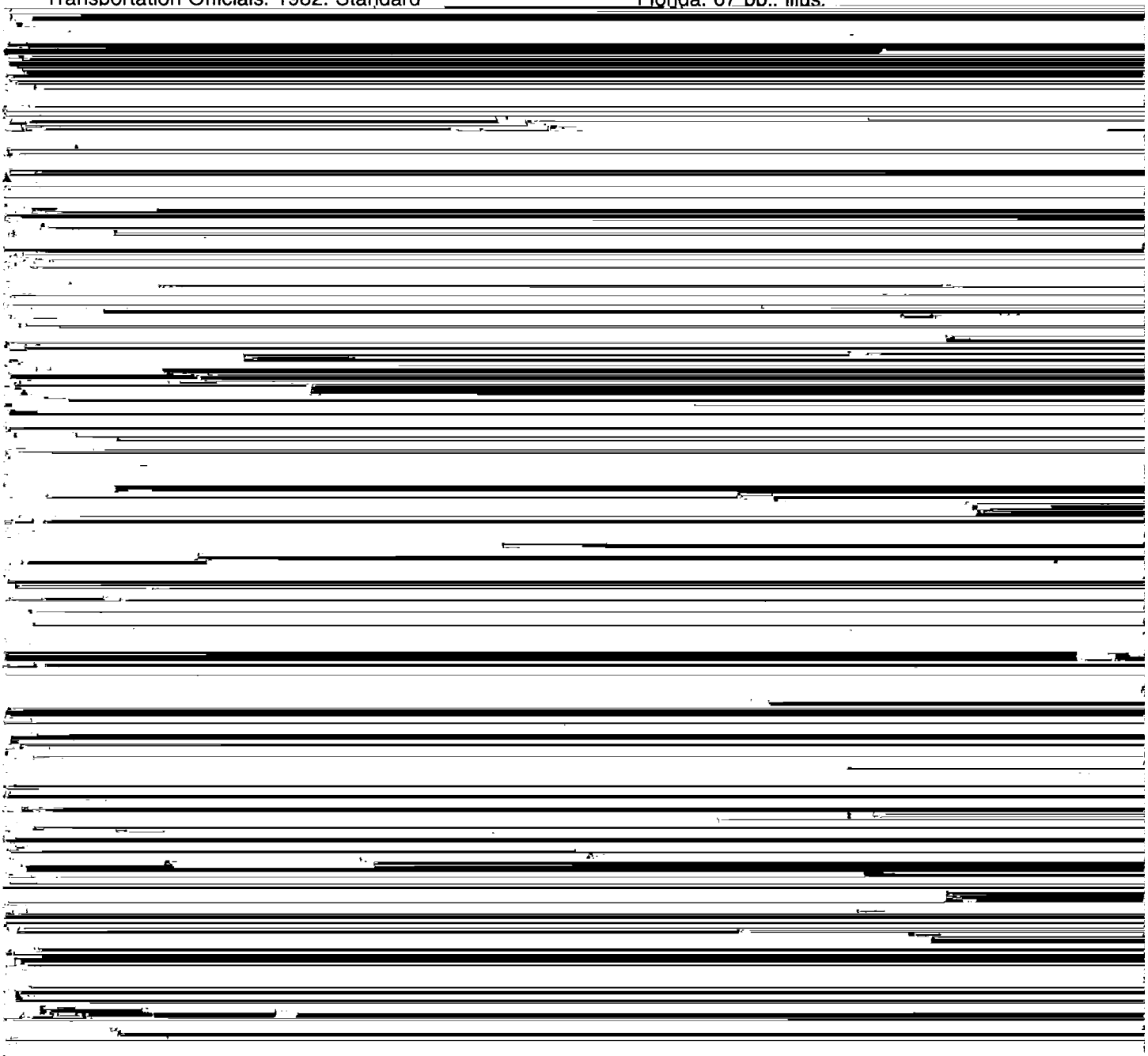

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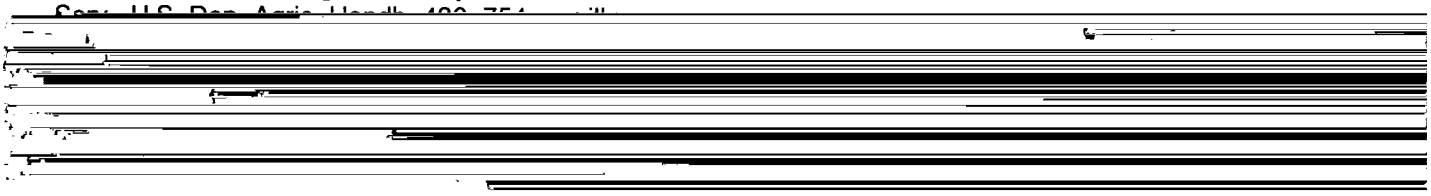


Glossary

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.

Alkali (sodic) soil. Soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding. A partial method of controlling excess water for the growth of citrus and other 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.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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, i.e., 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.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). The volume of soft soil decreases excessively 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.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

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

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

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

Firm.—When moist, crushes under moderate

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

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, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay are in the soil. The soil is not a source of gravel or sand for construction purposes.

Excess salts (in tables). Excess water-soluble salts in

Forb. Any herbaceous plant that is not a grass or a sedge.

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.

Hammock. A densely wooded area, slightly elevated above adjacent areas, that has characteristic natural vegetation of cabbage palms, oaks, and pines with an understory of saw palmetto, shrubs, and grasses.

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.

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 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 (unweathered bedrock) 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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

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

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

application. The rate of water intake in inches per hour is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

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 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.

Lamellae. Thin, slightly wavy layers of soil enriched with clay and sometimes with iron or organic matter, or both. These layers are brighter in color than the soil between the layers. Individual layers are generally 1/8 to 1 inch or more thick and are generally repeated vertically at intervals of 1 inch to 6 inches.

Landshaping. Rearrangement of soil materials by cutting and filling to form a more suitable site for the intended use.

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.

Marl. An unconsolidated mineral deposited in marine or freshwater. It consists mainly of silt- and clay-size particles of calcium carbonate.

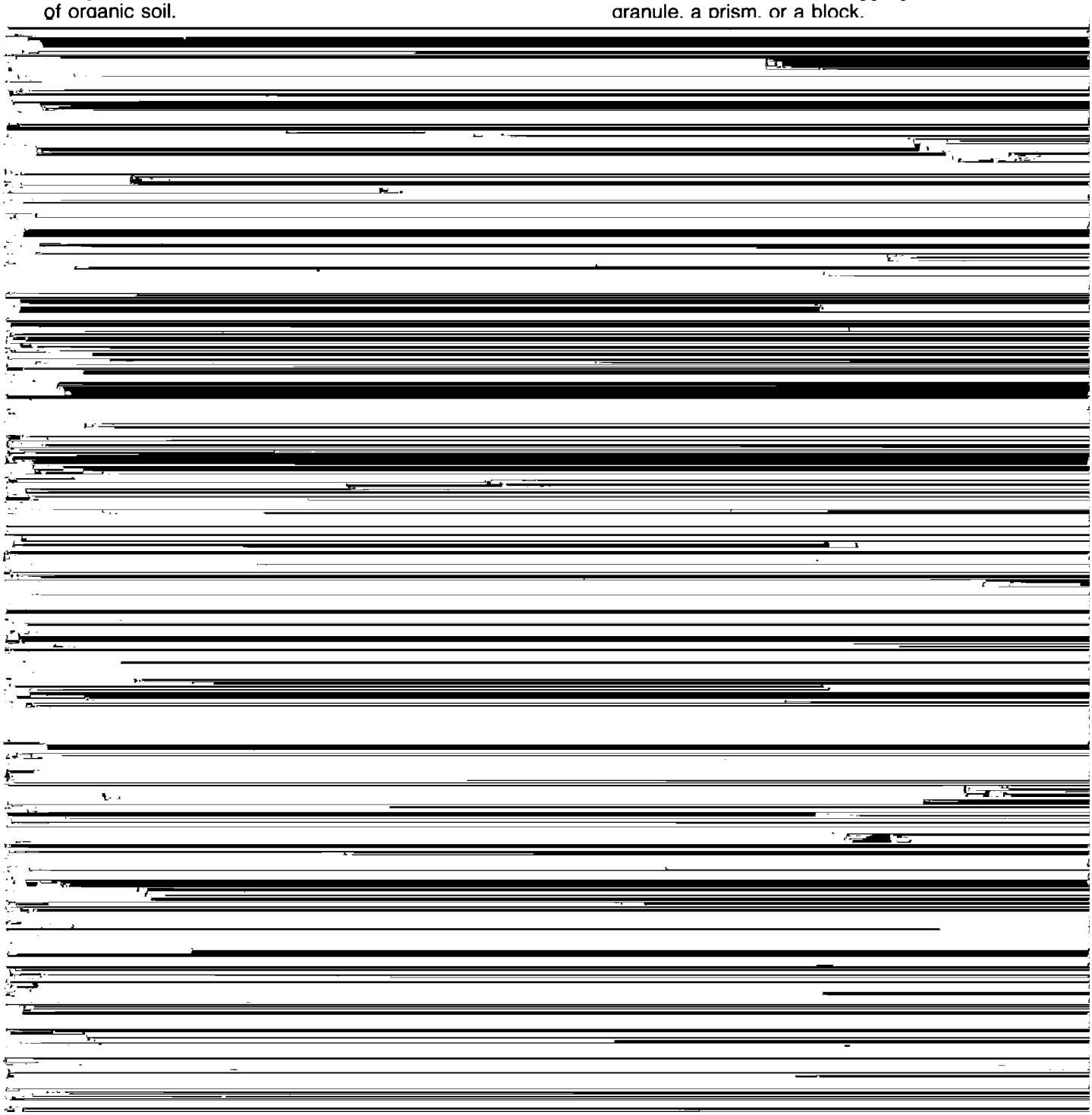
Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.



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.

Random transect. An unbiased, statistically sound sampling scheme used to determine map unit composition and purity by random sampling.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The 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.

of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil 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

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

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 is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Based on data recorded in the period 1944 through 1983 at Orlando, Florida]

Month	Temperature					Precipitation			
				Mean number of days with temperatures of--			Mean number of days--		
	Normal daily mean	Normal daily maximum	Normal	90°F or higher	32°F or lower	Normal total 1951-1980	Rainfall 0.01 inch or more	Thunderstorms	Heavy fog, visibility 1/4 mile or less
	°F	°F	°F	°F	°F	In	In		
January----	60.5	71.7	49.3	0	2	2.10	6	1	6
February---	61.5	72.9	50.0	0	1	2.83	7	1	3
March------	66.8	78.3	55.3	1	*	3.20	8	3	3
April------	72.0	83.6	60.3	5	0	2.19	5	3	1
May--------	77.3	88.3	66.2	11	0	3.96	9	8	2
June-------	80.9	90.6	71.2	20	0	7.39	14	14	1
July-------	82.4	91.7	73.0	25	0	7.78	17	19	1
August-----	82.5	91.6	73.4	25	0	6.32	16	17	1
September--	81.1	89.7	72.5	18	0	5.62	14	10	1
October----	74.9	84.4	65.4	3	0	2.82	9	3	2
November---	67.5	78.2	56.8	0	*	1.78	5	1	3
December---	62.0	73.1	50.9	*	1	1.83	6	1	5
Total------	72.4	82.8	62.0	108	4	47.83	116	82	28

* Less than one-half of a day.

TABLE 2.--FREEZE DATA

[Based on data recorded at Orlando, Florida]

Freeze threshold temperature	Mean date of last spring occurrence	Mean date of first fall occurrence	Mean number of days between dates	Years of record--spring	Number of occurrences in spring	Years of record--fall	Number of occurrences in fall
32°F----	January 11, 1982 (29°F)	December 25, 1983 (21°F)	*	20	*	20	*
28°F----	January 12, 1982 (23°F)	December 26, 1983 (20°F)	*	20	*	20	*

* When the frequency of occurrence in either spring or fall is 1 year in 10 or less, mean dates are not given.

TABLE 3.--AVERAGE COMPOSITION OF SELECTED MAP UNITS

[Average composition determined by Ground Penetrating Radar (GPR) and other transect methods*]

Map symbol and soil name	Transects	Soils	Composition	Confidence interval**	Confidence level	Dissimilar soils	Composition
			Pct	Pct	Pct		Pct
2. Archbold fine sand, 0 to 5 percent slopes	11	Archbold Similar soils	71 21	83-99	90	Pomello Other	7 1
3. Basinger fine sand, depressional	11	Basinger Similar soils	45 44	73-99	90	Samsula Smyrna Floridana	7 2 2
4. Candler fine sand, 0 to 5 percent slopes	39	Candler Similar soils	54 39	81-97	95	Millhopper Apopka Other	5 1 1
5. Candler fine sand, 5 to 12 percent slopes	25	Candler Similar soils	54 40	88-99	95	Tavares Apopka Millhopper Other	2 2 1 1
6. Candler-Apopka fine sands, 5 to 12 percent slopes	18	Candler Similar soils Apopka Similar soils	45 21 25 6	92-99	95	Tavares Lochloosa	2 1
9. Canova muck	13	Canova Similar soils	59 27	75-96	80	Gator Okeelanta	9 5
10. Chobee fine sandy loam, frequently flooded	3	Chobee Similar soils	91 5	86-99	90	Gator	4
11. Floridana and Chobee soils, frequently flooded	8	Floridana Similar soils Chobee	70 4 24	86-99	95	Gator	2
12. Emeralda and Holopaw fine sands, frequently flooded	8	Emeralda Similar soils Holopaw Similar soils	46 8 29 6	76-99	90	Pompano Gator	9 2
13. Felda fine sand	12	Felda Similar soils	91 4	90-99	95	Holopaw	5
14. Felda fine sand, occasionally flooded	7	Felda Similar soils	50 42	79-99	80	Wabasso	8
15. Felda fine sand, frequently flooded	4	Felda Similar soils	51 48	82-99	90	Pompano	1
16. Floridana fine sand, frequently flooded	11	Floridana Similar soils	82 17	97-99	95	Gator	1
17. Floridana mucky fine sand, depressional	7	Floridana Similar soils	53 40	84-99	90	Felda	7
18. Gator muck	15	Gator Similar soils	90 2	82-98	90	Terra Ceia Canova	6 2
19. Hontoon muck	17	Hontoon Similar soils	75 23	94-99	95	Sanibel Basinger	1 1

See footnotes at end of table.

TABLE 3.--AVERAGE COMPOSITION OF SELECTED MAP UNITS--Continued

Map symbol and soil name	Transects	Soils	Composition	Confidence interval**	Confidence level	Dissimilar soils	Composition
			Pct	Pct	Pct		Pct
20. Immokalee fine sand	14	Immokalee	53	85-99	70	Wabasso	5
		Similar soils	40			Pineda	2
21. Lake fine sand, 0 to 5 percent slopes	5	Lake	94	93-99	95	Tavares	2
		Similar soils	4				
22. Lochloosa fine sand	4	Lochloosa	68	91-99	95	Wabasso	2
		Similar soils	30				
23. Malabar fine sand	17	Malabar	45	90-99	95	Wabasso	3
		Similar soils	52				
25. Okeelanta muck	5	Okeelanta	92	86-99	95	Sanibel	1
		Similar soils	4			Terra Ceia	3
26. Ona fine sand	8	Ona	61	84-99	95	Immokalee	9
		Similar soils	30				
28. Florahome fine sand, 0 to 5 percent slopes	16	Florahome	66	82-99	95	Seffner	7
		Similar soils	24			Candler	3
30. Pineda fine sand	3	Pineda	86	87-99	80	Malabar	5
		Similar soils	7			Wabasso	2
31. Pineda fine sand, frequently flooded	5	Pineda	75	90-98	80	Wabasso	4
		Similar soils	19			Floridana	2
32. Pinellas fine sand	3	Pinellas	61	89-99	90	Wabasso	4
		Similar soils	35				
34. Pomello fine sand, 0 to 5 percent slopes	22	Pomello	42	78-94	80	Archbold	9
		Similar soils	43			Pompano	4
						Smyrna	1
36. Pompano fine sand	6	Pompano	86	77-95	80	Smyrna	8
						Immokalee	6

TABLE 3.--AVERAGE COMPOSITION OF SELECTED MAP UNITS--Continued

Map symbol and soil name	Transects	Soils	Composition	Confidence interval**	Confidence level	Dissimilar soils	Composition
			Pct	Pct	Pct		Pct
46. Tavares fine sand, 0 to 5 percent slopes	31	Tavares	67	78-92	90	Candler	9
		Similar soils	19			Millhopper	4
						Apopka	1
47. Tavares-Millhopper fine sands, 0 to 5 percent slopes	31	Tavares	48	94-98	90	Candler	4
		Similar soils	20				
		Millhopper	14				
		Similar soils	14				
49. Terra Ceia muck	15	Terra Ceia	93	85-99	95	Gator	5
						Okeelanta	2
51. Wabasso fine sand	13	Wabasso	58	96-99	90	Immokalee	1
		Similar soils	40			Smyrna	1
53. Wauberg fine sand	7	Wauberg	60	87-99	95	Holopaw	3
		Similar soils	34			Wabasso	3
54. Zolfo fine sand	23	Zolfo	59	77-93	90	Lochloosa	1
		Similar soils	27			Smyrna	4
						Millhopper	1
						Pomello	1
						Other	7

* An example of transect data characterization at a specific confidence level reads: In 80 percent of the areas mapped as Pomello fine sand, 0 to 5 percent slopes, Pomello and similar soils will comprise 78 to 94 percent of the delineation. In the remaining 20 percent of the areas of this map unit, the percentage of Pomello and similar soils may be either higher than 94 percent or lower than 78 percent. Inversely, dissimilar soils make up 6 to 22 percent of most mapped areas.

** The confidence interval is the proportion of named plus similar soils at a given confidence level.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Arents, nearly level	300	0.1
2	Archbold fine sand, 0 to 5 percent slopes	6,079	1.0
3	Basinger fine sand, depressional	30,292	5.2
4	Candler fine sand, 0 to 5 percent slopes	26,508	4.5
5	Candler fine sand, 5 to 12 percent slopes	12,426	2.1
6	Candler-Apopka fine sands, 5 to 12 percent slopes	7,022	1.2
7	Candler-Urban land complex, 0 to 5 percent slopes	5,501	0.9
8	Candler-Urban land complex, 5 to 12 percent slopes	1,065	0.2
9	Canova muck	904	0.2
10	Chobee fine sandy loam, frequently flooded	1,317	0.2
11	Floridana and Chobee soils, frequently flooded	17,670	3.0

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and	Land							

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Cabbage	Carrots	Grapefruit	Bahiagrass	Grass-clover	Oranges
		Bu	Crates	Bu	Boxes	AUM*	AUM*	Boxes
18--Gator	IIIw	95	350	200	---	15.0	17.0	---
19--Hontoon	VIIw	---	---	---	---	---	---	---
20--Immokalee	IVw	---	200	---	400	7.5	12.0	250
21--Lake	IVs	---	---	---	600	4.5	---	400
22--Lochloosa	IIw	---	---	---	675	10.0	12.0	475
23--Malabar	IVw	---	---	---	575	8.0	12.0	325
24--Millhopper-Urban land	---	---	---	---	---	---	---	---
25--Okeelanta	IIIw	95	350	200	---	15.0	18.0	---
26--Ona	IIIw	---	300	---	500	8.5	12.0	300
27--Ona-Urban land	---	---	---	---	---	---	---	---
28--Florahome	IIIs	---	---	---	700	8.0	12.0	500
29--Florahome-Urban land	---	---	---	---	---	---	---	---
30--Pineda	IIIw	---	---	---	575	8.0	12.0	425
31--Pineda	Vw	---	---	---	---	7.0	10.0	---
32--Pinellas	IIIw	---	250	---	575	8.0	12.0	425
33. Pits.								
34--Pomello	VIs	---	---	---	400	3.5	7.0	250
35--Pomello-Urban land	---	---	---	---	---	---	---	---
36--Pompano	IVw	---	260	---	375	8.0	10.0	275

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Cabbage	Carrots	Grapefruit	Bahiagrass	Grass-clover	Oranges
		Bu	Crates	Bu	Boxes	AUM*	AUM*	Boxes
37--- St. Johns	IIIw	---	300	---	550	8.5	12.0	300
38--- St. Lucie	VIIs	---	---	---	---	---	---	---
39--- St. Lucie-Urban land	---	---	---	---	---	---	---	---
40--- Samsula	VIIw	---	---	---	---	---	---	---
41:								
Samsula---	VIIw	---	---	---	---	---	---	---
Hontoon---	VIIw	---	---	---	---	---	---	---
Basinger---	VIIw	---	---	---	---	---	---	---
42--- Sanibel	VIIw	---	---	---	---	---	---	---
43--- Seffner	IIIw	---	---	---	700	9.0	11.0	500
44---	IVw	---	200	---	500	8.0	12.0	300

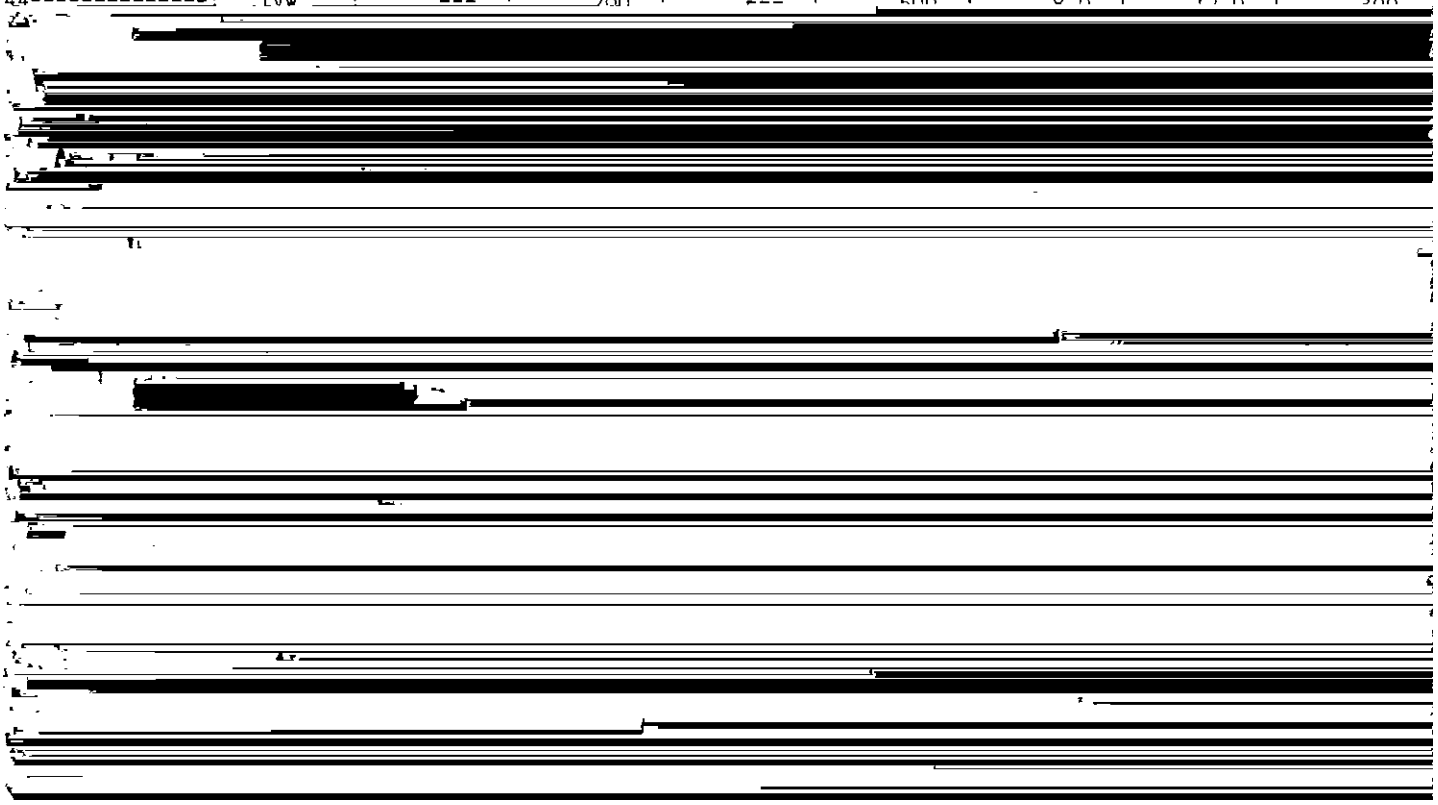
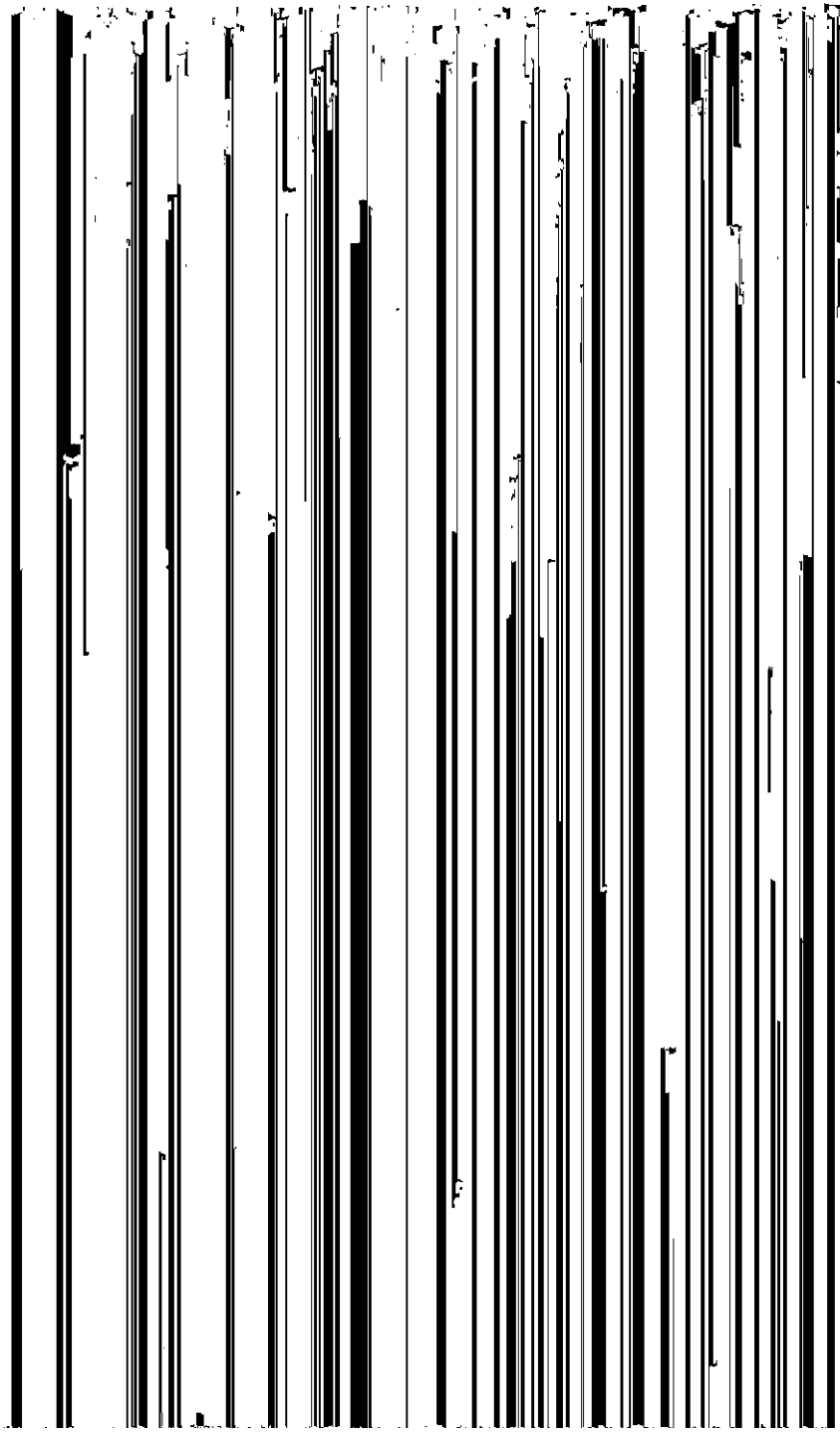


TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Cabbage	Carrots	Grapefruit	Bahiagrass	Grass-clover	Oranges
		Bu	Crates	Bu	Boxes	AUM*	AUM*	Boxes
54---------- Zolfo	IIIw	---	400	---	500	7.0	10.0	375
55---------- Zolfo-Urban land	---	---	---	---	---	---	---	---

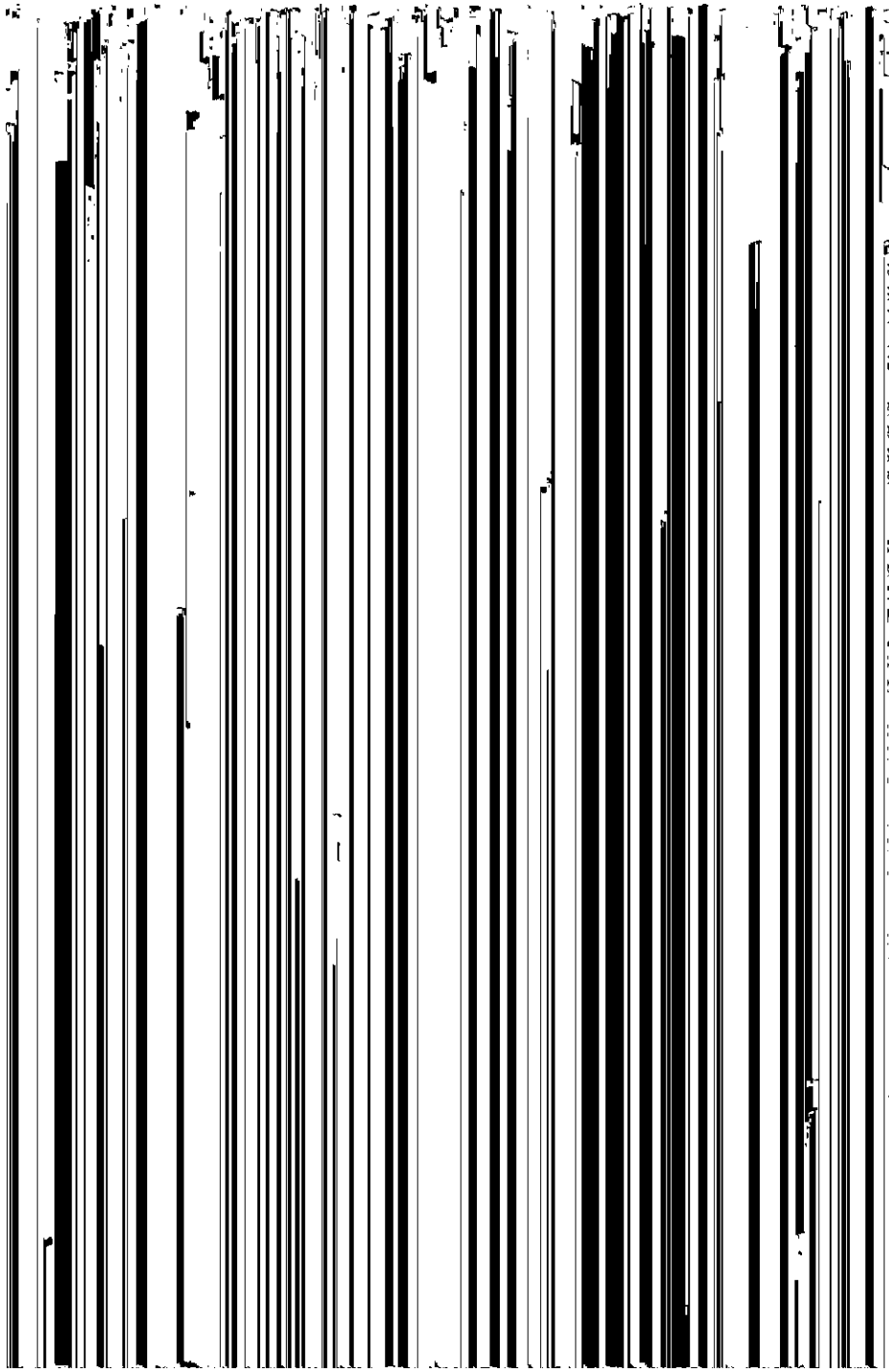
* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.



ENT AND PRODUCTIVITY

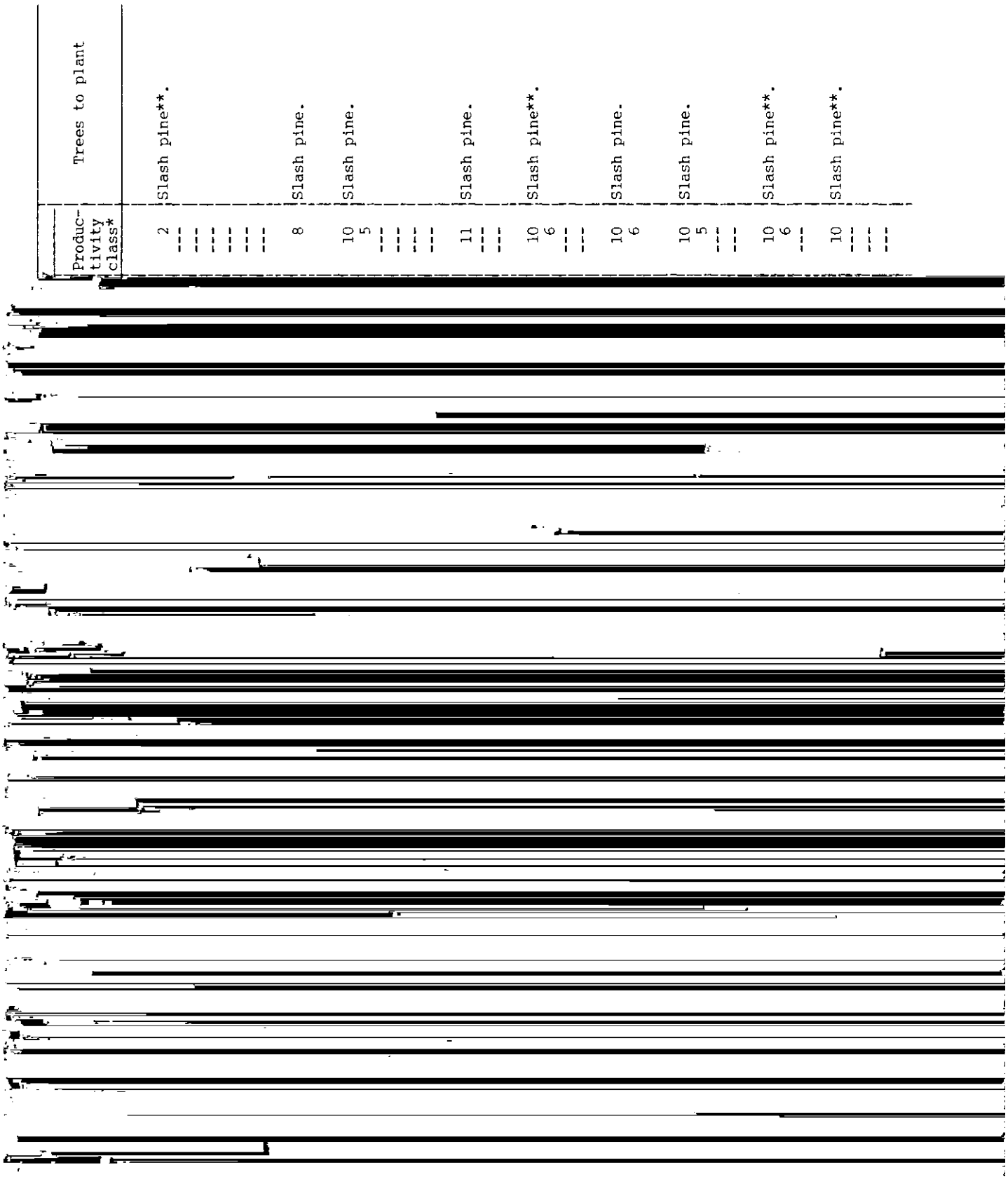
ted. Absence of an entry indicates that information was not

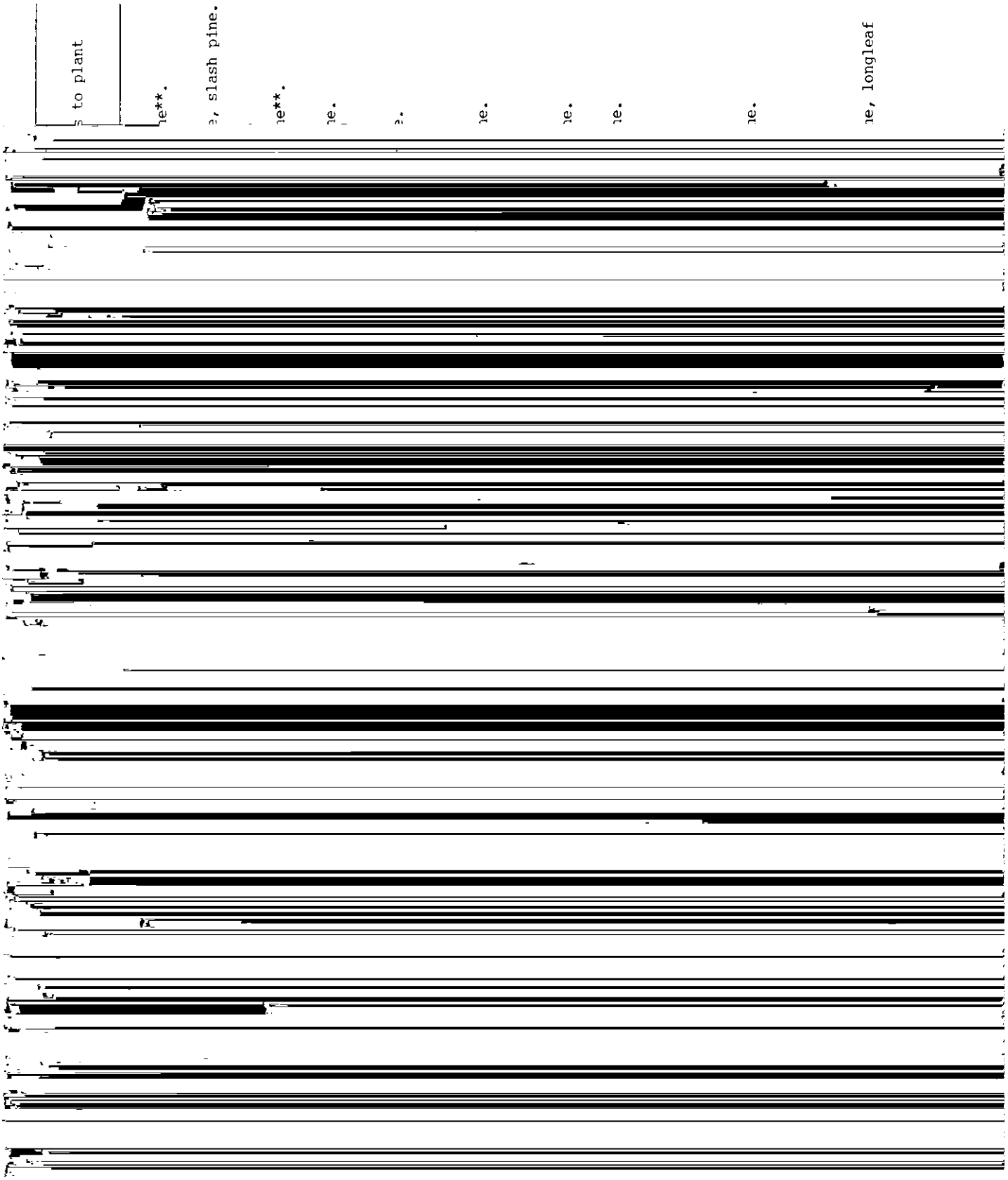
nt etition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
ht	Sand pine	60	3	Sand pine, slash pine.
	Inopina oak	---	---	
re	Pondcypress	75	2	Slash pine, pond pine**.
	Pond pine	60	3	
	Blackgum	---	---	
	Cabbage palm	---	---	
	Loblollybay gordonia	---	---	
	Red maple	---	---	
	Sweetbay	---	---	
rate	Slash pine	70	8	Sand pine, slash pine, longleaf pine.
	Longleaf pine	60	4	
	Sand pine	75	4	
	Turkey oak	---	---	
	Bluejack oak	---	---	
	Chapman oak	---	---	
	Scrub live oak	---	---	
rate	Slash pine	70	8	Sand pine, slash pine, longleaf pine.
	Longleaf pine	60	4	
	Sand pine	75	4	
	Turkey oak	---	---	
	Bluejack oak	---	---	
	Chapman oak	---	---	
	Scrub live oak	---	---	
ht	Slash pine	80	10	Slash pine, loblolly pine.
	Loblolly pine	80	8	
	Longleaf pine	70	6	
	Turkey oak	---	---	
	Bluejack oak	---	---	
	Chapman oak	---	---	
	Live oak	---	---	
re	Pondcypress	75***	2	Slash pine**.
	Blackgum	---	---	
	Red maple	---	---	
re	Baldcypress	100	6	Baldcypress, slash pine**.
	Red maple	---	---	
	Sweetgum	---	---	



JCTIVITY--Continued

Potential productivity			
Common trees	Site index	Productivity class*	Trees to plant
Baldcypress	100	6	Slash pine**,
Red maple	---	---	baldcypress.
Sweetgum	---	---	
Cabbage palm	---	---	
Laurel oak	---	---	
Water oak	---	---	
Baldcypress	100	6	Baldcypress,
Red maple	---	---	slash pine**.
Sweetgum	---	---	
Blackgum	---	---	
Slash pine	90	11	Slash pine**,
Baldcypress	100	6	baldcypress.
Cabbage palm	---	---	
Water oak	---	---	
Laurel oak	---	---	
Sweetgum	---	---	
Red maple	---	---	
Slash pine	80	10	Slash pine**,
Cabbage palm	---	---	baldcypress.
Laurel oak	---	---	
Slash pine	80	10	Slash pine.
Cabbage palm	---	---	
Laurel oak	---	---	
Slash pine	80	10	Slash pine**.
Red maple	---	---	
Sweetgum	---	---	
Cabbage palm	---	---	
Laurel oak	---	---	
Baldcypress	100	6	Slash pine**,
Red maple	---	---	baldcypress.
Sweetgum	---	---	
Cabbage palm	---	---	
Laurel oak	---	---	
Water oak	---	---	

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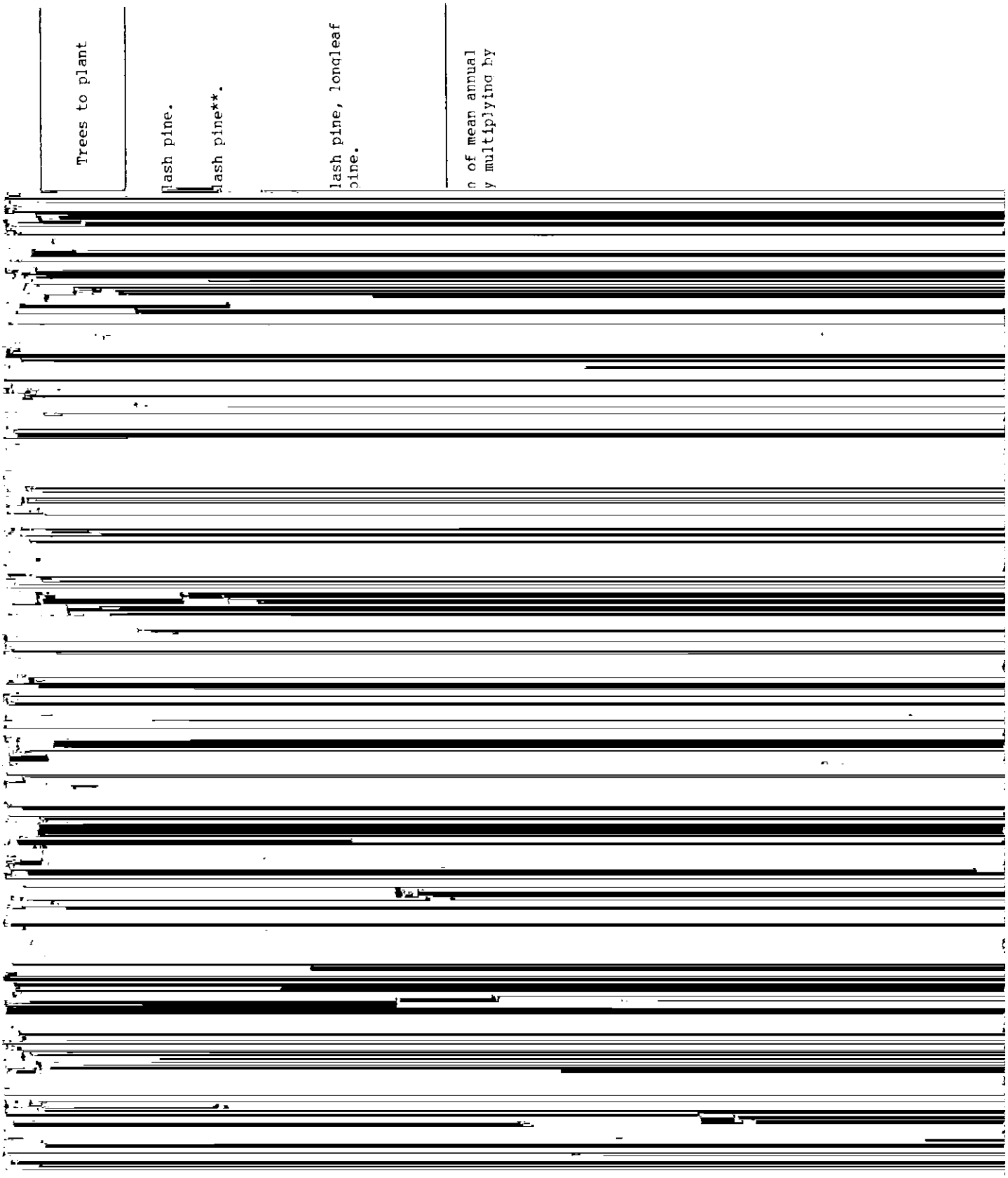
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TABLE 7.--RECREATIONAL DEVELOPMENT

[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]

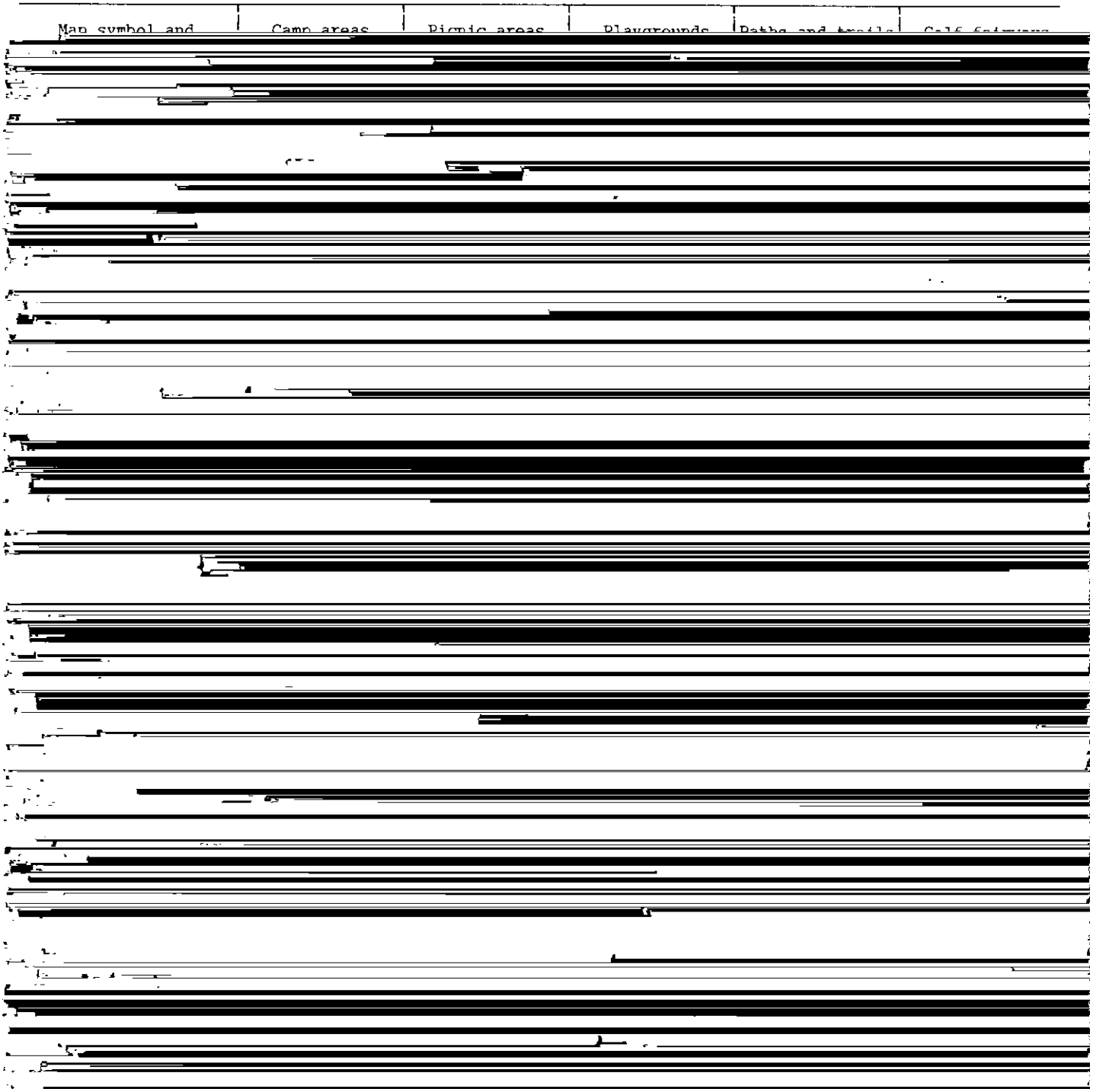

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
11: Chobee	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, flooding, percs slowly.	Severe: wetness.	Severe: wetness, flooding.
12: Emeralda	Severe: flooding, wetness, percs slowly.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
Holopaw	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
13--- Felda	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
14--- Felda	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
15--- Felda	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, droughty, flooding.
16--- Floridana	Severe: flooding, wetness, percs slowly.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
17--- 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.
18--- Gator	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.
19--- Hontoon	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
20--- Immokalee	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
21--- Lake	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
22--- Lochloosa	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
23--Malabar	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
24: Millhopper--Urban land.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
25--Okeelanta	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
26--Ona	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
27: Ona--Urban land.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
28--Florahome	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
29: Florahome--Urban land.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
30--Pineda	Severe: wetness, percs slowly, too sandy.	Severe: wetness, too sandy, percs slowly.	Severe: too sandy, wetness, percs slowly.	Severe: wetness, too sandy.	Severe: wetness, droughty.
31--Pineda	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, droughty, flooding.
32--Pinellas	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
33. Pits.					
34--Pomello	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
35: Pomello--Urban land.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
36--- Pompano	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
37--- St. Johns	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
38--- St. Lucie	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
39: St. Lucie---	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Urban land.					
40--- Samsula	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
41: Samsula---	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Hontoon---	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
Basinger---	Severe: ponding.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
42--- Sanibel	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
43--- Seffner	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty.
44--- Smyrna	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
45: Smyrna---	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Urban land.					
46--- Tavares	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
47: Tavares---	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
47: Millhopper	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
48: Tavares	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Urban land.					
49 Terra Ceia	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
50. Urban land.					
51 Wabasso	Severe: wetness,	Severe: wetness,	Severe: too sandy,	Severe: wetness,	Severe: wetness

TABLE 8.--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
1. Arents.										
2---------- Archbold	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
3---------- Basinger	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	---
4, 5---------- Candler	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
6: 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.
7, 8: Candler----------	Poor	Poor	Fair	Poor	Poor	Very	Very	Poor	Poor	Very
Urban land.						poor.	poor.			poor.
9---------- Canova	Poor	Fair	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
10---------- Chobee	Poor	Poor	Poor	Fair	Poor	Good	Good	Poor	Poor	Good.
11: Floridana---------	Very poor.	Poor	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
Chobee----------	Poor	Poor	Poor	Fair	Poor	Good	Good	Poor	Poor	Good.
12: [illegible]										

TABLE 8.--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
19--Hontoon	Very poor.	Very poor.	Poor	Fair	Very poor.	Good	Good	Very poor.	Fair	Good.
20--Immokalee	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Poor	Poor	Poor.
21--Lake	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
22--Lochloosa	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor.
23--Malabar	Poor	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
24: Millhopper	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
25--Okeelanta	Fair	Good	---	---	---	Good	Good	Good	---	Good.
26--Ona	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
27: Ona	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land.										
28--Florahome	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
29: Florahome	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
30--Pineda	Poor	Fair	Fair	Poor	Poor	Good	Fair	Fair	Poor	Fair.
31--Pineda	Poor	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
32--Pinellas	Very poor.	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
33. Pits.										
34--Pomello	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
35: Pomello	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

TABLE 8.--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
35: Urban land.										
36---------- Pompano	Poor	Fair	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
37---------- St. Johns	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
38---------- St. Lucie	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
39: St. Lucie---------	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Urban land.										
40---------- Samsula	Very poor.	Very poor.	Poor	Fair	Very poor.	Good	Good	Very poor.	Poor	Good.
41: Samsula----------	Very poor.	Very poor.	Poor	Fair	Very poor.	Good	Good	Very poor.	Poor	Good.
Hontoon----------	Very poor.	Very poor.	Poor	Poor	Very poor.	Good	Good	Very poor.	Poor	Poor.
Basinger----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
42---------- Sanibel	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
43---------- Seffner	Poor	Poor	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
44---------- Smyrna	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
45: Smyrna----------	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land.										
46---------- Tavares	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
47: Tavares----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Millhopper--------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
48: Tavares----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										

TABLE 8.--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
49---------- Terra Ceia	Fair	Good	---	---	---	Good	Good	Good	---	Good.
50. Urban land.										
51---------- Wabasso	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair	Poor.
52: Wabasso----------	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair	Poor.
Urban land.										
53---------- Wauberg	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
54---------- Zolfo	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor.
55: Zolfo----------	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor.
Urban land.										

TABLE 9.--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; it 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	Lawns and landscaping

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
12: Holopaw	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.
13---------- Felda	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
14---------- Felda	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty.
15---------- Felda	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty, flooding.
16---------- Floridana	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
17---------- Floridana	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
18---------- Gator	Severe: cutbanks cave, excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
19---------- Hontoon	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
20---------- Immokalee	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
21---------- Lake	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
22---------- Lochloosa	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Slight.
23---------- Malabar	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
24: Millhopper-------	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
Urban land.						

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
25---------- Okeelanta	Severe: cutbanks cave, excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
26---------- Ona	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
27: Ona----------	Severe: cutbanks cave,	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
38---------- St. Lucie	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
39: St. Lucie--------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
Urban land.						
40---------- Samsula	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, excess humus.
41: Samsula----------	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, excess humus.
Hontoon----------	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
Basinger---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
42---------- Sanibel	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, excess humus.
43---------- Seffner	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
44---------- Smyrna	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
45: Smyrna----------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land.						

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
48: Urban land.						
49---------- Terra Ceia	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
50. Urban land.						
51---------- Wabasso	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
52: Wabasso---------- Urban land.	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
53---------- Wauberg	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
54---------- Zolfo	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty, too sandy.
55: Zolfo---------- Urban land.	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty, too sandy.

TABLE 10.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "severe," "poor," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it 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
1. Arents.					
2* Archbold	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
3 Basinger	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
4* Candler	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
5* Candler	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
6*: Candler	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Apopka	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
7*: Candler	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
8*: Candler	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
9 Canova	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, seepage.	Severe: seepage, ponding.	Poor: ponding.
10 Chobee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 10.--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
11: Floridana	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Chobee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
12: Emeralda	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Holopaw	Severe: flooding, wetness.	Severe: seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
13--- Felda	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
14, 15--- Felda	Severe: flooding,	Severe: seepage,	Severe: flooding,	Severe: flooding,	Poor: seepage,

TABLE 10.--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
22* Lochloosa	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
23 Malabar	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
24*: Millhopper	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
25 Okeelanta	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
26 Ona	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
27: Ona	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Urban land.					
28* Florahome	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
29*: Florahome	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
30 Pineda	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
31* Pineda	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
32 Pinellas	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnote at end of table.

TABLE 10.--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
33. Pits.					
34*---------- Pomello	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
35*: Pomello----------	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Urban land.					
36---------- Pompano	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness,	Severe: seepage, wetness.	Poor: seepage, too sandy,

TABLE 10.--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
42---------- Sanibel	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
43*---------- Seffner	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
44---------- Smyrna	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
45: Smyrna----------	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Urban land.					
46---------- Tavares	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
47*: Tavares----------	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Millhopper---------	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
48*: Tavares----------	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
49---------- Terra Ceia	Severe: subsides, ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
50. Urban land.					
51---------- Wabasso	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnote at end of table.

TABLE 10.--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
52*: Wabasso	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Urban land.					
53--- Wauberg	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
54--- Zolfo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
55*: Zolfo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Urban land.					

* There may be a hazard of contamination of ground water in areas that have a large number of septic tank absorption fields because of inadequate filtration of the effluent.

TABLE 11.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1. Arents.				
2---------- Archbold	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
3---------- Basinger	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, wetness.
4, 5---------- Candler	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
6: Candler----------	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
Apopka----------	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
7, 8: Candler----------	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
Urban land.				
9---------- Canova	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
10---------- Chobee	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness.
11: Floridana----------	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Chobee----------	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness.
12: Emeralda----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, too clayey, wetness.
Holopaw----------	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, wetness.
13, 14, 15---------- Felda	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, wetness.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
32--Pinellas	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
33. Pits.				
34--Pomello	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
35: Pomello	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Urban land.				
36--Pompano	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
37--St. Johns	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
38--St. Lucie	Good	Probable	Improbable: too sandy.	Poor: too sandy.
39: St. Lucie	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Urban land.				
40--Samsula	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
41: Samsula	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
Hontoon	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
Basinger	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
42--Sanibel	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
43--Seffner	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
44--Smyrna	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
45: Smyrna	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Urban land.				
46-------------------- Tavares	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
47: Tavares	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
Millhopper----------	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
48: Tavares	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
Urban land.				
49-------------------- Terra Ceia	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: excess humus, wetness.
50. Urban land.				
51-------------------- Wabasso	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, wetness.
52: Wabasso	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, wetness.
Urban land.				
53-------------------- Wauberg	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
54-------------------- Zolfo	Fair: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy.
55: Zolfo	Fair: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy.
Urban land.				

TABLE 12.--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; it 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	Grassed waterways
1. Arents.						
2---------- Archbold	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
3----------						

TABLE 12.--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	Grassed waterways
11: Chobee	Slight	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding.	Wetness, soil blowing.	Wetness, rooting depth, percs slowly.
12: Emeralda	Slight	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding.	Wetness, droughty, percs slowly.	Wetness, droughty, rooting depth.
Holopaw	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, droughty.
13--- Felda	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
14, 15--- Felda	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, droughty.
16--- Floridana	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding.	Wetness, fast intake, soil blowing.	Wetness, percs slowly.
17--- Floridana	Severe: seepage.	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly.	Ponding, fast intake, soil blowing.	Wetness, percs slowly.
18--- Gator	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Wetness, percs slowly.
19--- Hontoon	Severe: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Subsides, ponding.	Ponding, soil blowing.	Wetness.
20--- Immokalee	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
21--- Lake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
22--- Lochloosa	Severe: seepage.	Moderate: wetness.	Severe: cutbanks cave.	Favorable	Wetness, fast intake, soil blowing.	Favorable.
23--- Malabar	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.

TABLE 12.--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	Grassed waterways
24: Millhopper	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
Urban land.						
25--- Okeelanta	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, soil blowing.	Wetness.
26--- Ona	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
27: Ona	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
Urban land.						
28--- Florahome	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
29: Florahome	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
Urban land.						
30---	Severe:	Severe:	Severe:	Deep to water	Wetness	Wetness

TABLE 12.--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	Grassed waterways
35: Pomello	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Droughty.
Urban land.						
36-- Pompano	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
37-- St. Johns	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Wetness, cutbanks cave.	Wetness, droughty, fast intake.	Wetness.
38-- St. Lucie	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
39: St. Lucie	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
Urban land.						
40-- Samsula	Severe: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Wetness.
41:						

TABLE 12.--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	Grassed waterways
45: Smyrna	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, droughty.
Urban land.						
46--- Tavares	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
47: Tavares	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
Millhopper	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
48: Tavares	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Droughty.
Urban land.						
49--- Terra Ceia	Severe: seepage.	Excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Wetness.
50. Urban land.						
51--- Wabasso	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Percs slowly, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, droughty, rooting depth.
52: Wabasso	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Percs slowly, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, droughty, rooting depth.
Urban land.						
53--- Wauberg	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Percs slowly---	Wetness, fast intake, soil blowing.	Wetness, percs slowly.
54--- Zolfo	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Droughty.
55: Zolfo	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Droughty.
Urban land.						

TABLE 13.--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]

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
1. Arents.										
2---------- Archbold	0-80	Fine sand--------	SP	A-3	100	100	89-99	1-3	---	NP
3---------- Basinger	0-7	Fine sand--------	SP	A-3	100	100	85-100	1-4	---	NP
	7-32	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	32-47	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	47-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
4---------- Candler	0-5	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	5-74	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	74-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
5---------- Candler	0-4	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	4-61	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	61-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
6:										
Candler----------	0-6	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	6-69	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	69-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
Apopka----------	0-69	Fine sand--------	SP, SP-SM	A-3	100	100	85-100	3-10	---	NP
	69-80	Sandy loam, sandy clay loam, sandy clay.	SM-SC, SC	A-2-4, A-2-6, A-4, A-6	98-100	95-100	60-95	20-40	20-40	4-20
7:										
Candler----------	0-4	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	4-67	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	67-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
Urban land.										
8:										
Candler----------	0-5	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	5-52	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	52-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
Urban land.										

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
9----------	0-6	Muck----------	PT	---	---	---	---	---	---	---
Canova	6-16	Sand, fine sand	SP, SP-SM	A-3	100	100	70-100	3-10	---	NP
	16-37	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	100	100	75-95	15-35	15-40	5-25
	37-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	100	80-100	65-95	15-35	5-30	NP-20
10----------	0-7	Fine sandy loam	SP-SM, SM	A-2-4	100	100	85-99	12-25	<40	NP-10
Chobee	7-50	Sandy clay loam	SC	A-2-6, A-2-7, A-6, A-7	100	100	85-99	25-45	35-45	20-25
	50-80	Loamy sand, fine sand, sandy clay loam.	SP-SM, SM, SC, SM-SC	A-2-4, A-2-6, A-6, A-7	100	100	80-99	12-45	<45	NP-25
11:										
Floridana-------	0-14	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	80-90	5-25	---	NP
	14-28	Fine sand, sand	SP, SP-SM	A-3	100	100	85-95	2-10	---	NP
	28-80	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	100	100	80-95	15-35	20-30	7-16
Chobee----------	0-12	Fine sandy loam	SP-SM, SM	A-2-4	100	100	85-99	12-25	<40	NP-10
	12-56	Sandy clay loam	SC	A-2-6, A-2-7, A-6, A-7	100	100	85-99	25-45	35-45	20-25
	56-80	Loamy sand, fine sand, sandy clay loam.	SP-SM, SM, SC, SM-SC	A-2-4, A-2-6, A-6, A-7	100	100	80-99	12-45	<45	NP-25
12:										
Emeralda--------	0-7	Fine sand, loamy sand.	SP, SP-SM	A-3	100	100	90-99	8-15	---	NP
	7-12	Fine sand, loamy fine sand, loamy sand.	SP-SM, SM	A-2-4	100	100	90-99	10-25	---	NP
	12-42	Sandy clay, clay	CH, SC, CL	A-7	100	100	90-99	45-80	46-66	23-39
	42-80	Sandy clay, clay	CH, SC, CL	A-7	100	100	90-99	45-80	46-66	23-39
Holopaw---------	0-51	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-90	2-10	---	NP
	51-71	Fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	100	95-100	65-90	15-34	<30	NP-12
	71-80	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	95-100	65-90	5-15	---	NP
13----------	0-22	Fine sand--------	SP, SP-SM	A-3	100	100	90-99	2-5	---	NP
Felda	22-53	Sandy loam, fine sandy loam,	SM, SM-SC, SC	A-2-4, A-2-6	100	100	90-99	15-35	<40	NP-15

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
15---------- Felda	0-24	Fine sand--------	SP, SP-SM	A-3	100	100	90-99	2-5	---	NP
	24-47	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	100	100	90-99	15-35	<40	NP-15
	47-80	Sand, fine sand, loamy sand.	SP, SP-SM	A-3, A-2-4	100	100	80-99	2-12	---	NP
16---------- Floridana	0-17	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	80-90	5-25	---	NP
	17-28	Fine sand, sand	SP, SP-SM	A-3	100	100	85-95	2-10	---	NP
	28-80	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	100	100	80-95	15-35	20-30	7-16
17---------- Floridana	0-20	Mucky fine sand	SP-SM, SM	A-3, A-2-4	100	100	80-90	5-25	---	NP
	20-28	Sand, fine sand	SP, SP-SM	A-3	100	100	80-90	2-10	---	NP
	28-80	Sandy loam, fine sandy loam, sandy clay loam.	SM-SC, SC	A-2-4, A-2-6	100	100	85-95	20-35	20-40	7-18
18---------- Gator	0-28	Muck----------	PT	A-8	---	---	---	---	---	---
	28-80	Fine sand, loamy sand, loamy fine sand.	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
19---------- Hontoon	0-80	Muck----------	PT	A-8	---	---	---	---	---	---
20---------- Immokalee	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	70-100	2-10	---	NP
	5-35	Fine sand, sand	SP, SP-SM	A-3	100	100	70-100	2-10	---	NP
	35-67	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	70-100	5-21	---	NP
	67-80	Fine sand, sand	SP, SP-SM	A-3	100	100	70-100	2-10	---	NP
21---------- Lake	0-80	Fine sand--------	SP-SM	A-3, A-2-4	100	100	85-98	5-12	---	NP
22---------- Lochloosa	0-29	Fine sand--------	SP-SM, SM	A-2-4, A-3	95-100	95-100	90-98	8-20	---	NP
	29-58	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	95-100	95-100	90-98	25-40	25-40	5-18
	58-80	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	95-100	95-100	90-98	25-40	25-40	5-18
23---------- Malabar	0-18	Fine sand--------	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
	18-30	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	3-12	---	NP
	30-42	Sand, fine sand	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
	42-58	Sandy clay loam, fine sandy loam, sandy loam.	SC, SM-SC, SM	A-2, A-4, A-6	100	100	80-100	20-40	<35	NP-20
	58-80	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
24: Millhopper------	0-65	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	97-100	75-95	5-20	---	NP
	65-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-4	100	97-100	75-95	18-40	<28	NP-10

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In							Pct		
24: Urban land.										
25---------- Okeelanta	0-25	Muck----------	PT	A-8	---	---	---	---	---	---
	25-80	Fine sand, sand, loamy sand.	SP, SP-SM, SM	A-3, A-2-4	100	85-100	80-95	2-15	---	NP
26---------- Ona	0-6	Fine sand---------	SP-SM, SP	A-3	100	100	85-95	3-10	---	NP
	6-15	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-20	---	NP
	15-80	Fine sand, sand	SP-SM, SP	A-3	100	100	85-95	3-10	---	NP
27: Ona----------	0-5	Fine sand---------	SP-SM, SP	A-3	100	100	85-95	3-10	---	NP
	5-18	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-20	---	NP
	18-80	Fine sand, sand	SP-SM, SP	A-3	100	100	85-95	3-10	---	NP
Urban land.										
28---------- Florahome	0-19	Fine sand---------	SP, SP-SM	A-3, A-2-4	100	100	85-100	1-12	---	NP
	19-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	1-12	---	NP
29: Florahome-------	0-22	Fine sand---------	SP, SP-SM	A-3, A-2-4	100	100	85-100	1-12	---	NP
	22-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	1-12	---	NP
Urban land.										
30---------- Pineda	0-5	Fine sand---------	SP, SP-SM	A-3	100	100	80-95	2-8	---	NP
	5-37	Sand, fine sand.	SP, SP-SM	A-3	100	100	80-95	2-10	---	NP
	37-55	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM-SC, SM	A-2-4, A-2-6	100	100	65-95	15-35	<35	NP-20
	55-80	Sand, loamy sand, fine sand.	SP-SM, SM, SP	A-3, A-2-4	95-100	90-100	80-95	4-15	---	NP
31---------- Pineda	0-5	Fine sand---------	SP, SP-SM	A-3	100	100	80-95	2-8	---	NP
	5-37	Sand, fine sand	SP, SP-SM	A-3	100	100	80-95	2-10	---	NP
	37-55	Sandy loam, fine sandy loam sandy clay loam.	SC, SM-SC, SM	A-2-4, A-2-6	100	100	65-95	15-35	20-30	NP-15
	55-80	Sand, loamy sand, fine sand.	SP-SM, SM, SP	A-3, A-2-4	90-100	95-100	80-95	4-15	---	NP
32---------- Pinellas	0-18	Fine sand---------	SP	A-3	100	100	90-100	2-4	---	NP
	18-34	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	34-46	Fine sandy loam, sandy clay loam.	SP-SM, SM-SC, SC	A-2-4, A-2-6	100	100	90-100	12-35	20-30	5-13
	46-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	80-100	75-100	60-95	2-12	---	NP
33. Pits.										

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
34---------- Pomello	0-40	Fine sand--------	SP, SP-SM	A-3	100	100	60-100	1-8	---	NP
	40-55	Coarse sand, sand, fine sand.	SP-SM, SM	A-3, A-2-4	100	100	60-100	6-15	---	NP
	55-80	Coarse sand, sand, fine sand.	SP, SP-SM	A-3	100	100	60-100	4-10	---	NP
35:										
Pomello---------	0-42	Fine sand--------	SP, SP-SM	A-3	100	100	60-100	1-8	---	NP
	42-54	Coarse sand, sand, fine sand.	SP-SM, SM	A-3, A-2-4	100	100	60-100	6-15	---	NP
	54-80	Coarse sand, sand, fine sand.	SP, SP-SM	A-3	100	100	60-100	4-10	---	NP
Urban land.										
36---------- Pompano	0-80	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	75-100	1-12	---	NP
37---------- St. Johns	0-12	Fine sand--------	SP, SP-SM	A-3	100	100	75-95	3-10	---	NP
	12-24	Sand, fine sand	SP, SP-SM	A-3	100	100	85-95	3-10	---	NP
	24-44	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-20	---	NP
	44-80	Sand, fine sand	SP, SP-SM	A-3	100	100	80-90	2-10	---	NP
38----------	0-20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
44---------- Smyrna	0-17	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	17-27	Sand, fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
	27-80	Sand, fine sand	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
45:										
Smyrna----------	0-18	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	18-28	Sand, fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
	28-80	Sand, fine sand	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
Urban land.										
46---------- Tavares	0-6	Fine sand--------	SP, SP-SM	A-3	100	95-100	85-100	2-10	---	NP
	6-80	Sand, fine sand	SP, SP-SM	A-3	100	95-100	85-100	2-10	---	NP
47:										
Tavares----------	0-6	Fine sand--------	SP, SP-SM	A-3	100	95-100	85-100	2-10	---	NP
	6-80	Sand, fine sand	SP, SP-SM	A-3	100	95-100	85-100	2-10	---	NP
Millhopper------	0-64	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	97-100	75-95	5-20	---	NP
	64-76	Loamy sand, loamy fine sand.	SM	A-2-4	100	97-100	75-95	15-22	---	NP
	76-80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

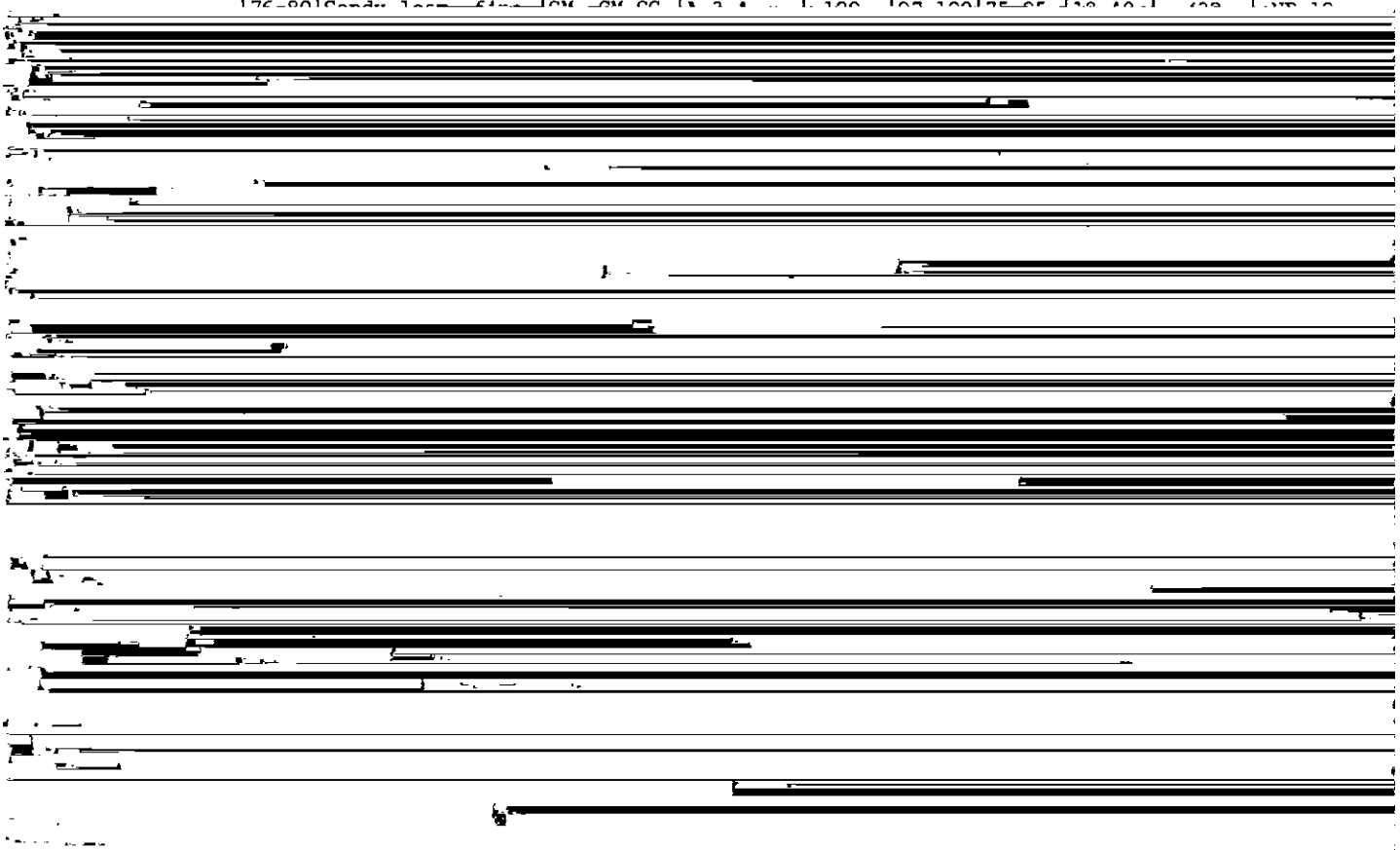

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
52: Urban land.										
53---------- Wauberg	0-8	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	95-100	80-98	5-20	---	NP
	8-28	Sand, fine sand, loamy sand.	SP, SP-SM, SM	A-3, A-2-4	100	95-100	80-95	3-17	---	NP
	28-60	Sandy clay loam	SC	A-2-4, A-2-6, A-4, A-6	100	98-100	90-99	28-42	22-36	9-16
	60-80	Sandy clay, clay	SC, CL, CH	A-6, A-7	100	98-100	90-99	45-65	37-55	21-40
54---------- Zolfo	0-5	Fine sand--------	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	5-55	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-18	---	NP
	55-80	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-18	---	NP
55: Zolfo----------	0-6	Fine sand--------	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	6-64	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-18	---	NP
	64-80	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-18	---	NP
Urban land.										

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. 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	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
12:												
Emeralda	0-7	2-8	1.25-1.50	6.0-20	0.10-0.15	5.1-6.5	<2	Low	0.10	5	1	3-10
	7-12	4-12	1.40-1.70	6.0-20	0.05-0.10	5.1-6.5	<2	Low	0.15			
	12-42	38-60	1.60-1.85	<0.2	0.10-0.20	6.1-8.4	<2	High	0.24			
	42-80	38-60	1.60-1.85	<0.2	0.10-0.20	7.9-8.4	<2	High	0.24			
Holopaw	0-51	2-5	1.20-1.60	6.0-20	0.03-0.07	5.1-7.3	<2	Low	0.10	5	2	1-4
	51-71	16-24	1.50-1.70	0.6-2.0	0.10-0.15	5.6-8.4	<2	Low	0.24			
	71-80	6-12	1.20-1.60	6.0-20	0.05-0.10	5.6-8.4	<2	Low	0.15			
13	0-22	1-3	1.40-1.55	6.0-20	0.02-0.05	5.1-7.3	<2	Low	0.10	5	2	1-4
Felda	22-53	13-30	1.50-1.65	0.6-6.0	0.10-0.15	6.1-7.8	<2	Low	0.24			
	53-80	1-10	1.50-1.65	6.0-20	0.02-0.05	6.1-8.4	<2	Low	0.10			
14	0-22	1-3	1.40-1.55	6.0-20	0.02-0.05	5.1-7.3	<2	Low	0.10	5	2	1-4

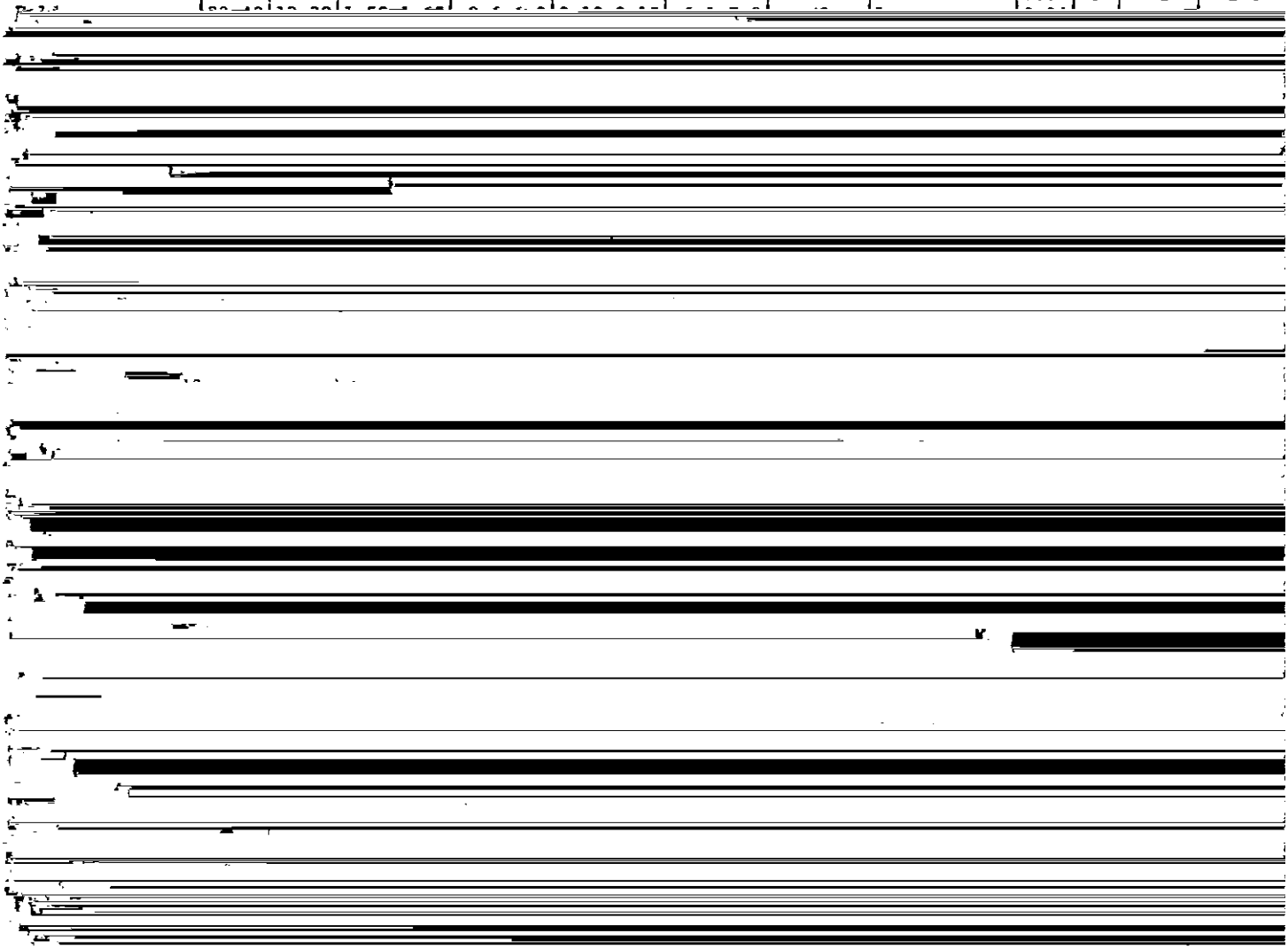

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and	Depth	Clay	Moist	Permea-	Available	Soil	Salinity	Shrink-swell	Erosion factors	Wind erodi-	Organic

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
39: St. Lucie-------	0-80	0-1	1.50-1.60	>20	0.02-0.05	3.6-7.3	<2	Low---------	0.10	5	1	0-1
Urban land.												
40----------	0-40	---	0.25-1.50	6.0-20	0.20-0.25	4.5-5.5	<2	Low---------	---	---	2	>20
Samsula	40-80	1-14	1.35-1.55	6.0-20	0.02-0.05	3.6-5.5	<2	Low---------	0.17			

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
51----------	0-3	1-5	1.25-1.45	6.0-20	0.03-0.08	3.6-6.5	<2	Low----------	0.10	5	2	1-4
Wabasso	3-18	0-5	1.35-1.55	6.0-20	0.02-0.05	3.6-6.5	<2	Low----------	0.10			
	18-21	1-12	1.50-1.75	0.6-2.0	0.10-0.15	4.5-7.3	<2	Low----------	0.15			
	21-70	12-30	1.60-1.75	<0.2	0.10-0.15	5.1-8.4	<2	Low----------	0.24			
	70-80	2-12	1.40-1.70	6.0-20	0.05-0.10	7.4-8.4	<2	Low----------	0.10			
52:												
Wabasso----------	0-4	1-5	1.25-1.45	6.0-20	0.03-0.08	3.6-6.5	<2	Low----------	0.10	5	2	1-4
	4-16	0-5	1.35-1.55	6.0-20	0.02-0.05	3.6-6.5	<2	Low----------	0.10			
	16-25	1-12	1.50-1.75	0.6-2.0	0.10-0.15	4.5-7.3	<2	Low----------	0.15			
	25-42	12-30	1.60-1.75	<0.2	0.10-0.15	5.1-8.4	<2	Low----------	0.24			
	42-80	2-12	1.40-1.70	6.0-20	0.05-0.10	7.4-8.4	<2	Low----------	0.10			
Urban land.												
53----------	0-8	1-12	1.05-1.55	>6.0	0.05-0.15	4.5-6.5	<2	Low----------	0.10	5	2	1-4
Wauberg	8-28	1-10	1.30-1.60	>6.0	0.03-0.10	4.5-6.5	<2	Low----------	0.15			
	28-60	24-35	1.50-1.70	<0.06	0.07-0.13	5.1-7.3	<2	Moderate-----	0.28			
	60-80	36-50	1.60-1.70	<0.06	0.08-0.15	5.1-7.3	<2	High---------	0.32			
54----------	0-5	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
Zolfo	5-55	1-5	1.50-1.60	6.0-20	0.03-0.10	4.5-7.3	<2	Low----------	0.10			
	55-80	1-5	1.50-1.70	0.6-2.0	0.10-0.25	3.6-6.5	<2	Low----------	0.15			
55----------	0-6	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
Zolfo	6-64	1-5	1.50-1.60	6.0-20	0.03-0.10	4.5-7.3	<2	Low----------	0.10			
	64-80	1-5	1.50-1.70	0.6-2.0	0.10-0.25	3.6-6.5	<2	Low----------	0.15			

TABLE 15.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
1. Arents.											
2---------- Archbold	A	None-------	---	---	3.5-6.0	Apparent	Jun-Nov	---	---	Low------	Moderate.
3*---------- Basinger	D	None-------	---	---	+2-1.0	Apparent	Jun-Feb	---	---	High-----	Moderate.
4, 5---------- Candler	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
6: Candler-------	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
Apopka--------	A	None-------	---	---	>6.0	---	---	---	---	Moderate	High.
7, 8: Candler-------	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
Urban land.											
9*---------- Canova	B/D	None-------	---	---	+2-0	Apparent	Jan-Dec	3-6	8-12	High-----	Low.
10---------- Chobee	B/D	Frequent---	Brief to very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
11: Floridana-----	D	Frequent---	Very long.	Jul-Sep	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
Chobee--------	B/D	Frequent---	Brief to very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
12: Emeralda------	D	Frequent---	Long---	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	High-----	Low.
Holopaw-------	D	Frequent---	Very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	High-----	High.
13---------- Felda	B/D	None-------	---	---	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
14---------- Felda	B/D	Occasional	Brief	Jul-Feb	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
15---------- Felda	B/D	Frequent---	Very long.	Jul-Feb	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
16---------- Floridana	D	Frequent---	Very long.	Jul-Oct	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
17*--- Floridana	D	None	---	---	+2-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
18*--- Gator	D	None	---	---	+2-1.0	Apparent	Jun-Dec	2-6	20-23	High	High.
19*--- Hontoon	B/D	None	---	---	+2-1.0	Apparent	Jan-Dec	16-24	>52	High	High.
20--- Immokalee	B/D	None	---	---	0-1.0	Apparent	Jun-Nov	---	---	High	High.
21--- Lake	A	None	---	---	>6.0	---	---	---	---	Low	High.
22--- Lochloosa	C	None	---	---	2.5-5.0	Apparent	Jul-Oct	---	---	High	High.
23--- Malabar	B/D	None	---	---	0-1.0	Apparent	Jun-Nov	---	---	High	Low.
24: Millhopper---	A	None	---	---	3.5-6.0	Perched	Aug-Feb	---	---	Low	Moderate.
Urban land.											
25*--- Okeelanta	B/D	None	---	---	+1-0	Apparent	Jun-Jan	16-20	16-30	High	Moderate.
26--- Ona	B/D	None	---	---	0-1.0	Apparent	Jun-Nov	---	---	High	High.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
35: Pomello	C	None	---	---	2.0-3.5	Apparent	Jul-Nov	---	---	Low	High.
Urban land.											
36--Pompano	B/D	None	---	---	0-1.0	Apparent	Jun-Nov	---	---	High	Moderate.
37--St. Johns	B/D	None	---	---	0-1.0	Apparent	Jun-Apr	---	---	High	High.
38--St. Lucie	A	None	---	---	>6.0	---	---	---	---	Low	Moderate.
39: St. Lucie	A	None	---	---	>6.0	---	---	---	---	Low	Moderate.
Urban land.											
40*--Samsula	B/D	None	---	---	+2-1.0	Apparent	Jan-Dec	16-20	30-36	High	High.
41: Samsula*	B/D	None	---	---	+2-1.0	Apparent	Jan-Dec	16-20	30-36	High	High.
Hontoon*	B/D	None	---	---	+2-1.0	Apparent	Jan-Dec	16-24	>52	High	High.
Basinger*	D	None	---	---	+2-1.0	Apparent	Jun-Feb	---	---	High	Moderate.
42*--Sanibel	B/D	None	---	---	+1-1.0	Apparent	Jun-Feb	3-5	5-15	High	Low.
43--Seffner	C	None	---	---	1.5-3.5	Apparent	Jun-Nov	---	---	Low	Moderate.
44--Smyrna	B/D	None	---	---	0-1.0	Apparent	Jul-Oct	---	---	High	High.
45: Smyrna	B/D	None	---	---	0-1.0	Apparent	Jul-Oct	---	---	High	High.
Urban land.											
46--Tavares	A	None	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low	High.
47: Tavares	A	None	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low	High.
Millhopper	A	None	---	---	3.5-6.0	Perched	Aug-Feb	---	---	Low	Moderate.
48: Tavares	A	None	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low	High.
Urban land.											
49*--Terra Ceia	B/D	None	---	---	+1-1.0	Apparent	Jan-Dec	16-20	50-60	Moderate	Moderate.
50. Urban land.											

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete

TABLE 16.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Apopka	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Archbold	Hyperthermic, uncoated Typic Quartzipsamments
Arents	Arents
Basinger	Siliceous, hyperthermic Spodic Psammaquents
Candler	Hyperthermic, uncoated Typic Quartzipsamments
Canova	Fine-loamy, siliceous, hyperthermic Typic Glossaqualfs
Chobee	Fine-loamy, siliceous, hyperthermic Typic Argiaquolls
Emeralda	Fine, mixed, hyperthermic Mollic Albaqualfs
Felda	Loamy, siliceous, hyperthermic Arenic Ochraqualfs
Florahome	Sandy, siliceous, hyperthermic Quartzipsammentic Haplumbrepts
Floridana	Loamy, siliceous, hyperthermic Arenic Argiaquolls
Gator	Loamy, siliceous, euic, hyperthermic Terric Medisaprists
Holopaw	Loamy, siliceous, hyperthermic Grossarenic Ochraqualfs
Hontoon	Dysic, hyperthermic Typic Medisaprists
Immokalee	Sandy, siliceous, hyperthermic Arenic Haplaquods
Lake	Hyperthermic, coated Typic Quartzipsamments
Lochloosa	Loamy, siliceous, hyperthermic Aquic Arenic Paleudults
Malabar	Loamy, siliceous, hyperthermic Grossarenic Ochraqualfs
Millhopper	Loamy, siliceous, hyperthermic Grossarenic Paleudults
Okeelanta	Sandy or sandy-skeletal, siliceous, euic, hyperthermic Terric Medisaprists
Ona	Sandy, siliceous, hyperthermic Typic Haplaquods
Pineda	Loamy, siliceous, hyperthermic Arenic Glossaqualfs
Pinellas	Loamy, siliceous, hyperthermic Arenic Ochraqualfs