United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Virginia Polytechnic Institute and State University

Soil Survey of Charles City County, Virginia

How To Use This Soil Survey

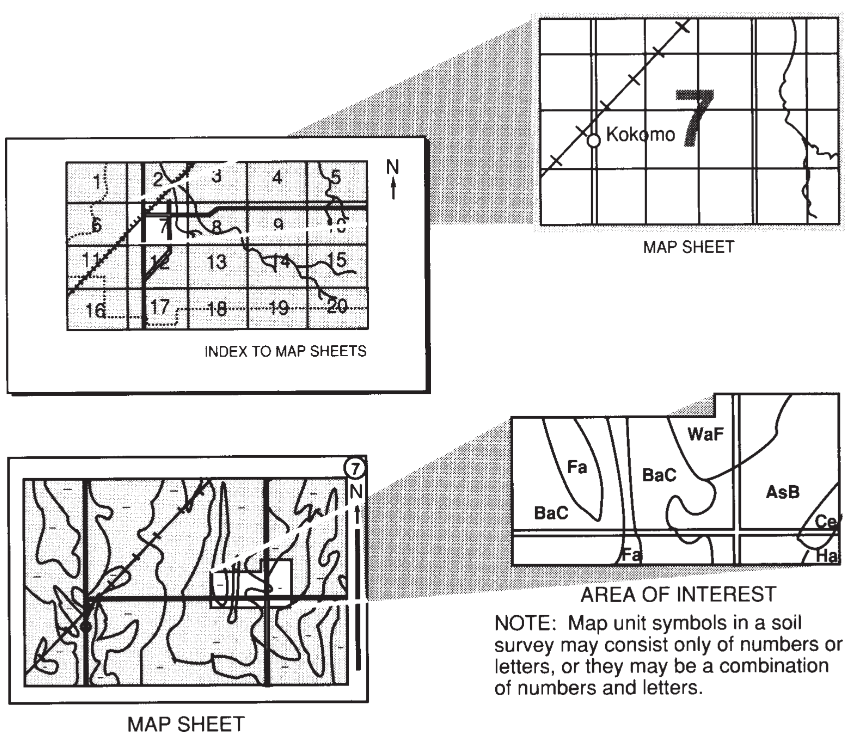
Detailed Soil Maps

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

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

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

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



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

National Cooperative Soil Survey

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 Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the Virginia Polytechnic Institute and State University. Financial assistance was provided by the Virginia Department of Conservation and Recreation and the Charles City County Board of Supervisors. The survey is part of the technical assistance furnished to the Colonial Soil and Water Conservation District.

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1993. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1988. The most current official data are available at http://websoilsurvey.nrcs.usda.gov.

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.

Nondiscrimination Statement

Cover Caption

The Shirley Plantation, which is located on Pamunkey loam, 0 to 2 percent slopes.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, ranchers, foresters, and agronomists can use the surveys 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 surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the surveys to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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

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

M. Denise Doetzer
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Charles City County, Virginia

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Virginia Polytechnic Institute and State University

CHARLES CITY COUNTY is in the east-central Coastal Plain region on a peninsula between the Chickahominy and James Rivers, approximately 20 miles east of Richmond (fig. 1). It consists of 116,100 acres, or 181 square miles, of land and 14,700 acres, or 20 square miles, of water.

Charles City is the county seat. It is located in the south-central part of the county on Virginia Route 5. Charles City County is dominantly rural. In 2000, it had a population of 6,926.

Wood products and agricultural field crops, namely corn, soybeans, cotton, and small grains, are important to the economy of the county. About 80 percent of the land is woodland. Only about 15 percent of the land is used for agriculture. In recent years, the acreage of agricultural land has decreased.

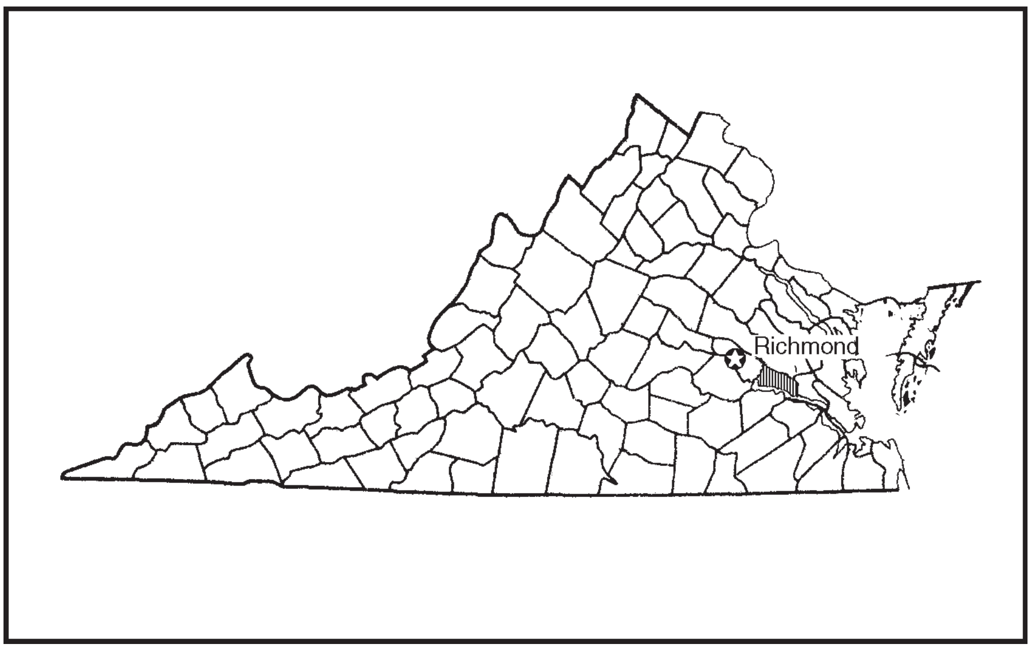

Figure 1.—Location of Charles City County in Virginia.

General Nature of the County

This section gives general information about Charles City County. It describes the history and development; agriculture and industry; climate; and physiography, relief, and drainage.

History and Development

Charles City County was named after King Charles I of England. It was one of the eight original shires that made up Virginia. Sixteen Virginia counties were eventually formed from the original shire of Charles City County.

The first known English settlement in the survey area was Shirley, settled in 1613. In 1664, the Shirley Plantation was patented by Major Edward Hill. It is the oldest plantation in Virginia and the oldest family-owned business in North America. Anne Hill Carter, mother of Robert E. Lee, was born at the Shirley Plantation.

The Westover Plantation is another famous plantation along the James River. It was founded in 1619, during the early years of settlement. The present-day manor house was built in 1730 by Colonel William Byrd, founder of the City of Richmond.

The Berkeley Plantation was the site of the first official Thanksgiving, which was held on December 4, 1619. The plantation house was built by Benjamin Harrison IV in 1726. It is the oldest three-story brick house in Virginia. Benjamin Harrison V, a signer of the Declaration of Independence and three times Governor of Virginia, and William Henry Harrison, ninth President of the United States, were born at Berkeley.

The Sherwood Forest Plantation was the birthplace of John Tyler, tenth President of the United States. The manor house is the longest frame house in the United States.

The Evelynton Plantation was founded by William Byrd and named for his daughter Evelyn. It was purchased in 1847 by Edmund Ruffin, who is credited with firing the first shot in the Civil War and for improving Virginia's agricultural economy by introducing marl as a liming agent.

During the Revolutionary War, the Shirley Plantation was a supply center for the Continental Army. Many members of the Virginia State Militia were from Charles City County.

During the Civil War, at the Battle of Malvern Hill, the Union Army encamped at the Shirley and Berkeley Plantations. The manor house of the Shirley Plantation temporarily became a Union Hospital. The bugle call "Taps" was composed by General Butterfield of the Union Army at Berkeley during the encampment.

The Chickahominy Indians originally inhabited the survey area. Captain John Smith discovered the Chickahominy town of Manosick in 1607. In 1646, the Indians were moved from their territory on the peninsula to an area along the Pamunkey and Mattaponi Rivers. About 1850, many members of the tribe moved back to Charles City County. Presently, about 600 Chickahominy Indians live in the county.

Charles City County has remained rural. Agriculture was the basis of the county's economic system until about 1950. Forest products are now the county's most important industry. An industrial complex, built at Roxbury in the late 1980s, attracted several small industries. Most of the labor force living in Charles City County, however, works outside the county.

Agriculture and Industry

Farming is on the decline in Charles City County. Most of the farms are located in the southern part of the survey area along the James River and Highway VA-5, south and west of the Charles City Courthouse. The major crops are corn, soybeans, cotton, and small grains. A few truck farms that raise specialty crops are scattered throughout the survey area. If an adequate supply of water is provided, the truck farm industry has good potential for growth. Some farms produce alternative crops to supplement farm income. According to the 2002 Census of Agriculture, the county has a few cattle, dairy, poultry, and swine operations.

Forestry is a major source of income in Charles City County, but according to the current trend, wood product companies are selling their property to private buyers.

Urban and industrial developments are in the Roxbury area in Charles City County. Some of the principal businesses in this industrial area are boat manufacturing, lumber products, machine tooling, and a trucking and service center.

Climate

Prepared by the Natural Resources Conservation Service, National Water and Climate Center, Portland, Oregon.

The tables "Temperature and Precipitation," "Freeze Dates in Spring and Fall," and "Growing Season" give climate data for the survey area as recorded at the climate station at the Richmond WSO Airport in Richmond, Virginia (no long-term climate stations were available for Charles City County; therefore, data from the nearby Richmond station were used).

The table "Temperature and Precipitation" gives data on temperature and precipitation for the survey area as recorded at Richmond in the period 1949 to 1992. The table "Freeze Dates in Spring and Fall" shows probable dates of the first freeze in fall and the last freeze in spring. The table "Growing Season" provides data on the length of the growing season.

In winter, the average temperature is 39 degrees F and the average daily minimum temperature is 29 degrees. The lowest temperature on record, which occurred at Richmond on February 10, 1979, was -8 degrees. In summer, the average temperature is 75.9 degrees and the average daily maximum temperature is 86.8 degrees. The highest temperature, which occurred at Richmond on July 6, 1977, was 105 degrees.

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

The average annual total precipitation is about 43 inches. Of this, about 24 inches, or about 55 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 18 inches. The heaviest 1-day rainfall during the period of record was 5.5 inches at Richmond on August 18, 1985. Thunderstorms occur on about 35 days each year, and most occur in June, July, or August.

Average seasonal snowfall is 14 inches. The greatest snow depth at any one time during the period of record was 15 inches. On average, 9 days per year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in mid-afternoon is about 53 percent. Humidity is higher at night, and the average humidity at dawn is about 85 percent. The sun shines 60 percent of the time possible in summer and 40 percent of the time possible in winter. The prevailing wind is from the south. Average wind speed is highest, around 9 miles per hour, in March.

Physiography, Relief, and Drainage

Charles City County lies entirely within the Atlantic Coastal Plain physiographic province, on a peninsula between the Chickahominy and James Rivers. Elevation ranges from near sea level along the James River to about 150 feet above sea level in the western part of the county near the Henrico County line.

The county has both wet, flat areas and well drained, nearly level to very steep areas. The eastern part of the county is nearly level or gently sloping and has a few tidal creeks and marshes. Steep or very steep escarpments and side slopes dissect the area.

The north-central to northwestern part of the county consists of broad uplands. The drainage pattern toward the Chickahominy River is dendritic and very steep. The slopes toward the James River are less steep and have longer drainageways.

Streams and creeks are generally small and are influenced by tidal action. They drain into the James and Chickahominy Rivers, east of Walkers Dam. Marshes are mostly fresh water, but they become brackish during long, dry periods.

How This Survey Was Made

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

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area 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-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

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

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

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict 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 descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Map Unit Composition

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

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

The presence of minor components 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.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Emporia fine sandy loam, 2 to 6 percent slopes is a phase of the Emporia series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Nevarc-Remlik complex, 10 to 15 percent slopes is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas 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 or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Udorthents, smooth, gently sloping is an example.

The table “Acreage and Proportionate Extent of the Soils” lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

1A—Altavista fine sandy loam, 0 to 3 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 15 acres

Map Unit Composition

Altavista and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 11 inches—dark grayish brown fine sandy loam

Subsoil:
11 to 16 inches—light yellowish brown loam
16 to 28 inches—light olive brown loam
28 to 37 inches—light olive brown clay loam; gray iron depletions
37 to 49 inches—yellowish brown and strong brown loam; gray iron depletions
49 to 62 inches—gray sandy clay loam; light olive brown and yellowish brown masses of oxidized iron

Substratum:
62 to 74 inches—gray stratified fine sandy loam, loamy fine sand, and fine sand; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained, clayey Dogue soils; on the slightly higher rises
- Poorly drained Nimmo and Tomotley soils; in areas around small drainageways and in depressions
- Soils in areas that are subject to ponding

Similar components:
- Soils that have a solum less than 40 inches thick
- Soils that have a slope of 3 to 6 percent

Soil Properties and Qualities

Available water capacity: High (about 9.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 2.5 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2w
Virginia soil management group: B
Hydric soil: No

2A—Augusta sandy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 15 acres

Map Unit Composition

Augusta and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 13 inches—pale brown sandy loam; gray iron depletions

Subsoil:
13 to 27 inches—light olive brown sandy clay loam; light gray iron depletions
27 to 40 inches—light gray sandy loam; olive brown masses of oxidized iron

Substratum:
40 to 51 inches—grayish brown gravelly loamy sand; light gray iron depletions and reddish brown masses of oxidized iron
51 to 72 inches—light brownish gray stratified loamy sand and gravelly loamy sand; strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Conetoe soils; in the slightly higher areas
- Moderately well drained Dogue soils; in similar areas
- Moderately well drained Munden soils; in slight depressions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Somewhat poorly drained
Seasonal high water table: At a depth of 1.0 to 2.0 feet from December to May
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, peanuts, and wheat; poorly suited to grass-legume hay
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited

- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The wetness of the soil may limit the use of log trucks on this soil.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 4w
Virginia soil management group: Z
Hydric soil: No

3A—Bethera silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level medium to broad flats and depressions
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Bethera and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—dark gray silt loam

Subsurface layer:
4 to 7 inches—dark gray silt loam; yellowish brown masses of oxidized iron
7 to 12 inches—gray silt loam; strong brown masses of oxidized iron

Subsoil:
12 to 40 inches—light gray clay loam; yellowish brown, strong brown, and yellowish red masses of oxidized iron
40 to 72 inches—light gray clay loam; dark yellowish brown and strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Slagle soils; in the slightly higher areas

- Somewhat poorly drained Nahunta soils; in the slightly higher areas

Similar components:
- Soils that have a thinner solum
- Soils that have less clay
- Soils in areas that have water on the surface through early summer

Soil Properties and Qualities

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At the surface from December through April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: Occasional
Depth of ponding: 0 to 1.0 foot
Shrink-swell potential: Moderate
Runoff class: Negligible
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Poorly suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.

Woodland
Suitability: Moderately suited to sweetgum
- Ponding may create unsafe conditions for log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- Ponding limits this soil for building site development.

Septic tank absorption fields
- Ponding limits this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6w

Virginia soil management group: OO
Hydric soil: Yes

4A—Bibb fine sandy loam, 0 to 2 percent slopes, frequently flooded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Flood plains
Position on the landform: Nearly level fresh water basins
Size and shape of areas: Irregular and elongated, 5 to 300 acres

Map Unit Composition

Bibb and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown fine sandy loam

Subsurface layer:
4 to 9 inches—gray fine sandy loam

Substratum:
9 to 31 inches—gray fine sandy loam; light olive brown masses of oxidized iron
31 to 41 inches—greenish gray fine sandy loam; light olive brown, strong brown, and yellowish brown masses of oxidized iron
41 to 65 inches—light greenish gray gravelly loamy coarse sand

Minor Components

Contrasting components:
- Poorly drained, fine-loamy Tomotley soils; at the higher elevations on flood plains
- Very poorly drained Mattan soils; at the lower elevations on flood plains adjacent to tidal swamps
- Very poorly drained Lawnes soils; at the lower elevations on flood plains adjacent to tidal marshes

Similar components:
- Soils that have a clayey subsoil
- Soils that have a sandy subsoil
- Soils that are wet because of seepage
- Soils that are somewhat poorly drained and are near active stream channels and the bases of terrace escarpments
- Soils that have gravel in the surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0.5 to 1.0 foot from November to May
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: None
Shrink-swell potential: Low

Runoff class: Very high
Parent material: Loamy and sandy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Poorly suited
- Flooding may damage pastures.
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine
- Flooding may damage haul roads and restrict the use of log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.

Building sites
- Flooding limits building site development on this soil.

Septic tank absorption fields
- Flooding limits the use of this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Flooding may damage local roads and streets.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6w
Virginia soil management group: EE
Hydric soil: Yes

5A—Bojac loamy fine sand, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Low stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Bojac and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—dark brown loamy fine sand

Subsoil:
10 to 35 inches—brown sandy loam

Substratum:
35 to 70 inches—strong brown loamy sand

Minor Components

Contrasting components:
- Well drained, fine-loamy Pamunkey soils; in similar areas
- Moderately well drained Munden soils; in the slightly lower areas
- Poorly drained Tomotley soils; in the lower areas

Similar components:
- Soils that have a high base saturation because of intensive liming and fertilization; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 5.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 4.0 to 6.6 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to cotton, peanuts, wheat, and grass-legume hay; moderately suited to corn; poorly suited to soybeans
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- This soil is well suited to haul roads, log landings, and equipment operations.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The excessive permeability of the soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2s
Virginia soil management group: DD
Hydric soil: No

5B—Bojac loamy fine sand, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Low stream terraces
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Bojac and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—dark brown loamy fine sand

Subsoil:
10 to 35 inches—brown sandy loam

Substratum:
35 to 70 inches—strong brown loamy sand

Minor Components

Contrasting components:
- Well drained, fine-loamy Pamunkey soils; in similar areas
- Moderately well drained Munden soils; in the slightly lower areas
- Poorly drained Tomotley soils; in the lower areas

Similar components:
- Soils that have a high base saturation because of intensive liming and fertilization; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 5.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 4.0 to 6.6 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to cotton, peanuts, wheat, and grass-legume hay; moderately suited to corn; poorly suited to soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- This soil is well suited to haul roads, log landings, and equipment operations.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The excessive permeability of the soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: DD
Hydric soil: No

6B—Caroline silt loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises and side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Caroline and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 14 inches—yellowish brown silty clay loam
14 to 29 inches—strong brown clay; yellowish red and yellowish brown masses of oxidized iron
29 to 52 inches—strong brown clay; yellowish red, yellowish brown, and red masses of oxidized iron
52 to 70 inches—strong brown and yellowish brown clay; gray iron depletions and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, sandy and loamy Uchee soils; in similar areas
- Moderately well drained Slagle and Craven soils; in slight depressions and on foot slopes

Similar components:
- Soils that have a redder subsoil; in similar areas
- Soils that have a thinner profile; in similar areas

Soil Properties and Qualities

Available water capacity: High (about 10.7 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 3.5 to 5.0 feet from December to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to wheat; moderately suited to corn, soybeans, and grass-legume hay; unsuited to alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: AA
Hydric soil: No

7B—Caroline-Emporia complex, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises and side slopes
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Caroline and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Emporia and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Caroline
Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 14 inches—yellowish brown silty clay loam
14 to 29 inches—strong brown clay; yellowish red and yellowish brown masses of oxidized iron
29 to 52 inches—strong brown clay; yellowish red, yellowish brown, and red masses of oxidized iron
52 to 70 inches—strong brown and yellowish brown clay; gray iron depletions and red masses of oxidized iron

Emporia
Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 11 inches—brown fine sandy loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong brown and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained, sandy and loamy Uchee soils; in similar areas
- Moderately well drained Slagle and Craven soils; in slight depressions and on foot slopes

Similar components:
- Soils that are severely eroded; in similar areas
- Soils that have more than 30 percent silt in the upper part of the profile; in similar areas

Soil Properties and Qualities

Available water capacity: Caroline—high (about 10.7 inches); Emporia—moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Caroline—moderately low (about 0.06 in/hr); Emporia—moderately high (about 0.2 in/hr)
Drainage class: Well drained
Seasonal high water table: Caroline—at a depth of 3.5 to 5.0 feet from December to April; Emporia—at a depth of 3.0 to 4.5 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Caroline—clayey marine sediments; Emporia—loamy and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to wheat; moderately suited to corn, soybeans, and grass-legume hay; unsuited to alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soils restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soils makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Shrinking and swelling restrict the use of these soils as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e

Virginia soil management group: Caroline—AA; Emporia—R
Hydric soil: No

7C—Caroline-Emporia complex, 6 to 10 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Sloping narrow to medium side slopes
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Caroline and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Emporia and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Caroline
Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 14 inches—yellowish brown silty clay loam
14 to 29 inches—strong brown clay; yellowish red and yellowish brown masses of oxidized iron
29 to 52 inches—strong brown clay; yellowish red, yellowish brown, and red masses of oxidized iron
52 to 70 inches—strong brown and yellowish brown clay; gray iron depletions and red masses of oxidized iron

Emporia
Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 11 inches—brown fine sandy loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong brown and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained, sandy and loamy Uchee soils; in similar areas
- Moderately well drained Slagle and Craven soils; in slight depressions and on foot slopes

Similar components:
- Soils that are severely eroded; in similar areas

- Soils that have more than 30 percent silt in the upper part of the profile; in similar areas

Soil Properties and Qualities

Available water capacity: Caroline—high (about 10.7 inches); Emporia—moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Caroline—moderately low (about 0.06 in/hr); Emporia—moderately high (about 0.2 in/hr)
Drainage class: Well drained
Seasonal high water table: Caroline—at a depth of 3.5 to 5.0 feet from December to April; Emporia—at a depth of 3.0 to 4.5 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Parent material: Caroline—clayey marine sediments; Emporia—loamy and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, wheat, and grass-legume hay; unsuited to alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soils restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soils makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Shrinking and swelling restrict the use of these soils as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Caroline—AA; Emporia—R
Hydric soil: No

8B—Catpoint loamy sand, 0 to 4 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Low stream terraces
Position on the landform: Nearly level to gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 10 acres

Map Unit Composition

Catpoint and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—dark brown loamy sand

Subsurface layer:
8 to 24 inches—brownish yellow fine sand

Subsoil:
24 to 41 inches—yellowish brown and light yellowish brown loamy sand
41 to 66 inches—strong brown loamy sand and light yellowish brown fine sand

Minor Components

Contrasting components:
- Well drained, loamy Conetoe soils; in similar areas
- Moderately well drained Seabrook and Munden soils; in slight depressions adjacent to the smaller drainageways

Similar components:
- Soils that do not have a subsoil; in similar areas
- Soils that do not have lamellae; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 4.8 inches)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Drainage class: Somewhat excessively drained
Seasonal high water table: At a depth of 4.0 to 6.6 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Sandy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to peanuts and wheat; poorly suited to corn, soybeans, and grass-legume hay
- Sandy or coarse-textured layers accelerate the rate at which plant nutrients are leached.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Poorly suited

Woodland
Suitability: Moderately suited to loblolly pine
- The coarse-textured layers of the soil increase the need for maintenance of haul roads and log landings.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The excessive permeability of this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3s
Virginia soil management group: II
Hydric soil: No

9A—Chickahominy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats, depressions, and drainageways
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Chickahominy and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown loam

Subsurface layer:
2 to 5 inches—dark grayish brown loam; light olive brown masses of oxidized iron

Subsoil:
5 to 35 inches—grayish brown clay; yellowish brown masses of oxidized iron
35 to 64 inches—gray clay; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Peawick soils; in the slightly higher areas

Similar components:
- Somewhat poorly drained Newflat soils; in the slightly higher areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0 to 0.5 foot from November to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat
- The high clay content of the soil restricts the rooting depth of crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: LL
Hydric soil: Yes

10A—Chickahominy loam, 0 to 2 percent slopes, ponded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level narrow to medium depressions and drainageways
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Chickahominy and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown loam

Subsurface layer:
2 to 5 inches—dark grayish brown loam; light olive brown masses of oxidized iron

Subsoil:
5 to 35 inches—grayish brown clay; yellowish brown masses of oxidized iron
35 to 64 inches—gray clay; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Peawick soils; in the slightly higher areas

Similar components:
- Somewhat poorly drained Newflat soils; in the slightly higher areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.5 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0 to 0.5 foot from November to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: Occasional
Depth of ponding: 0 to 1.0 foot
Shrink-swell potential: High

Runoff class: Very high
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Poorly suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Poorly suited to sweetgum
- Ponding may create unsafe conditions for log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- Ponding limits this soil for building site development.

Septic tank absorption fields
- Ponding limits this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6w
Virginia soil management group: LL
Hydric soil: Yes

11B—Conetoe loamy sand, 0 to 4 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Low stream terraces
Position on the landform: Nearly level to gently sloping narrow to medium rises
Size and shape of areas: Irregular, 5 to 10 acres

Map Unit Composition

Conetoe and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown loamy sand

Subsurface layer:
5 to 22 inches—light yellowish brown loamy sand

Subsoil:
22 to 42 inches—strong brown sandy loam
42 to 50 inches—yellowish brown loamy fine sand

Substratum:
50 to 72 inches—very pale brown sand

Minor Components

Contrasting components:
- Well drained, coarse-loamy Bojac soils; in similar areas
- Moderately well drained Seabrook soils; in slight depressions
- Somewhat excessively drained Catpoint soils; in similar areas

Similar components:
- Soils that have a sandy clay subsoil; in similar areas
- Soils that have a gravelly substratum; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 5.8 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Sandy and loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to peanuts, wheat, and grass-legume hay; moderately suited to corn; poorly suited to soybeans
- Sandy or coarse-textured layers accelerate the rate at which plant nutrients are leached.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The coarse-textured layers of the soil increase the need for maintenance of haul roads and log landings.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The excessive permeability of this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2s
Virginia soil management group: DD
Hydric soil: No

12B—Craven loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping narrow to broad flats and narrow to medium rises and side slopes
Size and shape of areas: Irregular, 5 to 15 acres

Map Unit Composition

Craven and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown loam

Subsoil:
10 to 22 inches—strong brown clay; red and yellowish brown masses of oxidized iron
22 to 36 inches—strong brown and yellowish brown clay; gray iron depletions and red and yellowish red masses of oxidized iron
36 to 45 inches—strong brown clay; gray iron depletions and reddish brown and yellowish red masses of oxidized iron
45 to 70 inches—light gray clay loam; reddish brown and strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Kempsville and Uchee soils; in the slightly higher areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that are severely eroded; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 2.0 to 3.0 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, cotton, wheat, and grass-legume hay; poorly suited to soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: HH
Hydric soil: No

13C3—Craven clay loam, 6 to 10 percent slopes, severely eroded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Sloping narrow to medium side slopes
Size and shape of areas: Irregular, 5 to 15 acres

Map Unit Composition

Craven and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown clay loam

Subsoil:
6 to 20 inches—yellowish brown clay; light brownish gray iron depletions and strong brown and yellowish red masses of oxidized iron
20 to 39 inches—yellowish brown sandy clay; light brownish gray iron depletions and strong brown and yellowish red masses of oxidized iron

Substratum:
39 to 64 inches—brownish yellow and strong brown stratified sandy loam, sandy clay loam, and sandy clay; light brownish gray iron depletions

Minor Components

Contrasting components:
- Well drained Kempsville and Uchee soils; in the slightly higher areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that have a surface layer of clay; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 2.0 to 3.0 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Poorly suited to corn, cotton, soybeans, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Erosion has removed part of the surface soil; the remaining surface soil is less productive and more difficult to manage.
- The high clay content of the soil restricts the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to southern red oak; moderately suited to loblolly pine
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.

- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: HH
Hydric soil: No

14B—Craven-Caroline complex, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping narrow rises and side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Craven and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Caroline and similar soils: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Craven
Surface layer:
0 to 10 inches—dark grayish brown loam

Subsoil:
10 to 22 inches—strong brown clay; red and yellowish brown masses of oxidized iron
22 to 36 inches—strong brown and yellowish brown clay; gray iron depletions and red and yellowish red masses of oxidized iron
36 to 45 inches—strong brown clay; gray iron depletions and reddish brown and yellowish red masses of oxidized iron
45 to 70 inches—light gray clay loam; reddish brown and strong brown masses of oxidized iron

Caroline
Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 14 inches—yellowish brown silty clay loam
14 to 29 inches—strong brown clay; yellowish red and yellowish brown masses of oxidized iron
29 to 52 inches—strong brown clay; yellowish red, yellowish brown, and red masses of oxidized iron
52 to 70 inches—strong brown and yellowish brown clay; gray iron depletions and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, loamy Emporia, Kempsville, and Uchee soils; in similar areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that are severely eroded; in similar areas
- Soils that have a redder subsoil; in similar areas
- Areas of ironstone outcrops

Soil Properties and Qualities

Available water capacity: Craven—moderate (about 8.4 inches); Caroline—high (about 10.7 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Craven—moderately well drained; Caroline—well drained
Seasonal high water table: Craven—at a depth of 2.0 to 3.0 feet from December to April; Caroline—at a depth of 3.5 to 5.0 feet from December to April
Water table kind: Craven—apparent; Caroline—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, cotton, wheat, and grass-legume hay; poorly suited to soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soils restricts the rooting depth of crops.

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of the soils as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: Craven—HH; Caroline—AA
Hydric soil: No

15C3—Craven-Caroline complex, 6 to 10 percent slopes, severely eroded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Sloping narrow side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Craven and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Caroline and similar soils: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Craven
Surface layer:
0 to 6 inches—yellowish brown clay loam

Subsoil:
6 to 20 inches—yellowish brown clay; light brownish gray iron depletions and strong brown and yellowish red masses of oxidized iron
20 to 39 inches—yellowish brown sandy clay; light brownish gray iron depletions and strong brown and yellowish red masses of oxidized iron

Substratum:
39 to 64 inches—brownish yellow and strong brown stratified sandy loam, sandy clay loam, and sandy clay; light brownish gray iron depletions

Caroline
Surface layer:
0 to 5 inches—yellowish brown clay loam

Subsoil:
5 to 14 inches—yellowish brown silty clay loam
14 to 29 inches—strong brown clay; yellowish red and yellowish brown masses of oxidized iron
29 to 52 inches—strong brown clay; yellowish red, yellowish brown, and red masses of oxidized iron
52 to 70 inches—strong brown and yellowish brown clay; gray iron depletions and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, loamy Emporia, Kempsville, and Uchee soils; in similar areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that are severely eroded; in similar areas
- Soils that have a redder subsoil; in similar areas
- Areas of ironstone outcrops

Soil Properties and Qualities

Available water capacity: Craven—moderate (about 7.2 inches); Caroline—high (about 10.8 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Craven—moderately well drained; Caroline—well drained
Seasonal high water table: Craven—at a depth of 2.0 to 3.0 feet from December to April; Caroline—at a depth of 3.5 to 5.0 feet from December to April
Water table kind: Craven—apparent; Caroline—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Parent material: Clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Poorly suited to corn, cotton, soybeans, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Erosion has removed part of the surface soil; the remaining surface soil is less productive and more difficult to manage.
- The high clay content of the soils restricts the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Poorly suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to southern red oak; moderately suited to loblolly pine
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.

- The stickiness of the soils makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of these soils limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of these soils as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Craven—4e; Caroline—3e
Virginia soil management group: Craven—HH; Caroline—AA
Hydric soil: No

16C—Craven-Remlik complex, 6 to 10 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Sloping narrow side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Craven and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Remlik and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Craven
Surface layer:
0 to 10 inches—dark grayish brown loam

Subsoil:
10 to 22 inches—strong brown clay; red and yellowish brown masses of oxidized iron
22 to 36 inches—strong brown and yellowish brown clay; gray iron depletions and red and yellowish red masses of oxidized iron

36 to 45 inches—strong brown clay; gray iron depletions and reddish brown and yellowish red masses of oxidized iron
45 to 70 inches—light gray clay loam; reddish brown and strong brown masses of oxidized iron

Remlik
Surface layer:
0 to 4 inches—very dark grayish brown fine sand

Subsurface layer:
4 to 14 inches—yellowish brown fine sand
14 to 29 inches—light yellowish brown fine sand

Subsoil:
29 to 44 inches—brownish yellow fine sandy loam
44 to 50 inches—light yellowish brown fine sandy loam

Substratum:
50 to 72 inches—olive yellow loamy fine sand

Minor Components

Contrasting components:
- Well drained, loamy Caroline and Emporia soils; in similar areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that are severely eroded; in similar areas
- Soils that are very gravelly; in similar areas
- Areas of ironstone outcrops

Soil Properties and Qualities

Available water capacity: Craven—moderate (about 8.4 inches); Remlik—low (about 5.4 inches)
Slowest saturated hydraulic conductivity: Craven-—moderately low (about 0.06 in/hr); Remlik—moderately high (about 0.6 in/hr)
Drainage class: Craven—moderately well drained; Remlik—well drained
Seasonal high water table: Craven—at a depth of 2.0 to 3.0 feet from December to April; Remlik—at a depth of 4.0 to 6.6 feet from December to April
Water table kind: Craven—apparent; Remlik—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Craven—moderate; Remlik—low
Runoff class: Craven—medium; Remlik—low
Parent material: Craven—clayey marine sediments; Remlik—sandy and loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to cotton, wheat, and grass-legume hay; poorly suited to corn and soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soils restricts the rooting depth of crops.

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland

Suitability: Well suited to loblolly pine and southern red oak

- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The coarse-textured layers of the Remlik soil increase the need for maintenance of haul roads and log landings.
- The coarse-textured layers of the Remlik soil may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the Remlik soil may reduce the traction of wheeled harvest equipment and log trucks.
- The low strength of the Craven soil interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the Craven soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of sand or gravel in the Remlik soil increases sloughing and causes cutbanks to be more susceptible to caving.
- The high content of clay in the subsurface layer of the Craven soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the Craven soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the Craven soil.
- Shrinking and swelling restrict the use of the Craven soil as base material for local roads and streets.
- The low strength of the Craven soil is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Craven—3e; Remlik—4s
Virginia soil management group: Craven—HH; Remlik—DD
Hydric soil: No

17C—Craven-Uchee complex, 6 to 10 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Sloping narrow rises and side slopes
Size and shape of areas: Irregular, 5 to 10 acres

Map Unit Composition

Craven and similar soils: Typically 40 percent, ranging from about 35 to 45 percent
Uchee and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Craven
Surface layer:
0 to 10 inches—dark grayish brown loam

Subsoil:
10 to 22 inches—strong brown clay; red and yellowish brown masses of oxidized iron
22 to 36 inches—strong brown and yellowish brown clay; gray iron depletions and red and yellowish red masses of oxidized iron
36 to 45 inches—strong brown clay; gray iron depletions and reddish brown and yellowish red masses of oxidized iron
45 to 70 inches—light gray clay loam; reddish brown and strong brown masses of oxidized iron

Uchee
Surface layer:
0 to 4 inches—dark gray loamy sand

Subsurface layer:
4 to 26 inches—light yellowish brown loamy sand

Subsoil:
26 to 30 inches—light yellowish brown and brownish yellow sandy loam
30 to 50 inches—brownish yellow sandy clay loam

Substratum:
50 to 62 inches—yellowish brown sandy clay loam; yellowish red and gray iron depletions and strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, clayey Caroline and loamy Emporia soils; in similar areas
- Moderately well drained, loamy Slagle soils; in similar areas

Similar components:
- Soils that have a slope of 2 to 6 percent
- Soils that are severely eroded; in similar areas
- Soils that are gravelly; in similar areas
- Areas of ironstone outcrops

Soil Properties and Qualities

Available water capacity: Craven—moderate (about 8.4 inches); Uchee—moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Craven—moderately low (about 0.06 in/hr); Uchee—moderately high (about 0.2 in/hr)
Drainage class: Craven—moderately well drained; Uchee—well drained
Seasonal high water table: Craven—at a depth of 2.0 to 3.0 feet from December to April; Uchee—at a depth of 3.5 to 5.0 feet from December to April
Water table kind: Craven—apparent; Uchee—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium

Parent material: Craven—clayey marine sediments; Uchee—loamy and sandy marine sediments

Use and Management Considerations

Cropland

Suitability: Moderately suited to cotton, wheat, and grass-legume hay; poorly suited to corn and soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the Craven soil restricts the rooting depth of crops.

Pasture

Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland

Suitability: Well suited to loblolly pine and southern red oak
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the Uchee soil may reduce the traction of wheeled harvest equipment and log trucks.
- The low strength of the Craven soil interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the Craven soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of sand or gravel in the Uchee soil increases sloughing and causes cutbanks to be more susceptible to caving.
- The high content of clay in the subsurface layer of the Craven soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the Craven soil.
- Shrinking and swelling restrict the use of the Craven soil as base material for local roads and streets.
- The low strength of the Craven soil is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Craven—3e; Uchee—4s
Virginia soil management group: Craven—HH; Uchee—DD
Hydric soil: No

18A—Dogue silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level narrow to broad rises
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Dogue and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 12 inches—grayish brown silt loam

Subsoil:
12 to 24 inches—yellowish brown clay; light yellowish brown and strong brown masses of oxidized iron
24 to 36 inches—yellowish brown and light yellowish brown clay; gray iron depletions and red masses of oxidized iron
36 to 52 inches—yellowish brown, strong brown, and light yellowish brown clay; gray iron depletions and red masses of oxidized iron
52 to 72 inches—gray clay loam; strong brown, yellowish brown, light yellowish brown, and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Pamunkey soils; in the slightly higher areas
- Moderately well drained, loamy Altavista soils; in similar areas
- Somewhat poorly drained Newflat soils; in slight depressions or in the lower areas
- Poorly drained Roanoke soils; in slight depressions or in the lower areas

Similar components:
- Soils that have a high silt content; in similar areas
- Soils that have a clayey substratum; in similar areas

Soil Properties and Qualities

Available water capacity: High (about 9.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from January to March
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2w
Virginia soil management group: K
Hydric soil: No

18B—Dogue silt loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Gently sloping narrow to broad rises
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Dogue and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 12 inches—grayish brown silt loam

Subsoil:
12 to 24 inches—yellowish brown clay; light yellowish brown and strong brown masses of oxidized iron
24 to 36 inches—yellowish brown and light yellowish brown clay; gray iron depletions and red masses of oxidized iron

36 to 52 inches—yellowish brown, strong brown, and light yellowish brown clay; gray iron depletions and red masses of oxidized iron
52 to 72 inches—gray clay loam; strong brown, yellowish brown, light yellowish brown, and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Pamunkey soils; in the slightly higher areas
- Moderately well drained, loamy Altavista soils; in similar areas
- Somewhat poorly drained Newflat soils; in slight depressions or in the lower areas
- Poorly drained Roanoke soils; in slight depressions or in the lower areas

Similar components:
- Soils that have a high silt content; in similar areas
- Soils that have a clayey substratum; in similar areas
- Soils that have a thicker subsoil; in similar areas

Soil Properties and Qualities

Available water capacity: High (about 9.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from January to March
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: K
Hydric soil: No

18C—Dogue silt loam, 6 to 10 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Sloping narrow to broad rises and side slopes
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Dogue and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 12 inches—grayish brown silt loam

Subsoil:
12 to 24 inches—yellowish brown clay; light yellowish brown and strong brown masses of oxidized iron
24 to 36 inches—yellowish brown and light yellowish brown clay; gray iron depletions and red masses of oxidized iron
36 to 52 inches—yellowish brown, strong brown, and light yellowish brown clay; gray iron depletions and red masses of oxidized iron
52 to 72 inches—gray clay loam; strong brown, yellowish brown, light yellowish brown, and red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Pamunkey soils; in the slightly higher areas
- Moderately well drained, loamy Altavista soils; in similar areas
- Somewhat poorly drained Newflat soils; in slight depressions or in the lower areas
- Poorly drained Roanoke soils; in slight depressions or in the lower areas

Similar components:
- Soils that have a high silt content; in similar areas
- Soils that have a clayey substratum; in similar areas
- Soils that have a thicker subsoil; in similar areas

- Soils that are severely eroded; in similar areas
- Soils that have a slope greater than 10 percent

Soil Properties and Qualities

Available water capacity: High (about 9.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from January to March
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to peanuts, wheat, and grass-legume hay; moderately suited to corn and soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: K
Hydric soil: No

19A—Dragston fine sandy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 10 acres

Map Unit Composition

Dragston and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown fine sandy loam

Subsurface layer:
4 to 8 inches—pale brown fine sandy loam; gray iron depletions

Subsoil:
8 to 12 inches—pale brown and yellowish brown fine sandy loam
12 to 25 inches—gray fine sandy loam; yellowish brown masses of oxidized iron
25 to 35 inches—yellowish brown and brownish yellow loamy fine sand; gray iron depletions

Substratum:
35 to 45 inches—yellowish brown sand; light brownish gray iron depletions
45 to 54 inches—dark yellowish brown sand; brown iron depletions
54 to 64 inches—yellowish brown sand; grayish brown iron depletions
64 to 72 inches—dark yellowish brown sandy loam
72 to 75 inches—greenish gray sandy loam

Minor Components

Contrasting components:
- Moderately well drained Altavista soils; in the slightly higher convex areas
- Poorly drained Nimmo and Tomotley soils; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 5.4 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Drainage class: Somewhat poorly drained
Seasonal high water table: At a depth of 1.0 to 2.5 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The excessive permeability of this soil increases the risk of groundwater contamination.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Well suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings.
- The wetness of the soil may limit the use of log trucks on this soil.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability in this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Prime farmland if drained
Land capability class: 4w
Virginia soil management group: E
Hydric soil: No

20B—Emporia fine sandy loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Emporia and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 11 inches—brown fine sandy loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong brown and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained Kempsville and Uchee soils; in similar areas
- Moderately well drained Slagle soils; in shallow depressions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 3.0 to 4.5 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Loamy and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to cotton, soybeans, peanuts, wheat, and grass-legume hay; moderately suited to corn and alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- This soil is well suited to haul roads, log landings, and equipment operations.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: R
Hydric soil: No

21B—Emporia gravelly fine sandy loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Emporia and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown gravelly fine sandy loam

Subsurface layer:
2 to 8 inches—light yellowish brown gravelly fine sandy loam

Subsoil:
8 to 14 inches—yellowish brown fine sandy loam
14 to 23 inches—yellowish brown fine sandy loam; yellowish red and strong brown masses of oxidized iron
23 to 35 inches—yellowish brown sandy clay loam; strong brown and yellowish red masses of oxidized iron
35 to 60 inches—yellowish red sandy clay loam

Substratum:
60 to 70 inches—strong brown, yellowish red, and red clay loam

Minor Components

Contrasting components:
- Well drained Kempsville and Uchee soils; in similar areas
- Well drained, clayey Caroline soils; on small knolls
- Moderately well drained Slagle soils; in shallow depressions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Well drained

Seasonal high water table: At a depth of 3.0 to 4.5 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Gravelly, loamy, and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to peanuts and grass-legume hay; moderately suited to corn, cotton, soybeans, wheat, and alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- This soil is well suited to haul roads, log landings, and equipment operations.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: R
Hydric soil: No

22B—Emporia loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Emporia and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—grayish brown loam

Subsurface layer:
4 to 11 inches—brown loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong brown and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained, clayey Caroline soils; on small knolls
- Moderately well drained Slagle soils; in shallow depressions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 3.0 to 4.5 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Loamy and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to cotton, soybeans, peanuts, wheat, and grass-legume hay; moderately suited to corn and alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
*Suitability:*Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: R
Hydric soil: No

23B—Emporia-Kempsville complex, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Emporia and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Kempsville and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Emporia
Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 11 inches—brown fine sandy loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Kempsville
Surface layer:
0 to 8 inches—brown loamy sand

Subsoil:
8 to 12 inches—brown sandy loam
12 to 31 inches—strong brown sandy loam

31 to 40 inches—strong brown sandy loam; pale brown clay depletions
40 to 45 inches—strong brown sandy clay loam
45 to 64 inches—strong brown fine sandy loam; yellowish brown and yellowish red masses of oxidized iron
64 to 72 inches—strong brown sandy clay loam; yellowish brown and yellowish red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, clayey Caroline soils; in the higher areas
- Well drained, sandy and loamy Uchee soils; on small knolls
- Moderately well drained Slagle soils; in depressions and adjacent to drainageways

Similar components:
- Soils that are gravelly; in similar areas

Soil Properties and Qualities

Available water capacity: Emporia—moderate (about 8.1 inches); Kempsville—moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Emporia—moderately high (about 0.2 in/hr); Kempsville—moderately high (about 0.6 in/hr)
Drainage class: Well drained
Seasonal high water table: Emporia—at a depth of 3.0 to 4.5 feet from November to April; Kempsville—at a depth of more than 6 feet
Water table kind: Emporia—perched; Kempsville—none
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Emporia—moderate; Kempsville—low
Runoff class: Emporia—low; Kempsville—very low
Parent material: Emporia—loamy and clayey marine sediments; Kempsville—loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to cotton, soybeans, peanuts, wheat, and grass-legume hay; moderately suited to corn and alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The coarse-textured layers of the soils increase the need for maintenance of haul roads and log landings.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soils may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The seasonal high water table of the Emporia soil may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer of the Emporia soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table of the Emporia soil greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the Emporia soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of the Kempsville soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The low strength of the Emporia soil is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: Emporia—R; Kempsville—S
Hydric soil: No

24B—Izagora silt loam, 0 to 4 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level to gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Izagora and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—grayish brown silt loam

Subsurface layer:
10 to 18 inches—pale brown silt loam

Subsoil:
18 to 26 inches—yellowish brown clay loam; pale brown iron depletions
26 to 35 inches—yellowish brown clay loam; light brownish gray iron depletions
35 to 43 inches—yellowish brown clay loam; light brownish gray iron depletions and strong brown masses of oxidized iron
43 to 59 inches—yellowish brown clay loam; strong brown and yellowish gray iron depletions and red masses of oxidized iron
59 to 72 inches—yellowish brown clay loam; gray iron depletions and strong brown and yellowish red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Masada soils; in the higher areas
- Moderately well drained, clayey Dogue soils; in similar areas
- Somewhat poorly drained Nahunta soils; in depressions

Similar components:
- Soils that have a slope of 4 to 10 percent

Soil Properties and Qualities

Available water capacity: High (about 10.4 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 2.0 to 3.0 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to cotton
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: J
Hydric soil: No

25B—Kempsville loamy sand, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands

Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Kempsville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown loamy sand

Subsoil:
8 to 12 inches—brown sandy loam
12 to 31 inches—strong brown sandy loam
31 to 40 inches—strong brown sandy loam; pale brown clay depletions
40 to 45 inches—strong brown sandy clay loam
45 to 64 inches—strong brown fine sandy loam; yellowish brown and yellowish red masses of oxidized iron
64 to 72 inches—strong brown sandy clay loam; yellowish brown and yellowish red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, wetter Emporia soils; in the lower areas
- Well drained, sandy and loamy Uchee soils; on small knolls
- Moderately well drained Slagle soils; in depressions and adjacent to drainageways

Similar components:
- Soils that have a sandy substratum; in similar areas
- Soils that are red in the lower part of the subsoil; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to soybeans, peanuts, wheat, and grass-legume hay; moderately suited to corn
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The coarse-textured layers of the soil increase the need for maintenance of haul roads and log landings.

- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- The excessive permeability of the soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: S
Hydric soil: No

26A—Lawnes muck, 0 to 1 percent slopes, very frequently flooded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Flood plains
Position on the landform: Nearly level fresh and brackish water tidal marshes
Size and shape of areas: Irregular, 5 to 100 acres

Map Unit Composition

Lawnes and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Organic layer:
0 to 13 inches—dark gray muck

Substratum:
13 to 26 inches—dark gray loam
26 to 55 inches—very dark gray loam
55 to 62 inches—very dark gray sand

Minor Components

Contrasting components:
- Very poorly drained, fine-loamy Nawney soils; on flood plains of the larger streams
- Poorly drained Bibb soils; on flood plains of the smaller streams

Similar components:
- Soils that have a sandy layer within a depth of 40 inches; in similar areas
- Soils that have less sulfur; in similar areas
- Soils that have a higher clay content; in similar areas

Soil Properties and Qualities

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)

Drainage class: Very poorly drained
Seasonal high water table: At the surface
Water table kind: Apparent
Flooding hazard: Very frequent
Ponding hazard: Frequent
Depth of ponding: 0 to 3.0 feet
Shrink-swell potential: Low
Runoff class: Negligible
Parent material: Herbaceous organic materials over loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Unsuited

Woodland
Suitability: Unsuited

Building sites
- Flooding and ponding limit building site development on this soil.

Septic tank absorption fields
- Flooding and ponding limit this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7w
Virginia soil management group: PP
Hydric soil: Yes

27B—Masada loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: High stream terraces
Position on the landform: Gently sloping narrow rises and side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Masada and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 24 inches—yellowish red clay

24 to 45 inches—yellowish red clay; yellowish brown masses of oxidized iron
45 to 58 inches—red clay; yellowish brown and very pale brown masses of oxidized iron

Substratum:
58 to 70 inches—red clay loam

Minor Components

Contrasting components:
- Well drained, thick sola Turbeville soils; in similar areas
- Moderately well drained Dogue and Izagora soils; on foot slopes and in depressions

Similar components:
- Soils that have a redder upper profile; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: L
Hydric soil: No

28B3—Masada sandy clay loam, 2 to 6 percent slopes, severely eroded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: High stream terraces
Position on the landform: Gently sloping narrow rises and side slopes
Size and shape of areas: Irregular, 5 to 20 acres

Map Unit Composition

Masada and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—brown sandy clay loam

Subsoil:
6 to 39 inches—yellowish red clay
39 to 54 inches—yellowish red clay; yellowish brown masses of oxidized iron
54 to 64 inches—strong brown clay loam

Minor Components

Contrasting components:
- Well drained, thick sola Turbeville soils; in similar areas
- Moderately well drained Dogue and Izagora soils; on foot slopes and in depressions

Similar components:
- Soils that have a redder upper profile; in similar areas
- Soils that have a surface layer of sandy clay or clay; in similar areas
- Soils that have a slope of 6 to 15 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, wheat, and grass-legume hay; poorly suited to soybeans and alfalfa hay

- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Erosion has removed part of the surface soil; the remaining surface soil is less productive and more difficult to manage.
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: L
Hydric soil: No

29A—Mattan mucky loam, 0 to 1 percent slopes, very frequently flooded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Flood plains
Position on the landform: Nearly level freshwater swamps and marshes
Size and shape of areas: Long and broad, 100 to 1500 acres

Map Unit Composition

Mattan and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Organic layer:
0 to 12 inches—gray mucky loam
12 to 39 inches—very dark grayish brown muck

Substratum:
39 to 60 inches—very dark brown mucky fine sandy loam
60 to 70 inches—gray loamy sand

Minor Components

Contrasting components:
- Very poorly drained, fine-loamy Nawney soils; on the larger flood plains not flooded by tidal waters
- Poorly drained Bibb soils; on the smaller flood plains not flooded by tidal waters

Soil Properties and Qualities

Available water capacity: High (about 11.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Very poorly drained
Seasonal high water table: At the surface
Water table kind: Apparent
Flooding hazard: Very frequent
Ponding hazard: Frequent
Depth of ponding: 0 to 2.0 feet
Shrink-swell potential: Low
Runoff class: Negligible
Parent material: Organic materials over loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Unsuited

Woodland
Suitability: Well suited to baldcypress
- Flooding may damage haul roads.
- Flooding and ponding may create unsafe conditions for log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- Flooding and ponding limit building site development on this soil.

Septic tank absorption fields
- Flooding and ponding limit this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7w
Virginia soil management group: PP
Hydric soil: Yes

30A—Munden loamy sand, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Munden and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown loamy sand

Subsurface layer:
6 to 14 inches—grayish brown fine sandy loam

Subsoil:
14 to 27 inches—light yellowish brown fine sandy loam
27 to 38 inches—light olive brown fine sandy loam; light gray iron depletions

Substratum:
38 to 50 inches—light yellowish brown loamy sand
50 to 61 inches—light gray sand
61 to 70 inches—light gray sand; yellowish brown and light yellowish brown masses of oxidized iron
70 to 74 inches—light gray loamy sand; light yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained, fine-loamy Altavista and sandy Seabrook soils; in similar areas
- Somewhat poorly drained Augusta and Dragston soils; in depressions and in the lower areas

Similar components:
- Soils that have gravel in the subsoil and substratum; in similar areas
- Soils that have a slope of 2 to 6 percent

Soil Properties and Qualities

Available water capacity: Low (about 5.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 2.5 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy and sandy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay

- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The coarse-textured layers of the soil increase the need for maintenance of haul roads and log landings.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2w
Virginia soil management group: F
Hydric soil: No

31A—Nahunta silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level broad flats
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Nahunta and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown silt loam

Subsurface layer:
4 to 12 inches—light brownish gray silt loam; yellowish brown masses of oxidized iron

Subsoil:
12 to 18 inches—light yellowish brown silt loam; grayish brown iron depletions and yellowish brown masses of oxidized iron
18 to 35 inches—gray silt loam; yellowish brown masses of oxidized iron
35 to 42 inches—gray silt loam; yellowish brown masses of oxidized iron
42 to 48 inches—gray clay loam; light brownish gray iron depletions and yellowish brown and red masses of oxidized iron

Substratum:
48 to 72 inches—gray clay loam; light brownish gray iron depletions and red and yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Slagle and Izagora soils; in the higher areas
- Poorly drained Bethera soils; in depressions and in the lower areas

Similar components:
- Soils that have less silt in the subsoil; in similar areas

Soil Properties and Qualities

Available water capacity: High (about 10.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Somewhat poorly drained
Seasonal high water table: At a depth of 1.0 to 1.5 feet from December to May
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Parent material: Loamy and silty marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to cotton; poorly suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Poorly suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2w
Virginia soil management group: OO
Hydric soil: No

32B—Nansemond loamy sand, 0 to 4 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level to gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Nansemond and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy sand

Subsurface layer:
9 to 15 inches—grayish brown loamy sand
15 to 19 inches—light yellowish brown loamy sand

Subsoil:
19 to 30 inches—light yellowish brown gravelly fine sandy loam; brownish yellow masses of oxidized iron
30 to 43 inches—yellowish brown gravelly fine sandy loam; light brownish gray iron depletions

Substratum:
43 to 60 inches—yellowish brown and strong brown gravelly loamy sand
60 to 70 inches—yellowish brown sandy loam

Minor Components

Contrasting components:
- Moderately well drained, fine-loamy Altavista soils; in similar areas
- Moderately well drained, sandy Seabrook soils; on the lower terraces along drainageways
- Somewhat poorly drained Augusta and Dragston soils; in depressions and in the lower areas

Similar components:
- Soils that have a slope of 4 to 6 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 6.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 2.5 feet from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Loamy and sandy marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, cotton, soybeans, peanuts, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The excessive permeability of this soil increases the risk of groundwater contamination.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- This soil is well suited to haul roads, log landings, and equipment operations.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of this soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: F
Hydric soil: No

33A—Nawney silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Flood plains

Position on the landform: Nearly level fresh water swamps and basins
Size and shape of areas: Long and broad, 100 to 1,500 acres; long and narrow, 5 to 100 acres

Map Unit Composition

Nawney and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 14 inches—dark gray silt loam

Substratum:
14 to 28 inches—dark gray loam
28 to 55 inches—greenish gray sandy clay loam; yellowish red masses of oxidized iron
55 to 72 inches—greenish gray fine sandy loam

Minor Components

Contrasting components:
- Poorly drained Nimmo and Tomotley soils; in the higher areas that do not flood
- Very poorly drained Lawnes soils; in marshes at the lower elevations
- Very poorly drained Mattan soils; in swamps at the lower elevations

Similar components:
- Poorly drained Bibb soils; on the more narrow and the slightly higher flood plains

Soil Properties and Qualities

Available water capacity: High (about 9.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At the surface
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Unsuited

Woodland
Suitability: Well suited to baldcypress
- Flooding may damage haul roads and restrict the use of log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- Flooding limits building site development on this soil.

Septic tank absorption fields
- Flooding limits the use of this soil for septic tank absorption fields.

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Flooding may damage local roads and streets.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7w
Virginia soil management group: PP
Hydric soil: Yes

34A—Nawney silt loam, 0 to 2 percent slopes, ponded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Flood plains
Position on the landform: Nearly level fresh water swamps and basins
Size and shape of areas: Long and broad, 100 to 1,500 acres; long and narrow, 5 to 100 acres

Map Unit Composition

Nawney and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 14 inches—dark gray silt loam

Substratum:
14 to 28 inches—dark gray loam
28 to 55 inches—greenish gray sandy clay loam; yellowish red masses of oxidized iron
55 to 72 inches—greenish gray fine sandy loam

Minor Components

Contrasting components:
- Poorly drained Nimmo and Tomotley soils; in the higher areas that do not flood
- Very poorly drained Lawnes soils; in marshes at the lower elevations
- Very poorly drained Mattan soils; in swamps at the lower elevations

Similar components:
- Poorly drained Bibb soils; on the more narrow and the slightly higher flood plains

Soil Properties and Qualities

Available water capacity: High (about 9.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At the surface
Water table kind: Apparent
Flooding hazard: Frequent

Ponding hazard: Frequent
Depth of ponding: 0 to 2.0 feet
Shrink-swell potential: Moderate
Runoff class: Negligible
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Unsuited

Woodland
Suitability: Well suited to baldcypress
- Flooding may damage haul roads.
- Flooding and ponding may create unsafe conditions for log trucks.
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- Flooding and ponding limit building site development on this soil.

Septic tank absorption fields
- Flooding and ponding limit this soil for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7w
Virginia soil management group: PP
Hydric soil: Yes

35D—Nevarc-Remlik complex, 10 to 15 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Moderately steep narrow to medium side slopes
Size and shape of areas: Irregular and elongated, 5 to 100 acres

Map Unit Composition

Nevarc and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Remlik and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Nevarc
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 11 inches—pale brown loam

Subsoil:
11 to 26 inches—yellowish brown clay
26 to 42 inches—yellowish brown clay; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron
42 to 54 inches—yellowish brown sandy clay loam; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron

Substratum:
54 to 72 inches—yellowish brown fine sandy loam

Remlik
Surface layer:
0 to 4 inches—very dark grayish brown fine sand

Subsurface layer:
4 to 14 inches—yellowish brown fine sand
14 to 29 inches—light yellowish brown fine sand
29 to 44 inches—brownish yellow fine sandy loam
44 to 50 inches—light yellowish brown fine sandy loam

Substratum:
50 to 72 inches—olive yellow loamy fine sand

Minor Components

Contrasting components:
- Well drained, fine-loamy Emporia soils; in similar areas
- Soils that have a sandy layer more than 40 inches thick; in similar areas
- Soils in areas that have a spring or seep at the base of a slope

Similar components:
- Soils that are gravelly; in similar areas
- Soils that are severely eroded; in similar areas
- Soils that have a red subsoil; in similar areas
- Soils that have ironstone fragments; in similar areas

Soil Properties and Qualities

Available water capacity: Nevarc—moderate (about 7.6 inches); Remlik—low (about 5.4 inches)
Slowest saturated hydraulic conductivity: Nevarc—moderately low (about 0.06 in/hr); Remlik—moderately high (about 0.6 in/hr)
Drainage class: Nevarc—moderately well drained; Remlik—well drained
Seasonal high water table: Nevarc—at a depth of 1.5 to 3.0 feet from December to April; Remlik—at a depth of 4.0 to 6.6 feet from December to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Nevarc—moderate; Remlik—low

Runoff class: Nevarc—medium; Remlik—low
Parent material: Nevarc—clayey marine sediments; Remlik—sandy and loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to wheat; poorly suited to corn, soybeans, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the Nevarc soil restricts the rooting depth of crops.

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The coarse-textured layers of the Remlik soil increase the need for maintenance of haul roads and log landings.
- The coarse-textured layers of the Remlik soil may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the Remlik soil may reduce the traction of wheeled harvest equipment and log trucks.
- The stickiness of the Nevarc soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of sand or gravel in the Remlik soil increases sloughing and causes cutbanks to be more susceptible to caving.
- The high content of clay in the subsurface layer of the Nevarc soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the Nevarc soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the Nevarc soil.
- Shrinking and swelling restrict the use of the Nevarc soil as base material for local roads and streets.
- The low strength of the Nevarc soil is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e

Virginia soil management group: Nevarc—HH; Remlik—DD
Hydric soil: No

35E—Nevarc-Remlik complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Steep narrow to medium side slopes
Size and shape of areas: Irregular and elongated, 5 to 100 acres

Map Unit Composition

Nevarc and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Remlik and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Nevarc
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 11 inches—pale brown loam

Subsoil:
11 to 26 inches—yellowish brown clay
26 to 42 inches—yellowish brown clay; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron
42 to 54 inches—yellowish brown sandy clay loam; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron

Substratum:
54 to 72 inches—yellowish brown fine sandy loam

Remlik
Surface layer:
0 to 4 inches—very dark grayish brown fine sand

Subsurface layer:
4 to 14 inches—yellowish brown fine sand
14 to 29 inches—light yellowish brown fine sand
29 to 44 inches—brownish yellow fine sandy loam
44 to 50 inches—light yellowish brown fine sandy loam

Substratum:
50 to 72 inches—olive yellow loamy fine sand

Minor Components

Contrasting components:
- Well drained, fine-loamy Emporia soils; in similar areas
- Soils that have a sandy layer more than 40 inches thick; in similar areas
- Soils in areas that have a spring or seep at the base of a slope

Similar components:
- Soils that are gravelly; in similar areas
- Soils that are severely eroded; in similar areas
- Soils that have a red subsoil; in similar areas
- Soils that have ironstone fragments; in similar areas

Soil Properties and Qualities

Available water capacity: Nevarc—moderate (about 7.6 inches); Remlik—low (about 5.4 inches)
Slowest saturated hydraulic conductivity: Nevarc—moderately low (about 0.06 in/hr); Remlik—moderately high (about 0.6 in/hr)
Drainage class: Nevarc—moderately well drained; Remlik—well drained
Seasonal high water table: Nevarc—at a depth of 1.5 to 3.0 feet from December to April; Remlik—at a depth of 4.0 to 6.6 feet from December to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Nevarc—moderate; Remlik—low
Runoff class: Nevarc—high; Remlik—medium
Parent material: Nevarc—clayey marine sediments; Remlik—sandy and loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Moderately suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The slope poses safety hazards and creates the potential for erosion during construction of haul roads and log landings.
- The slope creates unsafe operating conditions for equipment and log trucks and reduces the operating efficiency of log trucks and some mechanical planting and harvesting equipment.
- The slope restricts the use of equipment for site preparation and may restrict the use of some mechanical planting equipment.
- The coarse-textured layers of the Remlik soil increase the need for maintenance of haul roads and log landings.
- The coarse-textured layers of the Remlik soil may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the Remlik soil may reduce the traction of wheeled harvest equipment and log trucks.
- The low strength of the Nevarc soil interferes with the construction of haul roads and log landings.
- The stickiness of the Nevarc soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of sand or gravel in the Remlik soil increases sloughing and causes cutbanks to be more susceptible to caving.
- The high content of clay in the subsurface layer of the Nevarc soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

- The restricted permeability of the Nevarc soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the Nevarc soil.
- Shrinking and swelling restrict the use of the Nevarc soil as base material for local roads and streets.
- The low strength of the Nevarc soil is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Nevarc—HH; Remlik—DD
Hydric soil: No

35F—Nevarc-Remlik complex, 25 to 60 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Very steep narrow to medium side slopes
Size and shape of areas: Irregular and elongated, 5 to 100 acres

Map Unit Composition

Nevarc and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Remlik and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Nevarc
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 11 inches—pale brown loam

Subsoil:
11 to 26 inches—yellowish brown clay
26 to 42 inches—yellowish brown clay; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron
42 to 54 inches—yellowish brown sandy clay loam; grayish brown iron depletions and yellowish red and strong brown masses of oxidized iron

Substratum:
54 to 72 inches—yellowish brown fine sandy loam

Remlik
Surface layer:
0 to 4 inches—very dark grayish brown fine sand

Subsurface layer:
4 to 14 inches—yellowish brown fine sand
14 to 29 inches—light yellowish brown fine sand

29 to 44 inches—brownish yellow fine sandy loam
44 to 50 inches—light yellowish brown fine sandy loam

Substratum:
50 to 72 inches—olive yellow loamy fine sand

Minor Components

Contrasting components:
- Well drained, fine-loamy Emporia soils; in similar areas
- Soils that have a sandy layer more than 40 inches thick; in similar areas
- Soils in areas that have a spring or seep at the base of a slope

Similar components:
- Soils that are gravelly; in similar areas
- Soils that are severely eroded; in similar areas
- Soils that have a red subsoil; in similar areas
- Soils that have ironstone fragments; in similar areas

Soil Properties and Qualities

Available water capacity: Nevarc—moderate (about 7.6 inches); Remlik—low (about 5.4 inches)
Slowest saturated hydraulic conductivity: Nevarc—moderately low (about 0.06 in/hr); Remlik—moderately high (about 0.6 in/hr)
Drainage class: Nevarc—moderately well drained; Remlik—well drained
Seasonal high water table: Nevarc—at a depth of 1.5 to 3.0 feet from December to April; Remlik—at a depth of 4.0 to 6.6 feet from December to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Nevarc—moderate; Remlik—low
Runoff class: Nevarc—high; Remlik—medium
Parent material: Nevarc—clayey marine sediments; Remlik—sandy and loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Unsuited

Pasture
Suitability: Unsuited

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The slope poses safety hazards and creates the potential for erosion during construction of haul roads and log landings.
- The slope creates unsafe operating conditions for equipment and log trucks and reduces the operating efficiency of log trucks and some mechanical planting and harvesting equipment.
- Because of the slope, it is impractical to use equipment for site preparation and mechanical planting.
- The coarse-textured layers of the Remlik soil increase the need for maintenance of haul roads and log landings.
- The coarse-textured layers of the Remlik soil may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the Remlik soil may reduce the traction of wheeled harvest equipment and log trucks.

- The low strength of the Nevarc soil interferes with the construction of haul roads and log landings.
- The stickiness of the Nevarc soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of sand or gravel in the Remlik soil increases sloughing and causes cutbanks to be more susceptible to caving.
- The high content of clay in the subsurface layer of the Nevarc soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the Nevarc soil limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the Nevarc soil.
- Shrinking and swelling restrict the use of the Nevarc soil as base material for local roads and streets.
- The low strength of the Nevarc soil is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Nevarc—HH; Remlik—DD
Hydric soil: No

36A—Newflat silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Newflat and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—gray silt loam

Subsurface layer:
2 to 6 inches—pale brown silt loam; gray iron depletions

Subsoil:
6 to 14 inches—brown silty clay; grayish brown iron depletions

14 to 55 inches—gray silty clay; strong brown masses of oxidized iron
55 to 64 inches—gray clay loam; strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Peawick soils; in the higher areas
- Poorly drained Chickahominy soils; in depressions and around small drainageways

Similar components:
- Soils that have a thinner subsoil; in similar areas
- Soils that have less clay in the subsoil; in similar areas
- Soils that have a slope of more than 2 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Drainage class: Somewhat poorly drained
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.

- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: LL
Hydric soil: No

37A—Nimmo sandy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Nimmo and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—black sandy loam

Subsurface layer:
4 to 10 inches—dark gray sandy loam; yellowish brown masses of oxidized iron
10 to 14 inches—dark gray sandy loam

Subsoil:
14 to 32 inches—gray fine sandy loam

Substratum:
32 to 40 inches—gray sand; yellowish brown masses of oxidized iron
40 to 64 inches—gray coarse sand

Minor Components

Contrasting components:
- Somewhat poorly drained Augusta and Dragston soils; in the higher areas
- Poorly drained, fine-loamy Tomotley and Nawney soils; in drainageways and depressions

Similar components:
- Soils in areas that are subject to ponding

Soil Properties and Qualities

Available water capacity: Low (about 5.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0 to 1.0 foot from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Parent material: Loamy and sandy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The wetness of the soil may limit the use of log trucks on this soil.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: E
Hydric soil: Yes

38A—Pamunkey loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Pamunkey and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 16 inches—dark yellowish brown loam
16 to 65 inches—brown clay loam

Minor Components

Contrasting components:
- Well drained, coarse-loamy Bojac soils; on river edges
- Moderately well drained Altavista and Yeopim soils; in swales and shallow drainageways
- Somewhat poorly drained Augusta soils; along narrow drainageways

Similar components:
- Soils that have a high base saturation as a result of intensive liming and fertilization; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 1

Virginia soil management group: B
Hydric soil: No

38B—Pamunkey loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Pamunkey and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 16 inches—dark yellowish brown loam
16 to 65 inches—brown clay loam

Minor Components

Contrasting components:
- Well drained, coarse-loamy Bojac soils; on river edges
- Moderately well drained Altavista and Yeopim soils; in swales and shallow drainageways
- Somewhat poorly drained Augusta soils; along narrow drainageways

Similar components:
- Soils that have a high base saturation as a result of intensive liming and fertilization; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, cotton, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland

Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: B
Hydric soil: No

38C—Pamunkey loam, 6 to 10 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Sloping narrow to medium side slopes
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Pamunkey and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 16 inches—dark yellowish brown loam
16 to 65 inches—brown clay loam

Minor Components

Contrasting components:
- Well drained, coarse-loamy Bojac soils; on river edges
- Moderately well drained Altavista and Yeopim soils; in swales and shallow drainageways
- Somewhat poorly drained Augusta soils; along narrow drainageways

Similar components:
- Soils that have a high base saturation as a result of intensive liming and fertilization; in similar areas
- Soils that have a surface layer of sandy clay loam

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)

Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, cotton, soybeans, and grass-legume hay; moderately suited to peanuts and wheat
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The slope creates unsafe operating conditions for equipment and log trucks, reduces the operating efficiency of log trucks, and restricts the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low soil strength is unfavorable for supporting heavy loads.
- Designing local roads and streets is difficult because of the slope.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: B
Hydric soil: No

39A—Peawick silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Peawick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown silt loam

Subsurface layer:
2 to 5 inches—light yellowish brown silt loam

Subsoil:
5 to 24 inches—yellowish brown silty clay loam; strong brown masses of oxidized iron
24 to 36 inches—yellowish brown silty clay; gray iron depletions and strong brown masses of oxidized iron
36 to 64 inches—gray clay; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Somewhat poorly drained Newflat soils; in depressions and low areas
- Poorly drained Chickahominy soils; in depressions and low areas

Similar components:
- Soils that have a thinner solum; in similar areas
- Soils that have a sandy substratum; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Medium
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to grass-legume hay; moderately suited to corn and wheat; poorly suited to soybeans and peanuts
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2w
Virginia soil management group: HH
Hydric soil: No

39B—Peawick silt loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Peawick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown silt loam

Subsurface layer:
2 to 5 inches—light yellowish brown silt loam

Subsoil:
5 to 24 inches—yellowish brown silty clay loam; strong brown masses of oxidized iron
24 to 36 inches—yellowish brown silty clay; gray iron depletions and strong brown masses of oxidized iron
36 to 64 inches—gray clay; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Somewhat poorly drained Newflat soils; in depressions and low areas
- Poorly drained Chickahominy soils; in depressions and low areas

Similar components:
- Soils that have a thinner solum; in similar areas
- Soils that have a sandy substratum; in similar areas
- Soils that have a slope of 6 to 10 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from November to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Medium
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to grass-legume hay; moderately suited to corn and wheat; poorly suited to soybeans and peanuts
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2e

Virginia soil management group: HH
Hydric soil: No

40A—Roanoke silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Roanoke and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 5 inches—gray silt loam

Subsoil:
5 to 25 inches—gray silty clay loam; yellowish brown and light olive brown masses of oxidized iron
25 to 40 inches—dark gray clay; yellowish brown and light olive brown masses of oxidized iron
40 to 55 inches—gray clay; yellowish brown masses of oxidized iron

Substratum:
55 to 75 inches—gray stratified sandy loam to sandy clay loam; yellowish brown masses of oxidized iron

Minor Components

Contrasting components:
- Moderately well drained Dogue soils; in the higher areas
- Somewhat poorly drained Augusta soils; in similar areas
- Poorly drained, loamy Tomotley soils; in similar areas

Similar components:
- Soils that have a higher base saturation in the lower part of the profile; in similar areas

Soil Properties and Qualities

Available water capacity: Moderate (about 8.8 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0 to 1.0 foot from November to May
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat

- The high clay content of the soil restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.

Woodland
Suitability: Moderately suited to southern red oak
- The wetness of the soil may limit the use of log trucks on this soil.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil makes it more difficult to construct haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to drier periods.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: NN
Hydric soil: Yes

41A—Seabrook loamy sand, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Seabrook and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy sand

Substratum:
9 to 20 inches—light yellowish brown loamy sand
20 to 26 inches—yellowish brown loamy sand
26 to 40 inches—yellowish brown loamy sand; light gray iron depletions and strong brown masses of oxidized iron
40 to 53 inches—yellowish brown loamy sand; light gray iron depletions
53 to 60 inches—light gray loamy sand; yellowish brown masses of oxidized iron
60 to 80 inches—strong brown gravelly sand; reddish brown masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Bojac and Catpoint soils; in the higher areas
- Moderately well drained, fine-loamy Altavista and Munden soils; in similar areas
- Somewhat poorly drained Dragston soils; in similar areas

Soil Properties and Qualities

Available water capacity: Low (about 3.8 inches)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 2.0 to 3.5 feet from December to March
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Parent material: Sandy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, wheat, and grass-legume hay; poorly suited to soybeans
- The limited available water capacity may cause plants to suffer from moisture stress.
- The excessive permeability of this soil increases the risk of groundwater contamination.
- Sandy or coarse-textured layers accelerate the rate at which plant nutrients are leached.

Pasture
Suitability: Moderately suited
- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The coarse-textured layers of the soil increase the need for maintenance of haul roads and log landings.
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of the soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3s
Virginia soil management group: EE
Hydric soil: No

42B—Slagle fine sandy loam, 0 to 4 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Nearly level to gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Slagle and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown fine sandy loam

Subsoil:
10 to 25 inches—yellowish brown sandy clay loam; strong brown and pale brown masses of oxidized iron
25 to 44 inches—yellowish brown sandy clay loam; grayish brown iron depletions and strong brown masses of oxidized iron
44 to 63 inches—yellowish brown sandy clay loam; light brownish gray and gray iron depletions and yellowish red masses of oxidized iron

Minor Components

Contrasting components:
- Well drained Emporia soils; in the higher areas
- Moderately well drained, clayey Craven soils; in similar areas

Similar components:
- Soils that have a fragipan; in areas of the upper drainage system of Parrish Hill Creek

Soil Properties and Qualities

Available water capacity: Moderate (about 8.7 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from November to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Loamy marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: K
Hydric soil: No

43B—Slagle-Emporia complex, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Slagle and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Emporia and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Slagle
Surface layer:
0 to 10 inches—dark grayish brown fine sandy loam

Subsoil:
10 to 25 inches—yellowish brown sandy clay loam; strong brown and pale brown masses of oxidized iron
25 to 44 inches—yellowish brown sandy clay loam; grayish brown iron depletions and strong brown masses of oxidized iron
44 to 63 inches—yellowish brown sandy clay loam; light brownish gray and gray iron depletions and yellowish red masses of oxidized iron

Emporia
Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 11 inches—brown fine sandy loam

Subsoil:
11 to 22 inches—yellowish brown loam
22 to 31 inches—yellowish brown clay loam; yellowish red and strong brown masses of oxidized iron
31 to 40 inches—yellowish brown clay; strong brown and yellowish red masses of oxidized iron
40 to 52 inches—yellowish red and strong brown clay; gray iron depletions
52 to 60 inches—yellowish brown and red sandy clay loam; gray iron depletions

Substratum:
60 to 72 inches—yellowish red sandy loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained, clayey Caroline and loamy Kempsville soils; in the higher areas
- Moderately well drained, clayey Craven soils; in similar areas

Soil Properties and Qualities

Available water capacity: Slagle—moderate (about 8.7 inches); Emporia—moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Slagle—moderately low (about 0.06 in/hr); Emporia—moderately high (about 0.2 in/hr)
Drainage class: Slagle—moderately well drained; Emporia—well drained
Seasonal high water table: Slagle—at a depth of 1.5 to 3.0 feet from November to April; Emporia—at a depth of 3.0 to 4.5 feet from November to April
Water table kind: Slagle—apparent; Emporia—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Slagle—loamy marine sediments; Emporia—loamy and clayey marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the Emporia soil reduces the efficiency of mechanical planting equipment.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer of the Emporia soil makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- Shrinking and swelling restrict the use of these soils as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: Slagle—K; Emporia—R
Hydric soil: No

44A—Tomotley fine sandy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Tomotley and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—dark gray fine sandy loam

Subsurface layer:
4 to 8 inches—dark grayish brown fine sandy loam

Subsoil:
8 to 15 inches—gray fine sandy loam; yellowish brown masses of oxidized iron
15 to 38 inches—dark gray sandy clay loam; yellowish brown masses of oxidized iron
38 to 58 inches—gray sandy clay loam; light olive brown masses of oxidized iron
58 to 65 inches—gray fine sandy loam; light olive brown masses of oxidized iron

Substratum:
65 to 75 inches—gray loamy sand

Minor Components

Contrasting components:
- Somewhat poorly drained Dragston soils; in the higher areas
- Poorly drained, clayey Roanoke soils; in similar areas
- Poorly drained, coarse-loamy Bibb soils; along drainageways
- Very poorly drained Nawney soils; in depressions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Poorly drained
Seasonal high water table: At a depth of 0 to 1.0 foot from December to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to grass-legume hay; poorly suited to corn, soybeans, and wheat
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pasture
Suitability: Moderately suited
- The seasonal high water table may affect equipment use, grazing patterns, and the viability of grass and legume species.

Woodland
Suitability: Well suited to loblolly pine
- The wetness of the soil may limit the use of log trucks on this soil.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.

- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: OO
Hydric soil: Yes

45B—Turbeville loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: High stream terraces
Position on the landform: Gently sloping medium to broad rises and side slopes
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Turbeville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—brown loam

Subsoil:
4 to 8 inches—reddish brown loam
8 to 15 inches—red clay loam
15 to 25 inches—reddish brown clay
25 to 72 inches—dark red clay

Minor Components

Contrasting components:
- Well drained, fine-loamy Wickham soils; in similar areas
- Moderately well drained Dogue soils; in upland depressions

Similar components:
- Well drained, thinner solum Masada soils; in similar areas
- Soils that have a slope of more than 6 percent

Soil Properties and Qualities

Available water capacity: High (about 9.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Clayey alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The high clay content of the soil restricts the rooting depth of crops.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Moderately suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to drier periods.

Building sites
- The high content of clay in the subsurface layer makes it more difficult to dig, fill, and compact the soil material in shallow excavations.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Shrinking and swelling restrict the use of this soil as base material for local roads and streets.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

46B—Uchee loamy sand, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Uchee and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—dark gray loamy sand

Subsurface layer:
4 to 26 inches—light yellowish brown loamy sand

Subsoil:
26 to 30 inches—light yellowish brown and brownish yellow sandy loam
30 to 50 inches—brownish yellow sandy clay loam

Substratum:
50 to 62 inches—yellowish brown sandy clay loam; yellowish red and gray iron depletions and strong brown masses of oxidized iron

Minor Components

Contrasting components:
- Well drained, fine-loamy Emporia and Kempsville soils; in similar areas
- Moderately well drained Slagle soils; in depressions and areas adjacent to drainageways

Similar components:
- Soils that have a sandy surface horizon less than 20 inches thick; in similar areas
- Soils that have a slope of more than 6 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Well drained
Seasonal high water table: At a depth of 3.5 to 5.0 feet from December to April
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Parent material: Loamy and sandy marine sediments

Use and Management Considerations

Cropland
Suitability: Well suited to peanuts, wheat, and grass-legume hay; moderately suited to corn and cotton; poorly suited to soybeans
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Sandy or coarse-textured layers accelerate the rate at which plant nutrients are leached.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to southern red oak; moderately suited to loblolly pine
- Coarse-textured layers may slough, which reduces the efficiency of mechanical planting equipment.
- The coarseness of the soil may reduce the traction of wheeled harvest equipment and log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability of the soil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- This soil is well suited to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3s
Virginia soil management group: DD
Hydric soil: No

47B—Udorthents, loamy, gently sloping

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands and stream terraces
Position on the landform: Nearly level to sloping medium to broad rises and side slopes
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Udorthents and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Udorthents consists of miscellaneous areas where natural soils have been altered by cutting and filling. Areas consist of sandy, loamy, and clayey soil material and varying amounts of rock fragments and range from severely compacted to slightly compacted.

Minor Components

Contrasting components:
- Common areas of dumps and landfills containing waste material
- Older sites of pits that support various types of trees
- Pools of water that commonly occur in the deeper pits

Use and Management Considerations

- Onsite investigation is needed to determine the suitability of areas of this map unit for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Not rated
Virginia soil management group: Not rated
Hydric soil: No

48B—Udorthents, smoothed, gently sloping

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Uplands and stream terraces
Position on the landform: Nearly level to sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 50 acres

Map Unit Composition

Udorthents and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Udorthents consists of miscellaneous areas where natural soils have been altered by cutting, filling, and shaping. Areas consist of sandy, loamy, and clayey soil material and varying amounts of rock fragments and range from severely compacted to slightly compacted.

Minor Components

Contrasting components:
- Soil material that is a mixture of Altavista, Pamunkey, Dogue, and Yeopim soils
- Areas of buried steel cables, boulders, discarded machinery parts, logs, tree limbs, and trees; in areas throughout the map unit

Use and Management Considerations

- Onsite investigation is needed to determine the suitability of areas of this map unit for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Not rated
Virginia soil management group: Not rated
Hydric soil: No

W—Water

This map unit is in major land resource areas of the Southern Coastal Plain (MLRA 133A). It includes ponds, lakes, creeks, and rivers.

This map unit is not assigned any interpretive groups.

49A—Wickham fine sandy loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Nearly level medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Wickham and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 12 inches—brown fine sandy loam

Subsoil:
12 to 50 inches—red sandy clay loam
50 to 62 inches—yellowish red sandy clay loam

Minor Components

Contrasting components:
- Well drained, clayey Turbeville and Masada soils; in the higher areas
- Moderately well drained Izagora soils; in low areas and near drainageways

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 1
Virginia soil management group: B
Hydric soil: No

49B—Wickham fine sandy loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Wickham and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 12 inches—brown fine sandy loam

Subsoil:
12 to 50 inches—red sandy clay loam
50 to 62 inches—yellowish red sandy clay loam

Minor Components

Contrasting components:
- Well drained, clayey Turbeville and Masada soils; in the higher areas
- Moderately well drained Izagora soils; in low areas and near drainageways

Similar components:
- Soils that have a slope of 6 to 10 percent
- Soils that have an eroded surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, cotton, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: B
Hydric soil: No

50B3—Wickham sandy clay loam, 2 to 6 percent slopes, severely eroded

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Stream terraces

Position on the landform: Sloping narrow to medium side slopes
Size and shape of areas: Irregular, 5 to 40 acres

Map Unit Composition

Wickham and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—reddish brown sandy clay loam

Subsoil:
4 to 50 inches—red sandy clay loam
50 to 62 inches—yellowish red sandy clay loam

Minor Components

Contrasting components:
- Well drained, clayey Turbeville and Masada soils; in the higher areas
- Moderately well drained Izagora soils; in low areas and near drainageways

Similar components:
- Soils that have a slope of 6 to 10 percent
- Soils that have a surface layer of clay

Soil Properties and Qualities

Available water capacity: Moderate (about 9.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy alluvial sediments

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, cotton, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- Erosion has removed part of the surface soil; the remaining surface soil is less productive and more difficult to manage.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine and southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- This soil is well suited to building sites.

Septic tank absorption fields
- This soil is well suited to septic tank absorption fields.

Local roads and streets
- Structural damage to local roads and streets may occur as a result of low soil strength.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: B
Hydric soil: No

51A—Yeopim silt loam, 0 to 2 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Marine terraces
Position on the landform: Nearly level medium to broad flats
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Yeopim and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—yellowish brown silt loam

Subsoil:
10 to 18 inches—yellowish brown silt loam; pale brown iron depletions
18 to 26 inches—dark yellowish brown silt loam; brownish yellow masses of oxidized iron
26 to 40 inches—dark yellowish brown silty clay loam; light brownish gray iron depletions
40 to 54 inches—yellowish brown silty clay loam; light brownish gray iron depletions
54 to 64 inches—yellowish brown clay loam; brownish yellow masses of oxidized iron
64 to 72 inches—yellowish brown loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained Pamunkey soils; in the higher areas
- Moderately well drained, loamy Altavista and Dogue soils; in similar areas
- Somewhat poorly drained Augusta soils; in slight depressions
- Poorly drained Roanoke soils; in slight depressions

Similar components:
- Soils that have a high base saturation as a result of intensive liming and fertilization

Soil Properties and Qualities

Available water capacity: High (about 10.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from November to April
Water table kind: Apparent
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy and silty alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2w
Virginia soil management group: K
Hydric soil: No

51B—Yeopim silt loam, 2 to 6 percent slopes

Setting

Major land resource area: Southern Coastal Plain (MLRA 133A)
Landform: Marine terraces
Position on the landform: Gently sloping medium to broad rises
Size and shape of areas: Irregular, 5 to 30 acres

Map Unit Composition

Yeopim and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—yellowish brown silt loam

Subsoil:
10 to 18 inches—yellowish brown silt loam; pale brown iron depletions
18 to 26 inches—dark yellowish brown silt loam; brownish yellow masses of oxidized iron
26 to 40 inches—dark yellowish brown silty clay loam; light brownish gray iron depletions
40 to 54 inches—yellowish brown silty clay loam; light brownish gray iron depletions
54 to 64 inches—yellowish brown clay loam; brownish yellow masses of oxidized iron
64 to 72 inches—yellowish brown loam; gray iron depletions

Minor Components

Contrasting components:
- Well drained Pamunkey soils; in the higher areas
- Moderately well drained, loamy Altavista and clayey Dogue soils; in similar areas
- Somewhat poorly drained Augusta soils; in slight depressions
- Poorly drained Roanoke soils; in slight depressions

Similar components:
- Soils that have a high base saturation as a result of intensive liming and fertilization
- Soils that have a slope of 6 to 10 percent
- Soils that are severely eroded

Soil Properties and Qualities

Available water capacity: High (about 10.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr)
Drainage class: Moderately well drained
Seasonal high water table: At a depth of 1.5 to 3.0 feet from November to April
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Parent material: Loamy and silty alluvial sediments

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, peanuts, wheat, and grass-legume hay
- The slope causes an increase in surface runoff, erosion, and nutrient loss.
- The risk of compaction increases when the soil is wet.
- Soil crusting decreases water infiltration and interferes with the emergence of seedlings.

Pasture
Suitability: Well suited
- The slope causes an increase in surface runoff, erosion, and nutrient loss.

Woodland
Suitability: Well suited to loblolly pine; moderately suited to southern red oak
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability of the soil limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Prime farmland in all areas
Land capability class: 2e
Virginia soil management group: K
Hydric soil: No

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 to prevent soil-related failures in land uses.

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained. The table "Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields" is described in this section.

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

Yields per Acre

The average yields per acre shown in the yields table in this survey are those that can be expected of the principal crops under a high level of management. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification and the Virginia soil management group of map units in the survey area also are shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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 the yields table 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 Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The 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 forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961).

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in the yields table.

Virginia Agronomic Land Use Evaluation System (VALUES)

The *Virginia Agronomic Land Use Evaluation System (VALUES)* is a system that ranks soils for management and productivity. VALUES places each soil series in Virginia into one of 43 management groups. The management groups, A through QQ, include the following soil characteristics: regional occurrence; parent material; landscape position or influence; solum thickness; dominant profile features, such as texture; available water capacity; and internal drainage. Economically and environmentally feasible yields were assigned to each management group based on yields of field trial crop data and research (Virginia Tech, 1994). The following paragraphs describe the soil management groups for Charles City County.

Group B. The soils of this group formed in alluvium and are on stream and river terraces in the Coastal Plain region. These soils are deep, have a loamy texture throughout, have a high available water capacity, and are moderately well drained or well drained.

Group E. The soils of this group formed in sandy coastal plain sediments and are on low-lying terraces, in depressions, and on flats where surface drainage is restricted. These soils are deep, have a coarse loamy texture throughout, commonly have a high water table that is present even during some parts of the growing season, have a high available water capacity, and are poorly drained.

Group F. The soils of this group formed in coarse-textured coastal plain sediments and are in low-lying landscape positions and are underlain by stratified loamy sediments. These soils are deep, have a coarse loamy texture throughout, have a moderately high or high available water capacity, and are somewhat poorly drained.

Group J. The soils of this group formed in coastal plain sediments and are in low-lying landscape positions. These soils are deep, have a loamy subsurface layer, have a moderately high available water capacity, and are somewhat poorly drained or moderately well drained.

Group K. The soils of this group formed in mixed marine and fluvial sediments in the Coastal Plain region and are on stream terraces to broad, nearly level interfluves on uplands. These soils are deep, have a loamy surface layer, have a clay loam to clayey subsurface layer, have a moderate available water capacity, and are somewhat poorly drained.

Group L. The soils of this group formed in old transported deposits of alluvium or colluvium and are common on stream terraces, foot slopes, and older, elevated, upland landscapes that were once stream terraces. These soils are deep, have a medium-textured surface layer, have a more clayey subsurface layer, commonly have gravel and rounded stones, have a moderate or high available water capacity, and typically are well drained.

Group O. The soils of this group formed in transported materials from old alluvium on dissected uplands. These soils are shallow to very deep, have a very dark red clayey subsurface layer that has significant amounts of rock fragments in some areas, have a moderate available water capacity, and are well drained.

Group R. The soils of this group formed in marine sediments and are located on the gently sloping uplands of the Coastal Plain. These soils are deep, have a sandy loam surface layer, have a reddish yellow clayey to clay loam subsurface layer that has some mottles in the lower part, have a moderate available water capacity, and are moderately well drained or well drained.

Group S. The soils of this group formed in loamy coastal plain sediments and are found on gently sloping uplands of the Coastal Plain. These soils are moderately deep, have a fine loamy texture in the subsoil, have a moderate or high available water capacity, and are moderately well drained or well drained.

Group AA. The soils of this group formed in a variety of sediments and are found on uplands. These soils are shallow to deep, have a clayey subsurface layer that sometimes has rock fragments, have a moderately low available water capacity, and are somewhat poorly drained or moderately well drained.

Group DD. The soils of this group formed in loamy coastal plain sediments and local alluvium and are on the gently sloping uplands and stream terraces of the Coastal Plain. These soils are moderately deep, have predominantly coarse loamy subsurface horizons, have an Arenic or a very thick sandy surface in some cases, have a moderately low available water capacity, and are excessively drained.

Group EE. The soils of this group formed in loamy sediments and are on low-lying landscape positions in the Coastal Plain. These soils are deep, have a coarse loamy to sandy subsurface layer, typically have a high water table during some part of the year despite the very sandy soil textures, and are very poorly drained or poorly drained.

Group HH. The soils of this group formed in loamy sediments on floodplains in the mountains and in finer textured sediments in the Coastal Plain. These soils are moderately deep to very deep, have a fine-loamy or clayey subsurface layer, have a moderate available water capacity, and are somewhat poorly drained or moderately well drained.

Group II. The soils of this group formed in sandy parent materials in the Coastal Plain or in local alluvium or colluvium of sandy origin. These soils are sandy-textured throughout and have little horizonation, have a very low or low available water capacity, and are moderately well drained or well drained.

Group LL. The soils of this group formed in clayey sediments on low coastal plain landscapes and are found mostly in the Coastal Plain region. These soils are deep, have a clayey subsurface texture throughout, have a moderate available water capacity, and are poorly drained or somewhat poorly drained.

Group NN. The soils of this group formed in alluvium along streams or on terraces. They are moderately deep to very deep, have a silty to clay loam subsurface layer, have a moderately high available water capacity, and are poorly drained or somewhat poorly drained.

Group OO. The soils of this group formed in alluvium or coastal plain sediments and are on terraces, levees, and broad nearly level landscapes in the Coastal Plain. These soils have a loamy to silty texture throughout, have a high available water capacity, and are poorly drained.

Group PP. The soils of this group formed in depressions, tidal basins, tidal flats, and other ponded areas and are represented by the marshes and tidal wetlands of the Coastal Plain. Some of these soils have organic horizons, some have clayey mineral horizons, and some have sulfidic materials. These soils have water tables at or near the soil surface and are saturated most of the time.

Prime Farmland and Other Important Farmlands

The table “Prime Farmland and Other Important Farmland” lists the map units in the survey area that are considered prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 43,000 acres in the survey area, or nearly 37 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county. About 20,000 acres of this prime farmland is used for crops. The crops grown on this land, mainly corn, cotton, and soybeans, account for an estimated two-thirds of the county's total agricultural income each year.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Hydric Soils

The table described in this section lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 2006) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   B. are poorly drained or very poorly drained and have either:
      1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or

2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or

3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.

3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Map units in the table "Hydric Soils List" meet the definition of hydric soils and have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (Hurt and others, 2002).

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

1A Altavista fine sandy loam, 0 to 3 percent slopes
2A Augusta sandy loam, 0 to 2 percent slopes
8B Catpoint loamy sand, 0 to 4 percent slopes
19A Dragston fine sandy loam, 0 to 2 percent slopes
30A Munden loamy sand, 0 to 2 percent slopes
31A Nahunta silt loam, 0 to 2 percent slopes
32B Nansemond loamy sand, 0 to 4 percent slopes

Agricultural Waste Management

The titles of the tables described in this section are:

- "Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge"
- "Agricultural Disposal of Wastewater by Irrigation and Overland Flow"
- "Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment"

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

The tables described in this section show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forestland Productivity and Management

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In the table, “Forestland Productivity,” the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

The titles of the tables described in this section are:

- “Haul Roads, Log Landings, and Soil Rutting on Forestland”
- “Hazard of Erosion and Suitability for Roads on Forestland”
- “Forestland Planting and Harvesting”

- “Forestland Site Preparation”
- “Damage by Fire and Seedling Mortality on Forestland”

In these tables, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreational Development

The titles of the tables described in this section are:

- "Camp Areas, Picnic Areas, and Playgrounds"
- "Paths, Trails, and Golf Fairways"

In the tables described in this section, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in these tables can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

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 ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

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 between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, 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 kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

The titles of the tables described in this section are:

- "Dwellings and Small Commercial Buildings"
- "Roads and Streets, Shallow Excavations, and Lawns and Landscaping"

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The tables described in this section show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained (fig. 2). Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

The titles of the tables described in this section are:

- “Sewage Disposal”
- “Landfills”

Figure 2.—The Evelynton Mansion, home of the Edmund Ruffin family, is located on Pamunkey loam, 2 to 6 percent slopes. This soil has excellent suitability for lawns and shrubs. Several of the historic plantations along the James River are located on Pamunkey soils.

These tables show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid 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. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

The titles of the tables described in this section are:

- “Source of Sand and Gravel”
- “Source of Reclamation Material, Roadfill, and Topsoil”

These tables give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing (fig. 3). They are used in many kinds of construction. Specifications for each use vary widely. In the table “Source of Sand and Gravel,” only the likelihood of finding material in suitable quantity is evaluated. The suitability of the

Figure 3.—A sand and gravel operation along the James River near the Shirley Plantation that uses material from the substratum of Pamunkey soils.

material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In the table "Source of Reclamation Material, Roadfill, and Topsoil," the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction;

available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place (fig. 4). In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and

Figure 4.—Material from the gravelly Nevarc and Remlik soils is used as roadbase and fill on Highway VA-106 in the Roxbury area.

fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

The table "Ponds and Embankments" gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment (fig. 5). Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more

Figure 5.—Harrison Lake National Fish Hatchery ponds in an area of Peawick silt loam. This soil has slight limitations affecting pond reservoirs where it occurs near a water source.

above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

The table described in this section gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

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 15 percent or more, 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 (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-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, CL-ML.

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 particle-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.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

The table described in this section shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook,” which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

The table described in this section shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

The table described in this section gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

The table described in this section gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2006). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, siliceous, subactive, thermic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example is the Emporia series.

The table "Taxonomic Classification of the Soils" indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2006). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Altavista Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 3 percent

Associated Soils

- Augusta soils, which are somewhat poorly drained
- Bojac soils, which are well drained and have less clay in the subsoil than the Altavista soils
- Dogue soils, which have more clay in the subsoil than the Altavista soils
- Dragston soils, which are somewhat poorly drained and have less clay in the subsoil than the Altavista soils
- Munden soils, which have less clay in the subsoil than the Altavista soils
- Nimmo soils, which are poorly drained and have less clay in the subsoil than the Altavista soils
- Pamunkey soils, which are well drained
- Roanoke soils, which are poorly drained and have more clay in the subsoil than the Altavista soils
- Tomotley soils, which are poorly drained

Taxonomic Classification

Fine-loamy, mixed, semiactive, thermic Aquic Hapludults

Typical Pedon

Altavista fine sandy loam, 0 to 3 percent slopes; in a cultivated area, about 1.7 miles northeast of the junction of Highways VA-623 and VA-627, about 1.1 miles northwest of the mouth of Parsons Creek, about 1.0 mile southwest of the tip of Old Neck marsh; elevation 10 feet.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; few fine roots; common fine tubular pores; moderately acid; clear smooth boundary.

BE—11 to 16 inches; light yellowish brown (10YR 6/4) loam; weak fine granular structure; friable; slightly sticky and non-plastic; few fine roots; common fine tubular and few fine vesicular pores; few fine mica flakes; strongly acid; clear smooth boundary.

Bt1—16 to 28 inches; light olive brown (2.5Y 5/4) loam; moderate fine and medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; common fine and medium tubular pores; few faint clay films on faces of peds; few fine mica flakes; very strongly acid; clear smooth boundary.

Bt2—28 to 37 inches; light olive brown (2.5Y 5/4) clay loam; weak fine and medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine tubular pores; common distinct clay films on faces of peds; common fine prominent gray (10YR 6/1) iron depletions; few fine mica flakes; very strongly acid; clear smooth boundary.

Bt3—37 to 49 inches; yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; common faint clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions; few fine mica flakes; very strongly acid; clear smooth boundary.

Btg—49 to 62 inches; gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; common distinct discontinuous clay films on vertical faces of peds; common medium prominent light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/6) masses of oxidized iron; few fine mica flakes; extremely acid; clear smooth boundary.

Cg—62 to 74 inches; gray (10YR 6/1) stratified fine sandy loam, loamy fine sand, and fine sand; single grain; friable; slightly sticky and non-plastic; compact in place; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; few fine mica flakes; extremely acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more

Reaction: Extremely acid to moderately acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 5 percent in the A, E, and B horizons and 0 to 35 percent in the C horizons

Mica flakes: Few to common in the B and C horizons

A or Ap horizon:

Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—sandy loam, fine sandy loam, or loam

E horizon (where present):

Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture—sandy loam, fine sandy loam, or loam

BE horizon:

Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture—fine sandy loam, loam, or sandy clay loam

Bt horizon:

Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray within the upper 24 inches of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, sandy clay loam, or clay loam

Btg horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, sandy clay loam, or clay loam

BC horizon (where present):
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, or sandy clay loam

C horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sand, fine sand, or stratified, ranging from sand to clay loam

Cg horizon:
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sand, fine sand, or stratified, ranging from sand to clay loam

Augusta Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which are moderately well drained
- Dragston soils, which have less clay in the subsoil than the Augusta soils
- Munden soils, which are moderately well drained and have less clay in the subsoil than the Augusta soils
- Pamunkey soils, which are well drained
- Roanoke soils, which are poorly drained and have more clay in the subsoil than the Augusta soils
- Tomotley soils, which are poorly drained

Taxonomic Classification

Fine-loamy, mixed, semiactive, thermic Aeric Endoaquults

Typical Pedon

Augusta sandy loam, 0 to 2 percent slopes; in a cultivated area, about 0.4 mile east of the junction of Highways VA-614 and VA-155, about 30 yards north of Highway VA-614; elevation 35 feet.

Ap—0 to 8 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; common fine and few medium and coarse roots; common fine and medium tubular pores; 2 percent rounded quartz gravel; moderately acid; abrupt smooth boundary.

E—8 to 13 inches; pale brown (10YR 6/3) sandy loam; weak medium granular structure; friable; slightly sticky and slightly plastic; common fine roots; common fine and medium tubular pores; common medium distinct gray (10YR 6/1) iron depletions; moderately acid; clear smooth boundary.

Bt—13 to 27 inches; light olive brown (2.5Y 5/4) sandy clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine and medium tubular pores; few faint clay films on faces of peds; few fine prominent light gray (10YR 7/1) iron depletions; very strongly acid; gradual smooth boundary.

BCg—27 to 40 inches; light gray (10YR 7/1) sandy loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; few faint clay films on faces of peds; many medium distinct olive brown (2.5Y 4/4) masses of oxidized iron; few fine mica flakes; very strongly acid; gradual smooth boundary.

Cg1—40 to 51 inches; grayish brown (2.5Y 5/2) gravelly loamy sand; single grain; loose; few fine and medium tubular pores; common medium distinct light gray (10YR 7/1) iron depletions and many coarse prominent reddish brown (5YR 4/4) masses of oxidized iron; few fine mica flakes; 20 percent rounded quartz gravel; very strongly acid; abrupt smooth boundary.

Cg2—51 to 72 inches; light brownish gray (10YR 6/2) stratified loamy sand and gravelly loamy sand; single grain; loose; many coarse prominent strong brown (7.5YR 4/6) masses of oxidized iron; 18 percent rounded quartz gravel; strongly acid.

Range in Characteristics

Solum thickness: 40 to 80 inches
Reaction: Very strongly acid to moderately acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 5 percent in the A, E, and B horizons and 0 to 20 percent in the C horizons
Mica flakes: None to common throughout the profile

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, or loam

E horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—2 to 4
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, or loam

BE horizon (where present):
Hue—10YR to 5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 to 6
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, sandy clay loam, or clay loam

Btg horizon (where present):
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, sandy clay loam, or clay loam

BCg horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, loam, sandy clay loam, or clay loam

Cg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—loamy sand, sandy loam, loam, or stratified sandy loam and sand

Bethera Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Clayey marine sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 0 to 2 percent

Associated Soils

- Caroline soils, which are well drained
- Emporia soils, which are well drained and have less clay in the subsoil than the Bethera soils

- Nahunta soils, which are somewhat poorly drained and have less clay in the subsoil than the Bethera soils
- Slagle soils, which are moderately well drained and have less clay in the subsoil than the Bethera soils

Taxonomic Classification

Fine, mixed, semiactive, thermic Typic Paleaquults

Typical Pedon

Bethera silt loam, 0 to 2 percent slopes; in an area of woodland, about 0.6 mile north-northeast of the junction of Highways VA-618 and VA-602, about 200 yards west of Highway VA-618; elevation 115 feet.

A1—0 to 4 inches; dark gray (10YR 4/1) silt loam; moderate fine and medium granular structure; friable; slightly sticky and slightly plastic; many fine and few coarse roots; extremely acid; clear smooth boundary.

A2—4 to 7 inches; dark gray (10YR 4/1) silt loam; moderate fine granular structure; friable; slightly sticky and slightly plastic; common fine and few coarse roots; many very fine tubular pores; few fine prominent yellowish brown (10YR 5/6) masses of oxidized iron; extremely acid; clear smooth boundary.

E—7 to 12 inches; gray (5Y 6/1) silt loam; weak fine and medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine and coarse roots; many very fine tubular pores; many fine prominent strong brown (7.5YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg1—12 to 40 inches; light gray (5Y 7/1) clay loam; strong medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine and coarse roots; many very fine tubular pores; few faint clay films on surfaces along pores and common distinct clay films on faces of peds; many fine prominent yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and yellowish red (5YR 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Btg2—40 to 72 inches; light gray (5Y 7/1) clay loam; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few very fine tubular pores; few faint clay films on surfaces along pores and common distinct clay films on faces of peds; few coarse prominent dark yellowish brown (10YR 3/6) and strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches or more
Reaction: Extremely acid to moderately acid throughout the profile

A or Ap horizon:
Hue—10YR or 2.5Y
Value—2 to 4
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, or silt loam

E horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red

Texture—fine sandy loam, loam, or silt loam

BEg horizon (where present):
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, or clay loam

Btg horizon:
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, sandy clay, silty clay, or clay

Cg horizon (where present):
Hue—neutral or 10YR to 5BG
Value—5 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, sandy clay, or clay

Bibb Series

Physiographic province: Southern Coastal Plain
Landform: Flood plains
Parent material: Loamy and sandy alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Lawnes soils, which are flooded daily by tidal water
- Mattan soils, which are flooded daily by tidal water or are in ponded basins
- Nawney soils, which have more clay in the soil than the Bibb soils

Taxonomic Classification

Coarse-loamy, siliceous, active, acid, thermic Typic Fluvaquents

Typical Pedon

Bibb fine sandy loam, 0 to 2 percent slopes, frequently flooded; in an area of woodland, about 30 yards southeast of Highway VA-607 and West Run; elevation 35 feet.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; common fine and medium roots; very strongly acid; abrupt smooth boundary.

Ag—4 to 9 inches; gray (10YR 5/1) fine sandy loam; moderate medium granular structure; friable; slightly sticky and non-plastic; common fine roots; very strongly acid; abrupt smooth boundary.

Cg1—9 to 31 inches; gray (5Y 6/1) fine sandy loam; massive; friable; slightly sticky and slightly plastic; few fine roots; common medium prominent light olive brown (2.5Y 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Cg2—31 to 41 inches; greenish gray (5GY 6/1) fine sandy loam; massive; friable; slightly sticky and slightly plastic; common fine roots; common medium prominent light olive brown (2.5Y 5/6), strong brown (7.5YR 4/6), and yellowish brown (10YR 5/6) masses of oxidized iron; very strongly acid; clear smooth boundary.

Cg3—41 to 65 inches; light greenish gray (5GY 7/1) gravelly loamy coarse sand; single grain; loose; 20 percent rounded quartz gravel; very strongly acid.

Range in Characteristics

Reaction: Extremely acid to strongly acid throughout the profile
Rock fragments: 0 to 2 percent gravel above a depth of 40 inches and 0 to 35 percent gravel below a depth of 40 inches

A horizon:
Hue—10YR
Value—2 to 5
Chroma—1 to 3
Texture—fine sandy loam, sandy loam, loam, or silt loam

Ag horizon (where present):
Hue—neutral or 10YR or 2.5Y
Value—3 to 7
Chroma—0 to 2
Texture—fine sandy loam, sandy loam, loam, or silt loam

Cg horizon:
Hue—neutral or 10YR to 5BG
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or stratified, ranging from sand to silt loam; some pedons have thin strata of gravel or organic matter

Bojac Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 6 percent

Associated Soils

- Altavista soils, which are moderately well drained and have more clay in the subsoil than the Bojac soils
- Munden soils, which are moderately well drained
- Pamunkey soils, which are well drained and have more clay in the subsoil than the Bojac soils

Taxonomic Classification

Coarse-loamy, mixed, semiactive, thermic Typic Hapludults

Typical Pedon

Bojac loamy fine sand, 0 to 2 percent slopes (fig. 6); in a cultivated area, about 0.7 mile southeast of the end of Highway VA-619, about 1.5 miles southwest of the mouth of Kittewan Creek, about 1.2 miles northeast of the tip of Weyanoke Point; elevation 7 feet.

Ap—0 to 10 inches; dark brown (7.5YR 3/4) loamy fine sand; weak fine granular structure; very friable; non-sticky and non-plastic; common fine roots; common fine and medium tubular pores; few fine mica flakes; very strongly acid; clear smooth boundary.

Bt—10 to 35 inches; brown (7.5YR 4/4) sandy loam; weak coarse subangular blocky structure; very friable; slightly sticky and slightly plastic; few fine roots; common fine and medium tubular pores; many clay films on faces of peds and common clay bridges between sand grains; few fine mica flakes; moderately acid; gradual smooth boundary.

C—35 to 70 inches; strong brown (7.5YR 4/6) loamy sand; single grain; loose; common fine and medium tubular pores; common fine mica flakes; slightly acid.

Range in Characteristics

Reaction: Extremely acid to slightly acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 5 percent in the A, E, and B horizons and 0 to 15 percent in the C horizons

Mica flakes: Few to common in the B and C horizons

A horizon (where present):
Hue—7.5YR to 2.5Y
Value—3
Chroma—1 or 2
Texture—loamy fine sand, sandy loam, or fine sandy loam

Ap horizon:
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—loamy fine sand, sandy loam, or fine sandy loam

E horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—4 or 6
Texture—loamy fine sand, sandy loam, or fine sandy loam

BE horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 or 6
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray below 40 inches
Texture—sandy loam, fine sandy loam, or loam or a thin subhorizon of sandy clay loam or clay loam

Figure 6.—Typical profile of Bojac loamy fine sand. This soil has a subsoil of dark brown sandy loam and a sandy substratum.

BC horizon (where present):
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray below 40 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand or loamy fine sand

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—stratified, ranging from coarse sand to loamy fine sand

Caroline Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Clayey marine sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 2 to 10 percent

Associated Soils

- Bethera soils, which are poorly drained
- Craven and Nevarc soils, which are moderately well drained
- Emporia soils, which have less clay in the subsoil than the Caroline soils
- Slagle soils, which are moderately well drained and have less clay in the subsoil than the Caroline soils

Taxonomic Classification

Fine, mixed, subactive, thermic Typic Paleudults

Typical Pedon

Caroline silt loam in an area of Caroline-Emporia complex, 2 to 6 percent slopes (fig. 7); in a cultivated area, about 0.3 mile north of the junction of Highways VA-603 and VA-622, about 0.6 mile north of the junction of Highways VA-603 and VA-106, about 0.5 mile southwest of the crossing of two power lines, about 50 yards east of Highway VA-106; elevation 152 feet.

Ap—0 to 5 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; slightly sticky and non-plastic; many fine and medium and few coarse roots; common fine and medium tubular pores; neutral; abrupt smooth boundary.

Bt1—5 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine and medium and few coarse roots; common fine and medium tubular pores; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—14 to 29 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine and medium and few coarse roots; common fine tubular pores; many distinct clay films on faces of peds; few medium distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Figure 7.—Typical profile of Caroline silt loam. This soil has a clayey subsoil that is brown in the upper part and red in the lower part.

Bt3—29 to 52 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine and few medium roots; common fine tubular pores; many distinct clay films on faces of peds and common distinct clay bridges between sand grains; common medium distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) and common medium prominent red (2.5YR 4/6) masses of oxidized iron; extremely acid; diffuse smooth boundary.

Bt4—52 to 70 inches; strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few medium roots; few fine tubular pores; many distinct clay films on faces of peds; common medium distinct red (2.5YR 4/6) masses of oxidized iron and common medium prominent gray (10YR 6/1) iron depletions; very strongly acid.

Range in Characteristics

Solum thickness: 60 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 10 percent ironstone and quartz gravel in the A, E, and B horizons and 0 to 20 percent ironstone and quartz gravel in the C horizons

A or Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 5
Texture—sandy loam, fine sandy loam, loam, or silt loam; clay loam in eroded areas

E horizon (where present):
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—3 to 6
Texture—sandy loam, fine sandy loam, loam, or silt loam

BA or BE horizon (where present):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture—sandy clay loam or clay loam

Bt horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—6 or 8
Redoximorphic features—iron depletions in shades of gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, sandy clay, or clay; some pedons have subhorizons of sandy clay loam, silty clay loam, or silty clay

BC horizon (where present):
Hue—5YR to 10YR
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam or sandy clay loam

C horizon (where present):
Hue—5YR to 10YR
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—fine sandy loam, sandy clay loam, clay loam, or stratified, ranging from sandy loam to clay

Catpoint Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces

Parent material: Sandy marine sediments
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 4 percent

Associated Soils

- Conetoe soils, which have more clay in the subsoil than the Catpoint soils
- Munden soils, which are moderately well drained
- Seabrook soils, which are moderately well drained and do not have a subsoil
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Thermic, coated Lamellic Quartzipsamments

Typical Pedon

Catpoint loamy sand, 0 to 4 percent slopes; in an area of woodland, about 1.1 miles east-northeast of Highway VA-614 and Collins Run on Virginia Division of Forestry fire trail 1501, about 0.8 mile northeast of the junction of Highway VA-614 and the fire trail, about 0.2 mile south of the Chickahominy River; elevation 25 feet.

A—0 to 8 inches; dark brown (10YR 3/3) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; common fine, medium, and coarse roots; common medium low-continuity tubular pores; very strongly acid; clear wavy boundary.

E—8 to 24 inches; brownish yellow (10YR 6/6) fine sand; single grain; loose; few fine and medium roots; common medium low-continuity tubular pores; very strongly acid; gradual smooth boundary.

E1 and Bt1—24 to 41 inches; light yellowish brown (10YR 6/4) loamy sand; single grain; loose (E1 part); yellowish brown (10YR 5/6) loamy sand; weak fine granular structure; very friable (Bt1 part); common fine and medium roots; common fine moderate-continuity pores; 10 percent lamellae, by volume; very strongly acid; clear smooth boundary.

E2 and Bt2—41 to 66 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose (E2 part); strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable (Bt2 part); common fine roots and few coarse roots; common medium moderate-continuity pores; 10 percent lamellae, by volume; strongly acid.

Range in Characteristics

Sandy material thickness: 80 inches or more
Reaction: Very strongly acid to slightly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 30 percent quartz gravel above a depth of 40 inches and 0 to 70 percent quartz gravel below a depth of 40 inches
Lamellae: Combined thickness of less than 6 inches above a depth of 60 inches

A horizon:
Hue—7.5YR to 2.5Y
Value—2 or 3
Chroma—1 to 4
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand
Thickness—less than 10 inches

Ap horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 or 5

Chroma—3 or 4
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand

E horizon and the E part of the E and Bt horizon:
Hue—10YR or 2.5Y
Value—6 to 8
Chroma—2 to 6
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand

Bt part (lamellae) of the E and Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

C horizon (where present):
Hue—10YR to 5Y
Value—5 to 8
Chroma—1 to 4
Texture (fine-earth fraction)—sand, fine sand, or loamy sand

Chickahominy Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Low
Slope range: 0 to 2 percent

Associated Soils

- Dogue and Peawick soils, which are moderately well drained
- Newflat soils, which are somewhat poorly drained

Taxonomic Classification

Fine, mixed, semiactive, thermic Typic Endoaquults

Typical Pedon

Chickahominy loam, 0 to 2 percent slopes; in an area of woodland, about 1.2 miles northwest of where Highway VA-5 crosses the Chickahominy River, about 30 yards south of Highway VA-5, about 1.3 miles north of the mouth of Tomahund Creek, about 0.9 mile southwest of the mouth of Morris Creek; elevation 38 feet.

A—0 to 2 inches; dark grayish brown (2.5Y 4/2) loam; moderate fine and medium granular structure; friable; moderately sticky and slightly plastic; many fine, medium, and coarse roots; few fine tubular pores; extremely acid; abrupt smooth boundary.

Eg—2 to 5 inches; dark grayish brown (10YR 4/2) loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; many fine, medium, and coarse roots; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/4) masses of oxidized iron; extremely acid; clear smooth boundary.

Btg1—5 to 35 inches; grayish brown (10YR 5/2) clay; strong fine and medium subangular blocky structure; firm; very sticky and very plastic; few fine roots; many distinct clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of oxidized iron; few fine mica flakes; extremely acid; gradual smooth boundary.

Btg2—35 to 50 inches; gray (5Y 5/1) clay; strong medium and coarse angular blocky structure; firm; very sticky and very plastic; few fine roots; many distinct clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/6) masses of oxidized iron; extremely acid; gradual wavy boundary.

Btg3—50 to 64 inches; gray (10YR 6/1) clay; moderate medium angular blocky and moderate medium subangular blocky structure; firm; very sticky and very plastic; many distinct clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches or more

Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 2 percent rounded quartz gravel in the A, E and B horizons

A horizon:

Hue—10YR to 5Y
Value—3 to 6
Chroma—1 or 2
Texture—very fine sandy loam, loam, or silt loam

Eg horizon:

Hue—10YR to 5Y
Value—3 to 6
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—very fine sandy loam, loam, or silt loam

BEg horizon (where present):

Hue—neutral or 10YR to 5Y
Value—4 to 6
Chroma—0 to 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

Btg horizon:

Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, silty clay, or clay

Cg horizon (where present):

Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, loam, silty clay loam, or stratified, ranging from sand to clay

Conetoe Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Sandy and loamy alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 4 percent

Associated Soils

- Catpoint soils, which have less clay in the subsoil than the Conetoe soils
- Munden soils, which are moderately well drained
- Seabrook soils, which are moderately well drained and do not have a subsoil
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Loamy, mixed, semiactive, thermic Arenic Hapludults

Typical Pedon

Conetoe loamy sand, 0 to 4 percent slopes; in an area of woodland, about 2.2 miles west of Walkers Dam on Virginia Department of Forestry fire trail 1501, about 0.8 mile west-southwest of Cypress Bank Landing, about 0.5 mile southwest of the center line of the Chickahominy River; elevation 25 feet.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; few fine and many medium roots; common medium moderate-continuity tubular pores; very strongly acid; gradual smooth boundary.

E—5 to 22 inches; light yellowish brown (10YR 6/4) loamy sand; single grain; very friable; common fine and medium roots; common medium moderate-continuity tubular pores; very strongly acid; gradual smooth boundary.

Bt—22 to 42 inches; strong brown (7.5YR 5/6) sandy loam; weak fine granular structure; friable; few fine and medium roots; few medium moderate-continuity tubular pores; few distinct clay bridges between sand grains; few fine mica flakes; strongly acid; gradual smooth boundary.

BC—42 to 50 inches; yellowish brown (10YR 5/6) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; common medium moderate-continuity tubular pores; few fine mica flakes; strongly acid; gradual smooth boundary.

C—50 to 72 inches; very pale brown (10YR 7/3) sand; single grain; loose; few fine roots; thin yellowish brown (10YR 5/6) lenses of loamy sand; common medium moderate-continuity tubular pores; few fine mica flakes; 5 percent lamellae, by volume; strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches
Reaction: Very strongly acid to slightly acid throughout the profile, except where lime has been applied

A horizon:
Hue—7.5YR to 2.5Y
Value—3 to 5; where value is 3, horizon is less than 6 inches thick
Chroma—1 to 3
Texture—sand, fine sand, loamy sand, or loamy fine sand
Thickness—less than 6 inches

Ap horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 or 5
Chroma—1 to 3
Texture—sand, fine sand, loamy sand, or loamy fine sand

E horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture—fine sand, loamy sand, or loamy fine sand

Bt horizon:
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—4 to 8
Texture—sandy loam, fine sandy loam, or sandy clay loam

BC horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

C horizon:
Hue—7.5YR to 2.5Y
Value—5 to 8
Chroma—1 to 8
Texture—sand, fine sand, loamy sand, or loamy fine sand; may have lenses of sandy loam or fine sandy loam

Craven Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Clayey marine sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 2 to 10 percent

Associated Soils

- Caroline soils, which are well drained
- Nahunta soils, which are somewhat poorly drained and have less clay in the subsoil than the Craven soils
- Nevarc soils, which have a perched water table
- Remlik and Uchee soils, which are well drained and have thick, sandy surface layers
- Slagle soils, which have less clay in the subsoil than the Craven soils

Taxonomic Classification

Fine, mixed, subactive, thermic Aquic Hapludults

Typical Pedon

Craven loam, 2 to 6 percent slopes; in a cultivated area, about 70 yards south of the Nance Shop Historic Marker on Highway VA-603, about 0.6 mile west-southwest of the junction of Highways VA-603 and VA-609 at the communication tower, about 1.0 mile east-northeast of the junction of Highways VA-603 and VA-605; elevation 130 feet.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam; moderate medium granular structure; friable; slightly sticky and slightly plastic; common fine, medium, and coarse roots; common fine and medium tubular pores; strongly acid; abrupt smooth boundary.

Bt1—10 to 22 inches; strong brown (7.5YR 5/6) clay; strong fine angular blocky structure; firm; moderately sticky and moderately plastic; few medium and coarse roots; few fine tubular pores; many distinct clay films on faces of peds; common fine prominent red (2.5YR 5/8) and common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron; common fine mica flakes; strongly acid; clear smooth boundary.

Bt2—22 to 36 inches; strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) clay; strong fine angular blocky structure; firm; moderately sticky and moderately plastic; common fine and few medium roots; many distinct clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions and many medium distinct red (2.5YR 5/8) and yellowish red (5YR 5/8) masses of oxidized iron; few fine mica flakes; very strongly acid; gradual smooth boundary.

Bt3—36 to 45 inches; strong brown (7.5YR 5/8) clay; strong medium angular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few distinct clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions and many medium distinct reddish brown (2.5YR 5/4) and yellowish red (5YR 5/8) masses of oxidized iron; few fine mica flakes; extremely acid; gradual smooth boundary.

BCg—45 to 70 inches; light gray (10YR 7/1) clay loam; massive; friable; moderately sticky and moderately plastic; few fine roots; many medium distinct reddish brown (2.5YR 5/4) and strong brown (7.5YR 5/8) masses of oxidized iron; few fine mica flakes; extremely acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 3 percent gravel throughout the profile

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 3
Texture—fine sandy loam, loam, or silt loam

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 3
Texture—fine sandy loam, loam, or silt loam; clay loam in eroded areas

E horizon (where present):
Hue—10YR to 5Y
Value—5 to 7
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

BA or BE horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—3 to 8
Texture—loam, sandy clay loam, clay loam, or silty clay loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, silty clay, or clay

Btg horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay

BCg horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay

C or Cg horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 to 6
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand, sandy loam, sandy clay loam, or clay loam

Dogue Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 10 percent

Associated Soils

- Altavista and Izagora soils, which have less clay in the subsoil than the Dogue soils
- Chickahominy and Roanoke soils, which are poorly drained
- Masada soils, which are well drained
- Newflat soils, which are somewhat poorly drained

- Pamunkey and Wickham soils, which are well drained and have less clay in the subsoil than the Dogue soils
- Peawick soils, which have more silt in the subsoil than the Dogue soils
- Udorthents, which do not have a well developed subsoil
- Yeopim soils, which have less clay in the subsoil than the Dogue soils

Taxonomic Classification

Fine, mixed, semiactive, thermic Aquic Hapludults

Typical Pedon

Dogue silt loam, 0 to 2 percent slopes; in a cultivated area, about 0.6 mile south of the junction of Highways VA-618 and VA-5, about 120 yards southwest of the junction of Highway VA-618 and a farm lane, about 20 yards west of farm lane; elevation 28 feet.

Ap—0 to 12 inches; grayish brown (10YR 5/2) silt loam; moderate medium granular structure; friable; slightly sticky and slightly plastic; few fine roots; common fine tubular pores; slightly acid; abrupt smooth boundary.

Bt1—12 to 24 inches; yellowish brown (10YR 5/8) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds; common medium distinct light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8) masses of oxidized iron; few fine mica flakes; very strongly acid; clear smooth boundary.

Bt2—24 to 36 inches; yellowish brown (10YR 5/8) and light yellowish brown (10YR 6/4) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; common faint clay films on faces of peds; common medium prominent gray (N 6/0) iron depletions and common medium prominent red (2.5YR 4/8) masses of oxidized iron; few fine mica flakes; extremely acid; clear smooth boundary.

Bt3—36 to 52 inches; yellowish brown (10YR 5/8), strong brown (7.5YR 5/6), and light yellowish brown (10YR 6/4) clay; moderate fine and medium subangular and angular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; common fine tubular pores; common distinct clay films on faces of peds; common medium prominent gray (N 6/0) iron depletions and many coarse prominent red (2.5YR 4/8) masses of oxidized iron; few fine mica flakes; extremely acid; clear smooth boundary.

BCg—52 to 72 inches; gray (N 6/0) clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; many coarse prominent strong brown (7.5YR 5/8), yellowish brown (10YR 5/6), light yellowish brown (10YR 6/4), and red (2.5YR 4/8) masses of oxidized iron; common fine mica flakes; extremely acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 15 percent quartz gravel in the A, E, and B horizons and 0 to 25 percent quartz gravel in the C horizons
Mica flakes: Few or common in the B and C horizons

A or Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 6; where value is 3, horizon is less than 6 inches thick
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

E horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 6
Texture—fine sandy loam, loam, or silt loam

BE horizon (where present):
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 or 6
Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, sandy clay, or clay

Btg horizon (where present):
Hue—neutral or 7.5YR to 2.5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, sandy clay, or clay

BC horizon (where present):
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, sandy clay loam, clay loam, or sandy clay

BCg horizon:
Hue—neutral or 7.5YR to 2.5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, sandy clay loam, clay loam, or sandy clay

C horizon (where present):
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sand to sandy clay loam

Cg horizon (where present):
Hue—neutral or 7.5YR or 10YR
Value—5 to 7
Chroma—0 to 2

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—silty clay loam, loam, or stratified, ranging from sand to sandy clay loam

Dragston Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which are moderately well drained and have more clay in the subsoil than the Dragston soils
- Augusta soils, which have more clay in the subsoil than the Dragston soils
- Munden soils, which are moderately well drained
- Nimmo soils, which are poorly drained
- Seabrook soils, which are moderately well drained and have less clay in the subsoil than the Dragston soils
- Tomotley soils, which are poorly drained and have more clay in the subsoil than the Dragston soils

Taxonomic Classification

Coarse-loamy, mixed, semiactive, thermic Aeric Endoaquults

Typical Pedon

Dragston fine sandy loam, 0 to 2 percent slopes; in an area of woodland, about 0.2 mile southwest of a borrow pit on Highway VA-618, about 0.4 mile south-southwest of the crossing of a power line and Highway VA-618, about 0.5 mile south-southwest of a gauging station on the Chickahominy River, about 50 yards west of Highway VA-618; elevation 18 feet.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine and medium granular structure; friable; slightly sticky and non-plastic; many fine, medium, and coarse roots; common fine and medium tubular pores; very strongly acid; abrupt smooth boundary.
E—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam; weak fine and medium granular structure; friable; slightly sticky and slightly plastic; many fine, medium, and coarse roots; common fine and medium tubular pores; common medium distinct gray (10YR 6/1) iron depletions; very strongly acid; abrupt smooth boundary.
BE—8 to 12 inches; pale brown (10YR 6/3) and yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; friable; slightly sticky and slightly plastic; few fine roots; common fine and medium tubular pores; very strongly acid; clear smooth boundary.
Btg—12 to 25 inches; gray (10YR 6/1) fine sandy loam; weak medium subangular blocky structure; friable; moderately sticky and slightly plastic; few fine and medium roots; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and clay bridges between sand grains; many coarse prominent yellowish brown (10YR 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

BC—25 to 35 inches; yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) loamy fine sand; massive; friable; slightly sticky and slightly plastic; few fine and medium roots; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and clay bridges between sand grains; many medium prominent gray (10YR 6/1) iron depletions; few fine mica flakes; slightly acid; gradual smooth boundary.

C1—35 to 45 inches; yellowish brown (10YR 5/6) sand; single grain; loose; many medium distinct light brownish gray (10YR 6/2) iron depletions; common very fine and fine black mineral grains; slightly acid; clear smooth boundary.

C2—45 to 54 inches; dark yellowish brown (10YR 4/4) sand; single grain; loose; common medium distinct brown (10YR 5/3) iron depletions; many very fine and fine black mineral grains; slightly acid; clear smooth boundary.

C3—54 to 64 inches; yellowish brown (10YR 5/4) sand; single grain; loose; many coarse distinct grayish brown (10YR 5/2) iron depletions; slightly acid; clear smooth boundary.

C4—64 to 72 inches; dark yellowish brown (10YR 4/6) sandy loam; massive; friable; moderately sticky and moderately plastic; slightly acid; clear smooth boundary.

Cg—72 to 75 inches; greenish gray (5BG 6/1) sandy loam; massive; friable; moderately sticky and moderately plastic; slightly acid.

Range in Characteristics

Solum thickness: 25 to 50 inches

Reaction: Very strongly acid or strongly acid in the A, E, and upper B horizons; very strongly acid to slightly acid in the lower part of the B horizon and the C horizons

Rock fragments: 0 to 2 percent in the A, E, and B horizons and 0 to 10 percent in the C horizons

A or Ap horizon:

Hue—10YR to 5Y

Value—2 to 5; where value is 3 or less, horizon is less than 10 inches thick

Chroma—1 to 4

Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

E horizon:

Hue—10YR to 5Y

Value—4 to 7

Chroma—2 to 4

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red

Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

BA or BE horizon:

Hue—10YR to 5Y

Value—4 to 6

Chroma—3 to 8

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red

Texture—sandy loam, fine sandy loam, or loam

Btg horizon:

Hue—neutral or 10YR to 5Y

Value—4 to 6

Chroma—0 to 2

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red

Texture—sandy loam, fine sandy loam, or loam; some pedons have a subhorizon of sandy clay loam

BC or BCg horizon:
Hue—neutral or 10YR to 5Y
Value—4 to 6
Chroma—0 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

C horizon:
Hue—10YR to 5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, fine sand, loamy sand, loamy fine sand, or sandy loam

Cg horizon:
Hue—neutral or 10YR to 5BG
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, fine sand, loamy sand, loamy fine sand, or sandy loam

Emporia Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy and clayey marine sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 2 to 6 percent

Associated Soils

- Bethera soils, which are poorly drained and have more clay in the subsoil than the Emporia soils
- Caroline soils, which have more clay in the subsoil than the Emporia soils
- Kempsville soils, which are firm in the lower part of the subsoil
- Nansemond soils, which are moderately well drained and have less clay in the subsoil than the Emporia soils
- Nevarc soils, which are moderately well drained and have more clay in the subsoil than the Emporia soils
- Remlik and Uchee soils, which have thick, sandy surface horizons
- Slagle soils, which are moderately well drained
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Fine-loamy, siliceous, semiactive, thermic Typic Hapludults

Typical Pedon

Emporia fine sandy loam, 2 to 6 percent slopes (fig. 8); in an area of woodland, about 0.7 mile south of the junction of Highways VA-620 and VA-609, about 0.3 mile north of

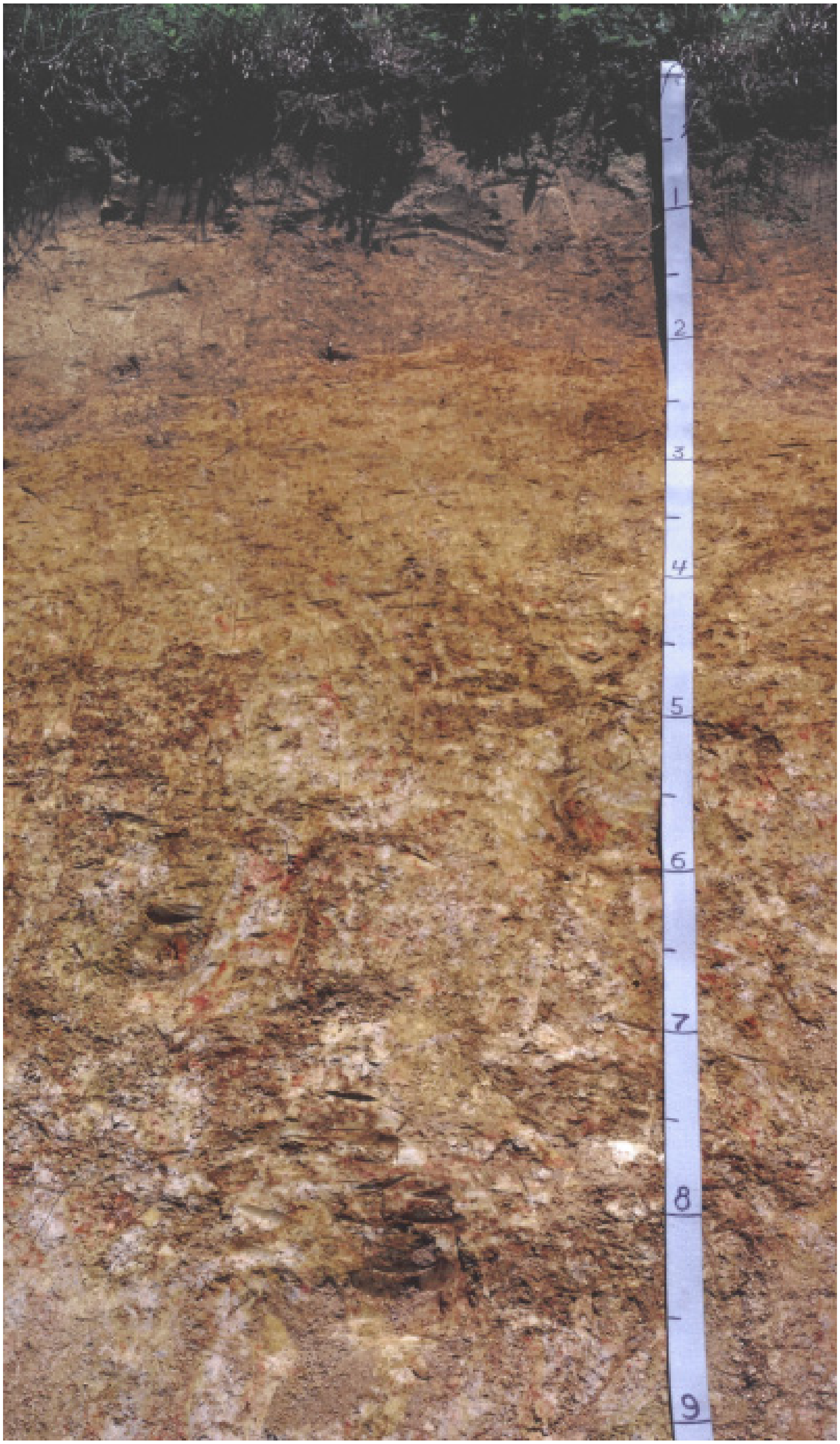

Figure 8.—Typical profile of Emporia fine sandy loam. This soil has stratification and variegation in the lower part of the subsoil.

a power line and East Run, about 0.2 mile south-southwest of Highway VA-620, about 330 yards east of power lines; elevation 135 feet.

A—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; few fine roots; many fine and medium vesicular pores; very strongly acid; abrupt smooth boundary.
E—4 to 11 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; few fine roots; many fine and medium vesicular pores; very strongly acid; abrupt smooth boundary.
Bt1—11 to 22 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine and medium roots; few fine and medium tubular pores; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.
Bt2—22 to 31 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds; common medium prominent yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.
Bt3—31 to 40 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds; common medium distinct strong brown (7.5YR 5/6) and common medium prominent yellowish red (5YR 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.
Bt4—40 to 52 inches; yellowish red (5YR 5/6) and strong brown (7.5YR 5/8) clay; moderate coarse subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions; very strongly acid; gradual smooth boundary.
BC—52 to 60 inches; yellowish brown (10YR 5/6) and red (2.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; common medium prominent gray (10YR 6/1) iron depletions; very strongly acid; clear smooth boundary.
C—60 to 72 inches; yellowish red (5YR 5/6) sandy loam; massive; friable; moderately sticky and moderately plastic; common medium prominent gray (10YR 6/1) iron depletions; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 75 inches
Reaction: Very strongly acid to moderately acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 35 percent gravel throughout the profile

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Ap horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BA or BE horizon (where present):
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon (upper part):
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray below 36 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam

Bt horizon (lower part):
Hue—5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray below 36 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, clay loam, sandy clay, or clay

BC or BCg horizon:
Hue—neutral or 2.5YR to 2.5Y
Value—4 to 6
Chroma—0 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, sandy clay loam, clay loam, or clay

C or Cg horizon:
Hue—neutral or 2.5YR to 5Y
Value—3 to 8
Chroma—0 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam to clay

Izagora Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 0 to 4 percent

Associated Soils

- Dogue soils, which have less clay in the subsoil than the Izagora soils
- Masada and Turbeville soils, which are well drained and have more clay in the subsoil than the Izagora soils
- Nahunta soils, which are somewhat poorly drained
- Roanoke soils, which are poorly drained and have more clay in the subsoil than the Izagora soils
- Tomotley soils, which are poorly drained

Taxonomic Classification

Fine-loamy, siliceous, semiactive, thermic Aquic Paleudults

Typical Pedon

Izagora silt loam, 0 to 4 percent slopes; in a cultivated area, about 0.5 mile southwest of the junction of Highways VA-619 and VA-638, about 1.2 miles east of Olds Point, about 1.9 miles northwest of the mouth of Kittewan Creek; elevation 67 feet.

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam; weak fine subangular blocky and weak fine granular structure; friable; slightly sticky and non-plastic; common fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

E—10 to 18 inches; pale brown (10YR 6/3) silt loam; weak fine granular and moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

Bt1—18 to 26 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine and medium tubular pores; few faint clay films on faces of peds; common fine distinct pale brown (10YR 6/3) iron depletions; moderately acid; clear smooth boundary.

Bt2—26 to 35 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine tubular pores; common distinct clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; clear smooth boundary.

Bt3—35 to 43 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine and medium tubular pores; common faint clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions and many medium prominent strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid; clear smooth boundary.

Bt4—43 to 59 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine tubular pores; common distinct discontinuous clay films on vertical faces of peds; many medium distinct gray (10YR 6/1) iron depletions and many medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) masses of oxidized iron; extremely acid; gradual smooth boundary.

BC—59 to 72 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm; moderately sticky and moderately plastic; many medium distinct gray (10YR 6/1) iron depletions and many medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 60 inches or more

Reaction: Extremely acid to moderately acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 5 percent gravel throughout the profile
Mica flakes: Few in the B horizons

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture—fine sandy loam, loam, or silt loam

E horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

Bt horizon (upper part):
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

Bt horizon (lower part):
Hue—10YR to 5Y
Value—5 or 6
Chroma—0 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay, or clay

BC horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, clay, or silty clay

Kempsville Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy marine sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 2 to 6 percent

Associated Soils

- Emporia soils, which have low chroma redoximorphic features between 36 and 54 inches

- Remlik and Uchee soils, which have thick, sandy surface layers
- Slagle soils, which are moderately well drained
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Fine-loamy, siliceous, subactive, thermic Typic Hapludults

Typical Pedon

Kempsville loamy sand, 2 to 6 percent slopes; in a cultivated area, about 2.8 miles northeast of the junction of Highways VA-5 and VA-623, about 2.2 miles southwest of the junction of Highways VA-621 and VA-623, about 150 yards southwest of Hickory Hill Farm; elevation 85 feet.

Ap—0 to 8 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; common fine roots; strongly acid; clear smooth boundary.

BA—8 to 12 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; slightly sticky and slightly plastic; few fine roots; moderately acid; abrupt smooth boundary.

Bt1—12 to 31 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine and medium tubular pores; many distinct clay films on faces of peds and clay bridges between sand grains; 5 percent rounded quartz gravel; moderately acid; clear smooth boundary.

Bt2—31 to 40 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; moderately sticky and slightly plastic; many distinct clay bridges between sand grains; common medium prominent pale brown (10YR 6/3) clay depletions; moderately acid; clear smooth boundary.

Bt3—40 to 45 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; many distinct clay films on faces of peds and clay bridges between sand grains; moderately acid; clear smooth boundary.

Bt4—45 to 64 inches; strong brown (7.5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few faint clay films on faces of peds and common distinct clay bridges between sand grains; few medium prominent yellowish brown (10YR 5/8) and common medium distinct yellowish red (5YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

BC—64 to 72 inches; strong brown (7.5YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; moderately sticky and moderately plastic; common medium prominent yellowish brown (10YR 5/8) and common medium distinct yellowish red (5YR 5/8) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 50 to 85 inches

Reaction: Very strongly acid to moderately acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 35 percent quartz gravel in the A, E and B horizons and 0 to 50 percent quartz gravel in the C horizons

A horizon (where present):

Hue—7.5YR to 2.5Y
Value—2 to 4
Chroma—2 to 4
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

Ap horizon:
Hue—7.5YR to 2.5Y
Value—2 to 5
Chroma—2 to 4
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 6
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

BA or BE horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 6
Texture (fine-earth fraction)—sandy loam or fine sandy loam

Bt horizon (upper part):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or sandy clay loam

Bt horizon (lower part):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray below a depth of 50 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or sandy clay loam; brittle and compact in as much as 30 percent of the mass in some pedons

BC horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray below a depth of 50 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or sandy clay loam

C horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 or 6
Redoximorphic features—iron depletions in shades of olive and gray below a depth of 50 inches and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—loam, sandy loam, fine sandy loam, loam, or sandy clay loam

Lawnes Series

Physiographic province: Southern Coastal Plain
Landform: Tidal marshes
Parent material: Herbaceous organic materials over loamy alluvial sediments
Drainage class: Very poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 1 percent

Associated Soils

- Bibb soils, which are poorly drained and have less organic matter than the Lawnes soils
- Mattan soils, which have more woody materials in the organic layer than the Lawnes soils
- Nawney soils, which have less organic matter than the Lawnes soils

Taxonomic Classification

Coarse-loamy, mixed, superactive, nonacid, thermic Typic Sulfaquents

Typical Pedon

Lawnes muck, 0 to 1 percent slopes, very frequently flooded; in Old Neck marsh, about 2.2 miles northeast of Highways VA-615 and VA-627, about 2.8 miles east of the junction of Highways VA-624 and VA-615 at Holdcroft; elevation 1 foot.

Oa—0 to 13 inches; dark gray (10YR 4/1) muck; 1 percent unrubbed fiber; massive; moderately fluid, moderately sticky, and slightly plastic; many fine live roots; sulfurous odor; strongly acid; clear smooth boundary.
Cg1—13 to 26 inches; dark gray (10YR 4/1) loam; common lenses and pockets of clay loam; 5 percent rubbed fiber; massive; moderately fluid, slightly sticky, and slightly plastic; common fine roots; sulfurous odor; strongly acid; diffuse smooth boundary.
Cg2—26 to 40 inches; very dark gray (10YR 3/1) loam; common pockets of sapric and hemic material; massive; moderately fluid, moderately sticky, and slightly plastic; few fine roots; sulfurous odor; strongly acid; diffuse smooth boundary.
Cg3—40 to 55 inches; very dark gray (10YR 3/1) loam; massive; moderately fluid, slightly sticky, and slightly plastic; few fine and medium roots; sulfurous odor; strongly acid; gradual smooth boundary.
Cg4—55 to 62 inches; very dark gray (10YR 3/1) sand; single grain; loose and nonfluid; strongly acid.

Range in Characteristics

Thickness of organic layer: 8 to 16 inches
Reaction: Strongly acid to neutral throughout the profile in the natural state; extremely acid throughout the soil upon drying
Electrical conductivity: Less than 8 dS/m
n value: Greater than 0.7 to a depth of 20 inches
Origin of organic material: Herbaceous plants

O horizon (where present):
Hue—neutral or 10YR to 5GY
Value—2 to 4
Chroma—0 to 2
Organic material—dominantly hemic; has thin surface layer of sapric material in some pedons
Texture—muck

A horizon (where present):
Hue—10YR to 5Y
Value—3 or 4
Chroma—1 or 2
Texture—sandy loam, fine sandy loam, loam, or silt loam or the mucky analogues of these textures

Cg horizon:
Hue—neutral or 10YR to 5GY
Value—2 to 5
Chroma—0 to 2
Texture—variable and stratified; clay content less than 18 percent in the control section; in some pedons, layers of sandy clay loam, silty clay loam, or clay loam and layers of the mucky analogues of these textures or buried hemist layers (Oeb), or both, occur below a depth of 40 inches

Masada Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 2 to 6 percent

Associated Soils

- Dogue soils, which are moderately well drained
- Izagora soils, which are moderately well drained and have less clay in the subsoil than the Masada soils
- Tomotley soils, which are poorly drained and have less clay in the upper part of the subsoil than the Masada soils
- Turbeville soils, which are dark red in the lower part of the subsoil
- Wickham soils, which have less clay in the subsoil than the Masada soils

Taxonomic Classification

Fine, mixed, semiactive, thermic Typic Hapludults

Typical Pedon

Masada loam, 2 to 6 percent slopes; in a cultivated area, about 0.5 mile southwest of the junction of Highways VA-618 and VA-5, about 250 yards southwest of an air beacon, about 0.7 mile north-northwest of the mouth of Buckland Creek, about 50 yards west of a farm lane leading to grain bins on Glen Cove Farm; elevation 65 feet.

Ap—0 to 10 inches; brown (10YR 4/3) loam; moderate medium granular structure; friable; slightly sticky and slightly plastic; many fine and medium and few coarse roots; common fine and medium tubular pores; strongly acid; clear smooth boundary.

Bt1—10 to 24 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine and few medium roots; common fine tubular pores; many distinct clay films on faces of peds; few fine mica flakes; strongly acid; clear smooth boundary.

Bt2—24 to 45 inches; yellowish red (5YR 4/6) clay; moderate medium angular and subangular blocky structure; friable; moderately sticky and moderately plastic; few medium roots; few fine tubular pores; common distinct clay films on faces of peds;

common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; few fine mica flakes; strongly acid; clear smooth boundary.

Bt3—45 to 58 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and very pale brown (10YR 7/3) masses of oxidized iron; few fine mica flakes; very strongly acid; gradual smooth boundary.

C—58 to 70 inches; red (2.5YR 4/6) clay loam; massive; friable; moderately sticky and moderately plastic; common fine mica flakes; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches

Reaction: Very strongly acid or strongly acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 15 percent quartz gravel in the A, E, and BE horizons and 0 to 35 percent quartz gravel in the B and C horizons

A horizon (where present):
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—sandy loam, fine sandy loam, or loam

Ap horizon:
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—1 to 8
Texture—sandy loam, fine sandy loam, loam, or sandy clay loam

E horizon (where present):
Hue—7.5YR to 2.5Y
Value—3 to 8
Chroma—2 to 8
Texture—sandy loam, fine sandy loam, or loam

BA or BE horizon (where present):
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—clay loam, sandy clay, or clay

BC horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—clay loam, sandy clay, or clay

C horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, sandy clay loam, or clay loam

Mattan Series

Physiographic province: Southern Coastal Plain
Landform: Swamps or marshes
Parent material: Organic materials over loamy alluvial sediments
Drainage class: Very poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 1 percent

Associated Soils

- Bibb and Nawney soils, which are mineral soils and have less organic matter than the Mattan soils
- Lawnes soils, which are mineral soils

Taxonomic Classification

Loamy, mixed, euic, thermic Terric Haplosaprists

Typical Pedon

Mattan mucky loam, 0 to 1 percent slopes, very frequently flooded; in a swamp, about 1.4 miles south of Walker's Dam, about 1.2 miles northeast of a private road and Highway VA-615, about 0.2 mile west of the Chickahominy River; elevation 2 feet.

Oe—0 to 12 inches; gray (5Y 5/1) mucky loam; massive; non-sticky and non-plastic; very strongly acid; abrupt smooth boundary.
Oa—12 to 39 inches; very dark grayish brown (10YR 3/2) muck; 10 percent rubbed fiber; massive; very fluid; many fine roots; extremely acid; gradual smooth boundary.
Cg1—39 to 60 inches; very dark brown (10YR 2/2) mucky fine sandy loam; 10 percent rubbed fiber; massive; very fluid; many fine roots; moderately fluid; extremely acid; gradual smooth boundary.
Cg2—60 to 70 inches; gray (10YR 5/1) loamy sand; massive; moderately sticky and non-plastic; extremely acid.

Range in Characteristics

Thickness of organic layer: 16 to 51 inches
Reaction: Extremely acid to moderately acid throughout the profile in the natural state; reaction drops slightly upon drying
Sulfur content: 0 to 0.5 percent
n value: 2 to 5.5
Origin of organic material: Herbaceous and woody plants and large pieces of logs that can be penetrated with an auger in most pedons

O horizon (surface tiers):
Hue—neutral or 10YR to 5G
Value—2 to 5
Chroma—0 to 3

Organic material—dominantly sapric; hemic in some pedons
Texture—mucky analogues of sandy loam, loam, silt loam, and silty clay loam

O horizon (subsurface tiers):
Hue—neutral or 7.5YR to 5GY
Value—2 to 4
Chroma—0 to 4
Organic material—dominantly sapric; thin layers of hemic material in some pedons
Texture—muck

Cg horizon:
Hue—neutral or 10YR to 5GY
Value—2 to 5
Chroma—0 to 2
Texture—stratified loamy sand to silty clay loam or the mucky analogues of these textures; the weighted average content of clay in the upper 12 inches ranges from 12 to 35 percent

Munden Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy and sandy alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which have more clay in the subsoil than the Munden soils
- Augusta soils, which are somewhat poorly drained and have more clay in the subsoil than the Munden soils
- Bojac soils, which are well drained
- Catpoint soils, which are well drained and have less clay in the subsoil than the Munden soils
- Conetoe soils, which have sandy surface horizons more than 20 inches thick
- Dragston soils, which are somewhat poorly drained
- Seabrook soils, which do not have a subsoil
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Coarse-loamy, mixed, semiactive, thermic Aquic Hapludults

Typical Pedon

Munden loamy sand, 0 to 2 percent slopes; in an area of woodland, about 1.0 mile west-southwest of Walker’s Dam, about 170 yards southeast of Binns Bar along the Chickahominy River, about 1.7 miles north-northeast of Highway VA-615 on a private road to Walker’s Dam, about 70 yards north of a farm lane; elevation 25 feet.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; common fine and medium and few coarse roots; common fine, medium, and coarse tubular pores; very strongly acid; clear smooth boundary.

E—6 to 14 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine and medium granular structure; very friable; non-sticky and non-plastic; few fine and medium roots; common fine, medium, and coarse tubular pores; very strongly acid; clear smooth boundary.

Bt1—14 to 27 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine and medium subangular blocky structure; very friable; slightly sticky and slightly plastic; few fine and medium roots; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and common distinct clay bridges between sand grains; few fine mica flakes; very strongly acid; clear smooth boundary.

Bt2—27 to 38 inches; light olive brown (2.5Y 5/6) fine sandy loam; weak medium and coarse subangular blocky structure; very friable; moderately sticky and moderately plastic; few fine and medium roots; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and common distinct clay bridges between sand grains; common medium prominent light gray (10YR 7/1) iron depletions; few fine mica flakes; very strongly acid; clear smooth boundary.

C—38 to 50 inches; light yellowish brown (2.5Y 6/4) loamy sand; single grain; loose; few fine mica flakes; very strongly acid; clear smooth boundary.

Cg1—50 to 61 inches; light gray (10YR 7/1) sand; single grain; loose; common fine mica flakes; strongly acid; clear smooth boundary.

Cg2—61 to 70 inches; light gray (10YR 7/1) sand; single grain; loose; many coarse prominent yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) masses of oxidized iron; common fine mica flakes; very strongly acid; clear wavy boundary.

2Cg3—70 to 74 inches; light gray (10YR 7/1) loamy sand; single grain; loose; common medium distinct light yellowish brown (10YR 6/4) masses of oxidized iron; common fine mica flakes; very strongly acid.

Range in Characteristics

Solum thickness: 25 to 50 inches or more

Reaction: Very strongly acid to moderately acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 5 percent gravel throughout the profile

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 4
Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

E horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—2 to 6
Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

BA or BE horizon (where present):
Hue—10YR to 5Y
Value—5 or 6
Chroma—3 to 6
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, or loam

C horizon:
Hue—7.5YR to 5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, fine sand, loamy sand, loamy fine sand, sandy loam, or fine sandy loam

Cg horizon:
Hue—neutral or 7.5YR to 5Y
Value—5 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, fine sand, loamy sand, loamy fine sand, sandy loam, or fine sandy loam

Nahunta Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy and silty marine sediments
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Bethera soils, which are poorly drained and have more clay in the subsoil than the Nahunta soils
- Craven soils, which are moderately well drained and have more clay in the subsoil than the Nahunta soils
- Izagora soils, which are moderately well drained

Taxonomic Classification

Fine-silty, siliceous, subactive, thermic Aeric Paleaquults

Typical Pedon

Nahunta silt loam, 0 to 2 percent slopes; in an area of woodland, about 150 yards north of the junction of Highways VA-5 and VA-609, about 50 yards west of Highway VA-609; elevation 63 feet.

A—0 to 4 inches; very dark grayish brown (2.5Y 3/2) silt loam; weak fine granular structure; friable; slightly sticky and slightly plastic; many fine roots; common fine tubular pores; very strongly acid; abrupt smooth boundary.

E—4 to 12 inches; light brownish gray (10YR 6/2) silt loam; moderate medium granular structure; friable; slightly sticky and slightly plastic; common fine roots; common very fine and fine tubular pores; few fine prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Bt—12 to 18 inches; light yellowish brown (2.5Y 6/4) silt loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common very fine and fine tubular pores; few distinct discontinuous clay films on faces of peds; few fine prominent grayish brown (10YR 5/2) iron depletions and common fine prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg1—18 to 35 inches; gray (10YR 6/1) silt loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct continuous clay films on faces of peds; many medium prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg2—35 to 42 inches; gray (10YR 6/1) silt loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few very fine tubular pores; few distinct discontinuous clay films on faces of peds; many medium prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Btg3—42 to 48 inches; gray (10YR 6/1) clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few very fine tubular pores; few distinct discontinuous clay films on faces of peds; many medium and coarse prominent light brownish gray (2.5Y 6/2) iron depletions and yellowish brown (10YR 5/8) and red (2.5YR 4/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Cg—48 to 72 inches; gray (10YR 6/1) clay loam; massive; friable; moderately sticky and moderately plastic; common medium distinct light brownish gray (2.5Y 6/2) iron depletions and many medium prominent red (2.5YR 4/8) and yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 70 inches or more

Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied

A horizon:
Hue—10YR or 2.5Y
Value—2 to 5
Chroma—1 or 2
Texture—loam or silt loam

Ap horizon (where present):
Hue—10YR or 2.5Y
Value—2 to 5
Chroma—1 or 2
Texture—loam or silt loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—2 to 4
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam or silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

Btg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

BCg horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

Cg horizon:
Hue—neutral or 10YR to 5Y
Value—5 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray in the lower part of the horizon and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

Nansemond Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy and sandy marine sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 4 percent

Associated Soils

- Emporia soils, which are well drained and have more clay in the subsoil than the Nansemond soils
- Slagle soils, which have more clay in the subsoil than the Nansemond soils

Taxonomic Classification

Coarse-loamy, siliceous, subactive, thermic Aquic Hapludults

Typical Pedon

Nansemond loamy sand, 0 to 4 percent slopes; in a cultivated area, about 0.2 mile northeast of the junction of Highways VA-155 and VA-614; elevation 35 feet.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; few fine roots; strongly acid; clear smooth boundary.

E1—9 to 15 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; few fine roots; strongly acid; abrupt smooth boundary.

E2—15 to 19 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; few fine roots; strongly acid; clear smooth boundary.

Bt1—19 to 30 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam; moderate medium granular structure; very friable; non-sticky and non-plastic; few fine roots; few faint clay films on faces of peds; common medium distinct brownish yellow (10YR 6/8) masses of oxidized iron; 20 percent rounded quartz gravel; very strongly acid; gradual smooth boundary.

Bt2—30 to 43 inches; yellowish brown (10YR 5/8) gravelly fine sandy loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; few faint clay films on faces of peds; common medium prominent light brownish gray (10YR 6/2) iron depletions; 20 percent rounded quartz gravel; very strongly acid; gradual wavy boundary.

C1—43 to 60 inches; yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) gravelly loamy sand; single grain; loose; 20 percent rounded quartz gravel; very strongly acid; gradual wavy boundary.

C2—60 to 70 inches; yellowish brown (10YR 5/8) sandy loam; massive; friable; slightly sticky and non-plastic; very strongly acid.

Range in Characteristics

Solum thickness: 25 to 45 inches

Reaction: Extremely acid to moderately acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 5 percent gravel in the A and E horizons and 0 to 35 percent gravel in the B and C horizons

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 4
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—2 to 6
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

BE horizon (where present):
Hue—10YR or 2.5Y

Value—5 or 6
Chroma—3 to 6
Texture—sandy loam or fine sandy loam

Bt horizon (upper part):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam or fine sandy loam

Bt horizon (lower part):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam or fine sandy loam

BC horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—loamy sand, loamy fine sand, or sandy loam

C or Cg horizon:
Hue—neutral or 7.5YR to 5Y
Value—4 to 8
Chroma—0 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand; thin strata of sandy loam in some pedons

Nawney Series

Physiographic province: Southern Coastal Plain
Landform: Flood plains
Parent material: Loamy alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Bibb soils, which have less clay in the subsoil than the Nawney soils
- Lawnes soils, which are flooded daily by tidal water and have higher n values than the Nawney soils
- Mattan soils, which have more sapric material than the Nawney soils

Taxonomic Classification

Fine-loamy, mixed, active, acid, thermic Typic Fluvaquents

Typical Pedon

Nawney silt loam, 0 to 2 percent slopes, ponded; in an area of woodland, about 250 yards west of the junction of Highway VA-609 and an abandoned part of Highway VA-600, about 225 yards east of the abandoned highway and the C&O Railroad, about 350 yards south of the Chickahominy River; elevation 35 feet.

A—0 to 14 inches; dark gray (10YR 4/1) silt loam; moderate medium granular structure; friable; moderately sticky and moderately plastic; many fine, medium, and coarse roots; few fine mica flakes; very strongly acid; clear smooth boundary.

Cg1—14 to 28 inches; dark gray (5Y 4/1) loam; massive; friable; moderately sticky and moderately plastic; common fine and medium roots; few fine mica flakes; very strongly acid; clear smooth boundary.

Cg2—28 to 55 inches; greenish gray (5G 5/1) sandy clay loam; massive; friable; moderately sticky and moderately plastic; common fine and medium roots; many coarse prominent yellowish red (5YR 4/6) masses of oxidized iron; few fine mica flakes; very strongly acid; gradual smooth boundary.

Cg3—55 to 72 inches; greenish gray (5BG 6/1) fine sandy loam; massive; friable; moderately sticky and moderately plastic; few fine, medium, and coarse roots; few fine mica flakes; very strongly acid.

Range in Characteristics

Loamy horizon thickness: 40 to 60 inches or more
Reaction: Extremely acid to strongly acid above 40 inches and extremely acid to slightly acid below 40 inches
Rock fragments: 0 to 2 percent gravel throughout the profile

A horizon:
Hue—neutral or 7.5YR to 5Y
Value—2 to 5; where value is 2 or 3, horizon is less than 6 inches thick
Chroma—0 to 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, loam, silt loam, or silty clay loam

Cg horizon:
Hue—neutral or 10YR to 5BG
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, loam, sandy clay loam, clay loam, or silty clay loam above 40 inches and stratified, ranging from sand to clay below 40 inches

Nevarc Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey marine sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 10 to 60 percent

Associated Soils

- Caroline soils, which are well drained
- Craven soils, which have an apparent water table
- Emporia soils, which are well drained and have less clay in the subsoil than the Nevarc soils
- Slagle soils, which have less clay in the subsoil than the Nevarc soils

Taxonomic Classification

Fine, mixed, subactive, thermic Aquic Hapludults

Typical Pedon

Nevarc sandy loam, in an area of Nevarc-Remlik complex, 25 to 60 percent slopes; in an area of woodland, about 2.9 miles southeast of the junction of Highways VA-623 and VA-621, about 150 yards northwest of the north boat landing in the Chickahominy Wildlife Management Area; elevation 80 feet.

A—0 to 5 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; slightly sticky and slightly plastic; many fine, common medium, and few coarse roots; common fine and medium tubular pores; extremely acid; abrupt smooth boundary.

E—5 to 11 inches; pale brown (10YR 6/3) loam; moderate medium granular structure; friable; slightly sticky and slightly plastic; common fine and medium and few coarse roots; common fine and medium tubular pores; extremely acid; abrupt smooth boundary.

Bt1—11 to 26 inches; yellowish brown (10YR 5/4) clay; strong fine and medium subangular and angular blocky structure; firm; moderately sticky and moderately plastic; common fine and medium and few coarse roots; common fine tubular pores; many distinct clay films on faces of peds; extremely acid; gradual smooth boundary.

Bt2—26 to 42 inches; yellowish brown (10YR 5/4) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine and medium roots; common fine and medium tubular pores; common distinct clay films on faces of peds; common medium prominent yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) masses of oxidized iron and common medium distinct grayish brown (10YR 5/2) iron depletions; very strongly acid; gradual smooth boundary.

BC—42 to 54 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions and common medium prominent yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) masses of oxidized iron; extremely acid; gradual smooth boundary.

C—54 to 72 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; friable; slightly sticky and slightly plastic; few fine tubular pores; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more
Reaction: Extremely acid to moderately acid throughout the profile
Rock fragments: 0 to 2 percent gravel throughout the profile

A horizon:
Hue—7.5YR to 2.5Y
Value—2 to 5
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture—sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam

Bt horizon (upper part):
Hue—7.5YR or 10YR
Value—4 to 7
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, silty clay loam, sandy clay, clay, or silty clay

Bt horizon (lower part):
Hue—5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, silty clay loam, sandy clay, clay, or silty clay

BC horizon:
Hue—5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay

C horizon:
Hue—5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, loamy sand, sandy loam, fine sandy loam, or stratified, ranging from sand to clay

Cg horizon (where present):
Hue—5YR to 2.5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sand, loamy sand, sandy loam, fine sandy loam, or stratified, ranging from sand to clay

Newflat Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Low
Slope range: 0 to 2 percent

Associated Soils

- Chickahominy soils, which are poorly drained
- Dogue soils, which are moderately well drained and have less silt in the subsoil than the Newflat soils
- Peawick soils, which are moderately well drained

Taxonomic Classification

Fine, mixed, active, thermic Aeric Endoaquults

Typical Pedon

Newflat silt loam, 0 to 2 percent slopes; in an area of woodland, about 0.7 mile east-southeast of the junction of Highways VA-621 and VA-623 on Highway VA-621, about 0.9 mile southeast of the junction of Highways VA-623 and VA-627, about 1.8 miles southwest of the mouth of Parsons Creek; elevation 35 feet.

A—0 to 2 inches; gray (10YR 5/1) silt loam; weak fine and medium granular structure; friable; slightly sticky and slightly plastic; many fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

E—2 to 6 inches; pale brown (10YR 6/3) silt loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; many fine, medium, and coarse roots; common medium distinct gray (10YR 6/1) iron depletions; very strongly acid; clear smooth boundary.

Bt—6 to 14 inches; brown (10YR 5/3) silty clay; strong fine angular blocky structure; firm; moderately sticky and moderately plastic; many fine and medium and few coarse roots; common distinct clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions; few fine mica flakes; very strongly acid; clear smooth boundary.

Btg1—14 to 24 inches; gray (5Y 6/1) silty clay; massive; firm; moderately sticky and moderately plastic; common fine and medium roots; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron; few fine mica flakes; very strongly acid; gradual smooth boundary.

Btg2—24 to 55 inches; gray (5Y 5/1) silty clay; massive; firm; very sticky and very plastic; common medium prominent strong brown (7.5YR 4/6) masses of oxidized iron; very strongly acid.

BCg—55 to 64 inches; gray (5Y 5/1) clay loam; massive; firm; very sticky and very plastic; common medium prominent strong brown (7.5YR 4/6) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 90 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied

A horizon:
Hue—neutral or 10YR or 2.5Y
Value—3 to 5
Chroma—0 to 2
Texture—very fine sandy loam, loam, or silt loam

Ap horizon (where present):
Hue—neutral or 10YR or 2.5Y
Value—3 to 5
Chroma—0 to 2
Texture—very fine sandy loam, loam, or silt loam

E horizon:
- Hue—10YR or 2.5Y
- Value—5 to 7
- Chroma—2 to 4
- Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
- Texture—very fine sandy loam, loam, or silt loam

Bt horizon:
- Hue—10YR to 5Y
- Value—5 or 6
- Chroma—3 to 6
- Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
- Texture—clay loam, silty clay loam, clay, or silty clay

Btg horizon:
- Hue—10YR to 5Y
- Value—4 to 7
- Chroma—0 to 2
- Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
- Texture—clay loam, silty clay loam, clay, or silty clay

BCg horizon:
- Hue—neutral or 10YR to 5Y
- Value—4 to 7
- Chroma—0 to 2
- Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
- Texture—loam, silt loam, sandy clay loam, clay loam, or clay

Cg horizon (where present):
- Hue—neutral or 10YR to 5Y
- Value—4 to 7
- Chroma—0 to 2
- Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
- Texture—fine sandy loam to clay

Nimmo Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy and sandy alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which are moderately well drained and have more clay in the subsoil than the Nimmo soils
- Dragston soils, which are somewhat poorly drained
- Tomotley soils, which have more clay in the subsoil than the Nimmo soils
- Yeopim soils, which are moderately well drained and have more clay and silt in the subsoil than the Nimmo soils

Taxonomic Classification

Coarse-loamy, mixed, semiactive, thermic Typic Endoaquults

Typical Pedon

Nimmo sandy loam, 0 to 2 percent slopes; in an area of woodland, about 30 yards south of the junction of Highways VA-600 and VA-106, about 225 yards south-southwest of the C&O Railroad; elevation 38 feet.

A—0 to 4 inches; black (5Y 2/1) sandy loam; weak fine granular structure; friable; slightly sticky and slightly plastic; many fine roots; common fine and medium and few coarse tubular pores; very strongly acid; clear smooth boundary.

E1—4 to 10 inches; dark gray (5Y 4/1) sandy loam; weak fine granular structure; very friable; slightly sticky and slightly plastic; common fine roots; common fine, medium, and coarse tubular pores; common fine prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

E2—10 to 14 inches; dark gray (10YR 4/1) sandy loam; weak fine granular structure; very friable; non-sticky and non-plastic; few fine, medium, and coarse roots; common fine, medium, and coarse tubular pores; very strongly acid; clear smooth boundary.

Btg—14 to 32 inches; gray (10YR 5/1) fine sandy loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; few fine black mineral grains; few feldspar grains; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and clay bridges between sand grains; very strongly acid; gradual smooth boundary.

Cg1—32 to 40 inches; gray (10YR 6/1) sand and discontinuous layers of sandy clay loam; single grain; loose; common fine prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Cg2—40 to 48 inches; gray (10YR 6/1) coarse sand; single grain; loose; few fine black mineral grains; 2 percent rounded quartz gravel; very strongly acid; clear smooth boundary.

Cg3—48 to 64 inches; gray (10YR 5/1) coarse sand; single grain; loose; strongly acid.

Range in Characteristics

Solum thickness: 25 to 45 inches

Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 3 percent gravel in the A, E, and B horizons and 0 to 20 percent gravel in the C horizons

A or Ap horizon:

Hue—10YR to 5Y
Value—2 to 5
Chroma—1 or 2
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

E horizon:

Hue—10YR to 5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

Btg horizon (where present):

Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2, dominantly 1

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, or loam

Cg horizon:
Hue—neutral or 7.5YR to 2.5Y
Value—3 to 8
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—coarse sand, sand, fine sand, loamy sand, or loamy fine sand; strata of finer textures in some pedons

Pamunkey Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 10 percent

Associated Soils

- Altavista soils, which are moderately well drained
- Augusta soils, which are somewhat poorly drained and have less clay in the subsoil than the Pamunkey soils
- Bojac soils, which have less clay in the subsoil than the Pamunkey soils
- Dogue soils, which are moderately well drained and have more clay in the subsoil than the Pamunkey soils
- Tomotley soils, which are poorly drained
- Udorthents, which do not have a well developed subsoil
- Wickham soils, which have less than 35 percent base saturation in the control section
- Yeopim soils, which are moderately well drained and have more silt in the subsoil than the Pamunkey soils

Taxonomic Classification

Fine-loamy, mixed, semiactive, thermic Typic Hapludalfs

Typical Pedon

Pamunkey loam, 2 to 6 percent slopes; in a cultivated area, about 2.3 miles southeast of the end of Highway VA-640, about 1.0 mile south of Highway VA-5, about 70 yards east of a barn on the Westover Plantation; elevation 27 feet.

Ap—0 to 10 inches; brown (10YR 4/3) loam; weak fine and medium granular structure; very friable; slightly sticky and slightly plastic; many fine roots; common fine and medium tubular pores; slightly acid; clear smooth boundary.

Bt1—10 to 16 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds and clay bridges between sand grains; common fine prominent very dark grayish brown (10YR 3/2) black mineral grains; common fine mica flakes; moderately acid; clear smooth boundary.

Bt2—16 to 40 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds; common fine prominent very dark grayish brown (10YR 3/2) black mineral grains; common fine mica flakes; moderately acid; clear smooth boundary.

Bt3—40 to 65 inches; brown (7.5YR 5/4) clay loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; common very fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds; common fine prominent very dark grayish brown (10YR 3/2) black mineral grains; common fine and medium mica flakes; moderately acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Reaction: Very strongly acid to slightly acid throughout the profile
Rock fragments: 0 to 15 percent quartz gravel throughout the profile
Mica flakes: Few to many in the B horizon

A horizon (where present):
Hue—5YR to 10YR
Value—3 to 6
Chroma—2 or 3
Texture—sandy loam, fine sandy loam, loam, or silt loam

Ap horizon:
Hue—5YR to 10YR
Value—3 to 6
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, loam, or silt loam

E horizon (where present):
Hue—5YR to 10YR
Value—5 or 6
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, loam, or silt loam

BA or BE horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture—fine sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

BC horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture—loamy sand, sandy loam, fine sandy loam, or loam

Peawick Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments

Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Low
Slope range: 0 to 6 percent

Associated Soils

- Chickahominy soils, which are poorly drained
- Dogue soils, which have less silt in the subsoil than the Peawick soils
- Newflat soils, which are somewhat poorly drained

Taxonomic Classification

Fine, mixed, active, thermic Aquic Hapludults

Typical Pedon

Peawick silt loam, 0 to 2 percent slopes; in an area of woodland, about 1.2 miles south of the junction of Highways VA-5 and VA-623 on Highway VA-623, about 1.1 miles northeast of the junction of Highway VA-613 and VA-623, about 0.3 mile southwest of Highway VA-623 and Tomahund Creek; elevation 33 feet.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine and medium granular structure; friable; moderately sticky and moderately plastic; many fine and medium and few coarse roots; extremely acid; abrupt smooth boundary.

E—2 to 5 inches; light yellowish brown (10YR 6/4) silt loam; moderate medium granular structure; friable; moderately sticky and moderately plastic; many fine and medium and few coarse roots; extremely acid; clear smooth boundary.

Bt1—5 to 24 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular and angular blocky structure; firm; moderately sticky and moderately plastic; common fine and medium roots; common fine tubular pores; common distinct clay films on faces of peds; common fine prominent strong brown (7.5YR 5/8) masses of oxidized iron; common fine mica flakes; extremely acid; clear smooth boundary.

Bt2—24 to 36 inches; yellowish brown (10YR 5/8) silty clay; strong fine and medium subangular and angular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; many distinct clay films on faces of peds; common fine prominent gray (10YR 6/1) iron depletions and common fine distinct strong brown (7.5YR 5/8) masses of oxidized iron; common fine mica flakes; extremely acid; clear smooth boundary.

Btg1—36 to 58 inches; gray (10YR 6/1) clay; strong medium and coarse angular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; many prominent clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/8) masses of oxidized iron; common fine mica flakes; extremely acid; gradual smooth boundary.

Btg2—58 to 64 inches; gray (10YR 6/1) clay; weak medium prismatic parting to strong medium and coarse angular blocky structure; very firm; very sticky and very plastic; few fine roots; many prominent clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; few fine mica flakes; extremely acid.

Range in Characteristics

Solum thickness: 60 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 2 percent gravel throughout the profile
Mica flakes: None to common throughout the profile

A horizon:
Hue—10YR to 5Y
Value—2 to 4
Chroma—1 to 3
Texture—loam or silt loam

Ap horizon (where present):
Hue—10YR to 5Y
Value—2 to 6
Chroma—1 to 4
Texture—loam or silt loam

E horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—2 to 4
Texture—loam or silt loam

Bt horizon (upper part):
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, clay, or silty clay

Bt horizon (lower part):
Hue—10YR to 5Y
Value—5 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, clay, or silty clay

Btg horizon:
Hue—neutral or 10YR to 5Y
Value—5 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, silty clay, or clay

BCg horizon (where present):
Hue—neutral or 10YR to 5Y
Value—5 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, silty clay loam, silty clay, or clay

Cg horizon (where present):
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam to clay

Remlik Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Sandy and loamy marine sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 10 to 60 percent

Associated Soils

- Craven soils, which are moderately well drained and have more clay in the subsoil than the Remlik soils
- Emporia and Kempsville soils, which do not have thick, sandy surface layers
- Slagle soils, which are moderately well drained
- Uchee soils, which have more clay in the lower subsoil than the Remlik soils

Taxonomic Classification

Loamy, siliceous, subactive, thermic Arenic Hapludults

Typical Pedon

Remlik fine sand, in an area of Nevarc-Remlik complex, 25 to 60 percent slopes; in an area of woodland, about 2.9 miles southeast of the junction of Highways VA-621 and VA-623, about 350 yards north-northwest of the north boat landing in the Chickahominy River Wildlife Management Area; elevation 60 feet.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; non-sticky and non-plastic; many fine roots; many fine, medium, and coarse tubular pores; extremely acid; clear smooth boundary.

E1—4 to 14 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; common fine roots; common fine and few medium tubular pores; very strongly acid; clear smooth boundary.

E2—14 to 29 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; common fine and few medium roots; common fine and few medium tubular pores; very strongly acid; clear smooth boundary.

Bt—29 to 44 inches; brownish yellow (10YR 6/6) fine sandy loam; weak fine and medium subangular blocky and granular structure; very friable; slightly sticky and slightly plastic; common fine and few medium roots; common fine, medium, and coarse tubular pores; few faint clay films on faces of peds and clay bridges between sand grains; extremely acid; clear smooth boundary.

BC—44 to 50 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine granular structure; friable; slightly sticky and slightly plastic; very strongly acid; clear smooth boundary.

C—50 to 72 inches; olive yellow (2.5Y 6/6) loamy fine sand; massive; friable; slightly sticky and slightly plastic; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more
Reaction: Extremely acid to moderately acid throughout the profile
Rock fragments: 0 to 35 percent gravel throughout the profile

A horizon:
Hue—10YR or 2.5Y
Value—2 to 5
Chroma—2 to 4
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand

E horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand

EB horizon (where present):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loamy sand or loamy fine sand

Bt horizon (upper part):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or sandy clay loam

Bt horizon (lower part):
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or sandy clay loam

BC horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

C horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7
Chroma—3 to 8
Texture (fine-earth fraction)—sand, loamy sand, or loamy fine sand; lamellae of sandy loam in some pedons

Roanoke Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which are moderately well drained and have less clay in the subsoil than the Roanoke soils
- Augusta soils, which are somewhat poorly drained and have less clay in the subsoil than the Roanoke soils
- Dogue soils, which are moderately well drained
- Izagora and Yeopim soils, which are moderately well drained and have less clay in the subsoil than the Roanoke soils

Taxonomic Classification

Fine, mixed, semiactive, thermic Typic Endoaquults

Typical Pedon

Roanoke silt loam, 0 to 2 percent slopes (fig. 9); in an area of woodland, about 1.0 mile north of Benjamin Harrison Bridge, about 50 yards northwest of the junction of Highways VA-156 and VA-106; elevation 40 feet.

Ag—0 to 5 inches; gray (10YR 5/1) silt loam; weak fine subangular blocky and moderate fine granular structure; friable; moderately sticky and moderately plastic; many fine, medium, and coarse roots; common fine and medium tubular pores; very strongly acid; clear smooth boundary.

Figure 9.—Typical profile of Roanoke silt loam. This soil is poorly drained. It has gray colors throughout the profile.

Btg1—5 to 25 inches; gray (N 6/0) silty clay loam; weak coarse prismatic parting to strong coarse angular and subangular blocky structure; firm; moderately sticky and moderately plastic; many fine and medium roots; common prominent continuous clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) and light olive brown (2.5Y 5/6) masses of oxidized iron; common fine mica flakes; very strongly acid; gradual smooth boundary.

Btg2—25 to 40 inches; dark gray (N 4/0) clay; weak coarse prismatic parting to strong coarse angular and subangular blocky structure; firm; moderately sticky and moderately plastic; many fine and medium roots; many prominent continuous clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) and light olive brown (2.5Y 5/6) masses of oxidized iron; common fine mica flakes; very strongly acid; gradual smooth boundary.

BCg—40 to 55 inches; gray (N 5/0) clay; weak coarse prismatic parting to strong coarse angular and subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; common prominent continuous clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/8) masses of oxidized iron; many fine mica flakes; strongly acid; gradual wavy boundary.

Cg—55 to 75 inches; gray (5Y 6/1) stratified sandy loam and sandy clay loam; massive; friable; moderately sticky and moderately plastic; common medium prominent yellowish brown (10YR 5/8) masses of oxidized iron; common fine mica flakes; strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches

Reaction: Extremely acid to strongly acid in the A, E, and B horizons, except where lime has been applied, and extremely acid to slightly acid in the C horizons

Rock fragments: 0 to 10 percent gravel in the A, E, and B horizons and 0 to 50 percent gravel in the C horizons

Mica flakes: Few to common in most profiles

Ag, A, or Ap horizon:
Hue—neutral or 10YR to 5Y
Value—2 to 6
Chroma—0 to 2
Texture—fine sandy loam, loam, or silt loam

Eg horizon (where present):
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Texture—fine sandy loam, loam, or silt loam

BAg or BEg horizon (where present):
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—silt loam, loam, clay loam, or silty clay loam

Btg horizon:
Hue—neutral or 10YR to 5Y
Value—4 to 6
Chroma—0 to 2

Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, silty clay loam, silty clay, or clay

BCg horizon:
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—clay loam, sandy clay loam, silty clay loam, or clay

Cg horizon:
Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture (fine-earth fraction)—sandy loam, sandy clay loam, clay loam, or stratified, ranging from sand to clay

Seabrook Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Sandy alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: High
Slope range: 0 to 2 percent

Associated Soils

- Catpoint soils, which are well drained
- Conetoe soils, which are well drained and have more clay in the subsoil than the Seabrook soils
- Dragston soils, which are somewhat poorly drained and have more clay in the subsoil than the Seabrook soils
- Munden soils, which are moderately well drained and have more clay in the subsoil than the Seabrook soils
- Tomotley soils, which are poorly drained and have more clay in the subsoil than the Seabrook soils

Taxonomic Classification

Mixed, thermic Aquic Udipsamments

Typical Pedon

Seabrook loamy sand, 0 to 2 percent slopes; in a cultivated area, about 0.3 mile east-northeast of the junction of Highways VA-600 and VA-622, about 0.4 mile west-northwest of where Highway VA-600 crosses the C&O Railroad, about 175 yards south of the railroad, along a farm lane; elevation 44 feet.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; common fine and medium roots; many fine tubular pores; moderately acid; gradual smooth boundary.

C1—9 to 20 inches; light yellowish brown (10YR 6/4) loamy sand; single grain; loose; common fine and medium roots; many fine tubular pores; moderately acid; clear smooth boundary.

C2—20 to 26 inches; yellowish brown (10YR 5/4) loamy sand; single grain; loose; common medium roots; common fine tubular pores; very strongly acid; clear smooth boundary.

C3—26 to 40 inches; yellowish brown (10YR 5/4) loamy sand; single grain; loose; few fine and medium roots; few fine tubular pores; common medium prominent light gray (10YR 7/2) iron depletions and strong brown (7.5YR 5/6) masses of oxidized iron; few fine mica flakes; very strongly acid; clear smooth boundary.

C4—40 to 53 inches; yellowish brown (10YR 5/4) loamy sand; single grain; loose; many medium prominent light gray (10YR 7/2) iron depletions; few fine mica flakes; very strongly acid; clear wavy boundary.

Cg—53 to 60 inches; light gray (10YR 7/1) loamy sand; single grain; loose; common coarse prominent yellowish brown (10YR 5/4) masses of oxidized iron; few fine mica flakes; 5 percent rounded quartz gravel; very strongly acid; clear wavy boundary.

C5—60 to 80 inches; strong brown (7.5YR 5/8) gravelly sand; single grain; loose; many coarse distinct reddish brown (5YR 4/4) masses of oxidized iron; few fine mica flakes; 25 percent rounded quartz gravel; strongly acid.

Range in Characteristics

Sandy horizon thickness: 72 inches or more

Reaction: Extremely acid to slightly acid throughout the profile, except where lime has been applied

Rock fragments: 0 to 35 percent gravel below 40 inches

Concretions: Concretions and loamy bodies, as much as 2 inches in diameter, occupy less than 10 percent of any one horizon when present

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 to 4
Texture—fine sand, loamy sand, or loamy fine sand

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 or 3
Texture—fine sand, loamy sand, or loamy fine sand

C horizon (upper part):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of gray, olive, and brown and masses of oxidized iron in shades of yellow, brown, and red
Texture—sand, fine sand, loamy coarse sand, loamy sand, or loamy fine sand

C horizon (lower part):
Hue—10YR to 5Y
Value—5 to 7
Chroma—3 or 4
Redoximorphic features—iron depletions in shades of gray, olive, and brown and masses of oxidized iron in shades of yellow, brown, and red

Texture (fine-earth fraction)—sand, fine sand, loamy coarse sand, loamy sand, or loamy fine sand

Cg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of gray, olive, and brown and masses of oxidized iron in shades of yellow, brown, and red
Texture (fine-earth fraction)—sand, fine sand, loamy coarse sand, loamy sand, or loamy fine sand

Slagle Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy marine sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Slope range: 0 to 6 percent

Associated Soils

- Bethera soils, which are poorly drained and have more clay in the subsoil than the Slagle soils
- Caroline soils, which are well drained and have more clay in the subsoil than the Slagle soils
- Craven soils, which have more clay in the subsoil than the Slagle soils
- Emporia and Kempsville soils, which are well drained
- Nansemond soils, which have less clay in the subsoil than the Slagle soils
- Nevarc soils, which have more clay in the subsoil than the Slagle soils
- Remlik and Uchee soils, which have thick, sandy surface layers
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Fine-loamy, siliceous, subactive, thermic Aquic Hapludults

Typical Pedon

Slagle fine sandy loam, in an area of Slagle-Emporia complex, 2 to 6 percent slopes; in a cultivated area, about 0.4 mile north of the junction of Highways VA-604 and VA-605, about 1.4 miles northwest of the junction of Highway VA-659 and Virginia Division of Forestry fire trail 1557, about 70 yards south of a 90-degree curve to the west on Highway VA-604; elevation 127 feet.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; slightly sticky and non-plastic; common fine roots; common fine and medium tubular pores; strongly acid; abrupt smooth boundary.

Bt1—10 to 25 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; few distinct clay films on faces of peds and clay bridges between sand grains; common medium distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) masses of oxidized iron; strongly acid; gradual smooth boundary.

Bt2—25 to 44 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine and medium tubular pores; many distinct clay films on faces of peds and clay bridges between sand grains; many medium and coarse distinct grayish brown (10YR 5/2) iron depletions and strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

Bt3—44 to 63 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine angular blocky and weak medium and coarse subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few fine and medium tubular pores; common distinct clay films on faces of peds and clay bridges between sand grains; many medium and coarse distinct gray (10YR 6/1) and light brownish gray (10YR 6/2) iron depletions and distinct yellowish red (5YR 5/8) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Reaction: Extremely acid to strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 5 percent gravel throughout the profile

A or Ap horizon:
Hue—10YR or 2.5Y
Value—2 to 6
Chroma—1 to 4
Texture—sandy loam, fine sandy loam, or loam

E horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—3 or 4
Texture—sandy loam, fine sandy loam, or loam

BE horizon (where present):
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—3 to 6
Texture—sandy loam, fine sandy loam, or loam

Bt horizon (upper part):
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—3 to 6
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, sandy clay loam, or clay loam

Bt horizon (lower part):
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, sandy clay loam, or clay loam

Btg horizon (where present):
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red

Texture—loam, sandy clay loam, or clay loam

BC or BCg horizon (where present):
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—1 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, fine sandy loam, sandy clay loam, clay loam, sandy clay, or clay

Cg horizon (where present):
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand to clay

Tomotley Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 2 percent

Associated Soils

- Altavista soils, which are moderately well drained
- Augusta soils, which are somewhat poorly drained
- Dragston soils, which are somewhat poorly drained and have less clay in the subsoil than the Tomotley soils
- Izagora soils, which are moderately well drained
- Nimmo soils, which have less clay in the subsoil than the Tomotley soils
- Pamunkey soils, which are well drained
- Seabrook soils, which are moderately well drained and do not have a subsoil

Taxonomic Classification

Fine-loamy, mixed, semiactive, thermic Typic Endoaquults

Typical Pedon

Tomotley fine sandy loam, 0 to 2 percent slopes; in an area of woodland, about 1.6 miles east of the junction of Highways VA-614 and VA-155, about 0.5 mile northeast of the junction of Highway VA-614 and Virginia Division of Forestry fire trail 1501; elevation 47 feet.

A—0 to 4 inches; dark gray (5Y 4/1) fine sandy loam; moderate medium granular structure; very friable; slightly sticky and slightly plastic; many fine and medium and common coarse roots; common fine and medium tubular pores; extremely acid; clear smooth boundary.

Eg—4 to 8 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; weak fine granular structure; friable; moderately sticky and slightly plastic; common fine and medium and few coarse roots; common fine and medium and few coarse tubular pores; very strongly acid; clear smooth boundary.

Btg1—8 to 15 inches; gray (5Y 5/1) fine sandy loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine and few medium roots; common fine and medium tubular pores; many distinct clay films on faces of peds and common clay bridges between sand grains; common medium prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg2—15 to 38 inches; dark gray (5Y 4/1) sandy clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common fine and medium tubular pores; many distinct clay films on faces of peds and common clay bridges between sand grains; common medium prominent yellowish brown (10YR 5/8) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg3—38 to 58 inches; gray (5Y 5/1) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; common medium prominent light olive brown (2.5Y 5/6) masses of oxidized iron; very strongly acid; gradual smooth boundary.

BCg—58 to 65 inches; gray (N 6/0) fine sandy loam; massive; friable; moderately sticky and slightly plastic; common medium prominent light olive brown (2.5Y 5/6) masses of oxidized iron; very strongly acid; clear smooth boundary.

Cg—65 to 75 inches; gray (5Y 5/1) loamy sand; single grain; loose; extremely acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more

Reaction: Extremely acid to strongly acid in the upper part of the profile, except where lime has been applied, and extremely acid to moderately acid in the lower part of the profile

Rock fragments: 0 to 5 percent gravel in the A, E, and B horizons

Mica flakes: Few or common in some pedons in the lower part of the B horizon and in the C horizon

Concretions: Fine black minerals occur in some pedons in the lower part of the B horizon and in the C horizon

A or Ap horizon:

Hue—neutral or 10YR to 5Y
Value—2 to 4
Chroma—0 to 2
Texture—loamy sand, loamy fine sand, fine sandy loam, or loam

Eg horizon:

Hue—10YR or 2.5Y
Value—4 to 7
Chroma—1 or 2
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand, loamy fine sand, fine sandy loam, or loam

Btg horizon:

Hue—neutral or 10YR to 5Y
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, loam, sandy clay loam, or clay loam

BCg horizon:

Hue—neutral or 10YR to 5Y

Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam, sandy clay loam, or clay loam

Cg horizon:
Hue—neutral or 10YR to 5BG
Value—4 to 7
Chroma—0 to 2
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loamy sand, sandy loam, or stratified, ranging from sand to clay

Turbeville Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Clayey alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 2 to 6 percent

Associated Soils

- Izagora soils, which are moderately well drained and have less clay in the subsoil than the Turbeville soils
- Masada soils, which do not have a dark red subsoil
- Wickham soils, which have less clay in the subsoil than the Turbeville soils

Taxonomic Classification

Fine, kaolinitic, thermic Typic Kandiudults

Typical Pedon

Turbeville loam, 2 to 6 percent slopes (fig. 10); in an area of woodland, about 350 yards north of the junction of Highways VA-607 and VA-609, about 150 yards west of Highway VA-609; elevation 125 feet.

A—0 to 4 inches; brown (7.5YR 4/4) loam; moderate fine and medium granular structure; friable; slightly sticky and slightly plastic; common fine and medium roots; few medium tubular pores; very strongly acid; clear smooth boundary.

BA—4 to 8 inches; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine and medium roots; common fine and medium and few coarse tubular pores; few distinct clay films on faces of peds and many distinct clay bridges between sand grains; very strongly acid; clear smooth boundary.

Bt1—8 to 15 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine and medium roots; common fine and medium tubular pores; common distinct clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—15 to 25 inches; reddish brown (2.5YR 4/4) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine and medium roots; few fine tubular pores; common distinct clay films on faces of peds and many distinct clay bridges between sand grains; strongly acid; gradual smooth boundary.

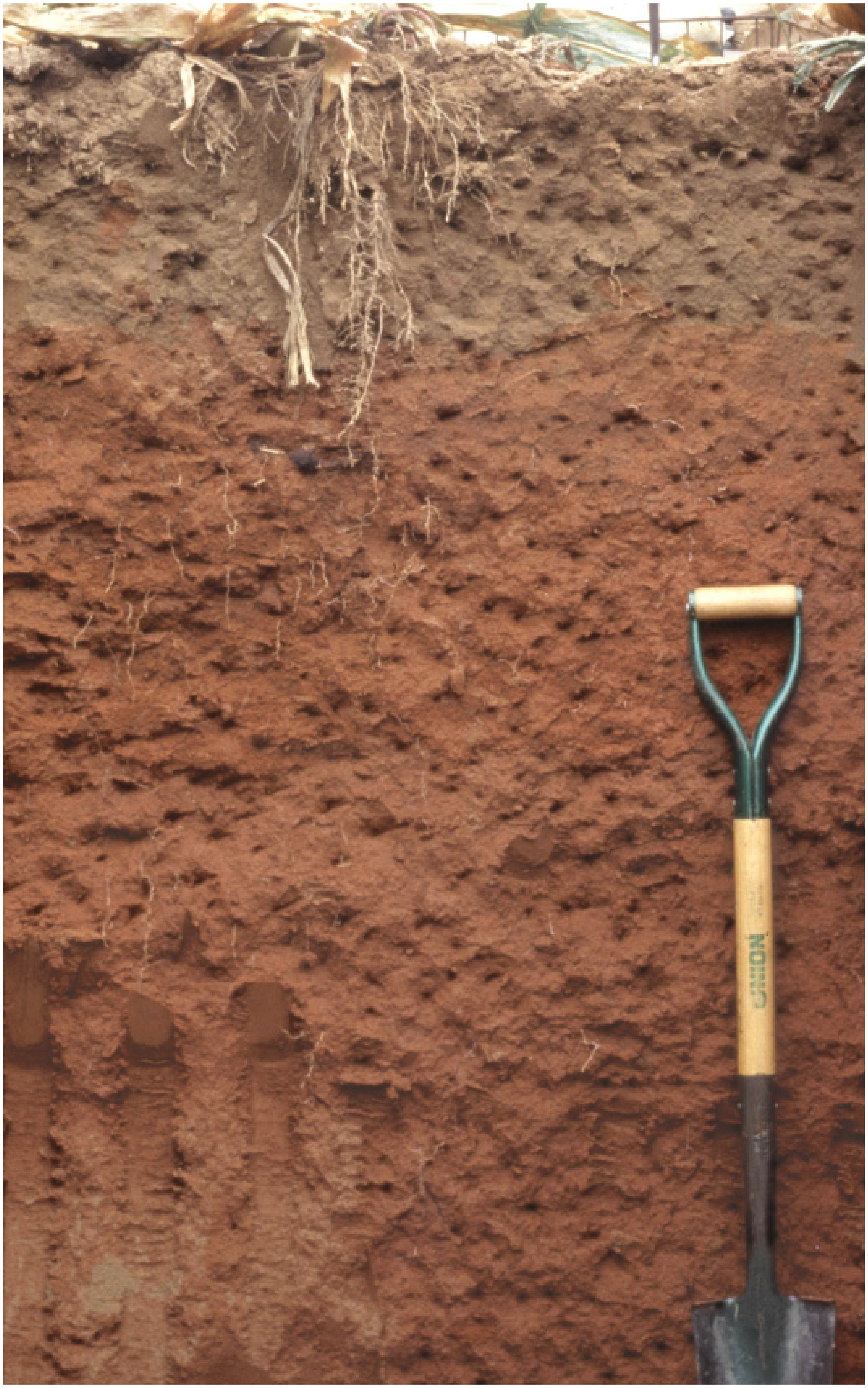

Figure 10.—Typical profile of Turbeville loam. This soil has a dark brown surface layer and a subsoil of reddish brown and red clay.

Bt3—25 to 50 inches; dark red (10R 3/6) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds and many distinct clay bridges between sand grains; 1 percent rounded quartz gravel; strongly acid; gradual smooth boundary.

Bt4—50 to 72 inches; dark red (10R 3/6) clay; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on faces of peds; 1 percent rounded quartz gravel; strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches or more
Reaction: Very strongly acid to moderately acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 5 percent quartz gravel throughout the profile

A horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—2 to 4
Texture—fine sandy loam or loam

Ap horizon (where present):
Hue—5YR to 10YR
Value—4 or 5
Chroma—2 to 4
Texture—fine sandy loam or loam

E horizon (where present):
Hue—5YR to 10YR
Value—5 to 7
Chroma—4 to 8
Texture—fine sandy loam or loam

BA or BE horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—fine sandy loam, loam, or clay loam

Bt horizon (upper part):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, sandy clay, or clay

Bt horizon (lower part):
Hue—10R to 5YR
Value—3 or 4
Chroma—4 to 8
Texture—clay loam, sandy clay, or clay

Uchee Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy and sandy marine sediments

Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 2 to 10 percent

Associated Soils

- Craven and Nevarc soils, which are moderately well drained, do not have thick, sandy surface horizons, and have more clay in the upper subsoil than the Uchee soils
- Emporia and Kempsville soils, which do not have thick, sandy surface layers
- Remlik soils, which have less clay in the lower subsoil than the Uchee soils
- Slagle soils, which are moderately well drained and do not have a thick, sandy surface layer

Taxonomic Classification

Loamy, kaolinitic, thermic Arenic Kanhapludults

Typical Pedon

Uchee loamy sand, in an area of Craven-Uchee complex, 6 to 10 percent slopes (fig. 11); in an area of woodland, about 1.0 mile west of the junction of Highways VA-618 and VA-602, about 200 yards south of Highway VA-602; elevation 141 feet.

A—0 to 4 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; non-sticky and non-plastic; few fine and medium roots; common fine and medium and few coarse tubular pores; very strongly acid; abrupt smooth boundary.

E—4 to 26 inches; light yellowish brown (10YR 6/4) loamy sand; single grain; very friable; non-sticky and non-plastic; few fine roots; common fine and medium and few coarse tubular pores; very strongly acid; gradual smooth boundary.

BE—26 to 30 inches; light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/8) sandy loam; weak fine granular structure; friable; slightly sticky and slightly plastic; few fine and medium roots; common fine and medium and few coarse tubular pores; few faint clay films on faces of peds and common distinct clay bridges between sand grains; very strongly acid; clear smooth boundary.

Bt—30 to 50 inches; brownish yellow (10YR 6/8) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine roots; few fine and medium tubular pores; common clay films on faces of peds and many distinct clay bridges between sand grains; very strongly acid; clear smooth boundary.

C—50 to 62 inches; yellowish brown (10YR 5/8) sandy clay loam; massive; friable; moderately sticky and moderately plastic; compact in place; few fine roots; few fine tubular pores; common medium prominent gray (10YR 6/1) iron depletions and yellowish red (5YR 5/6) and strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches
Reaction: Very strongly acid or strongly acid throughout the profile, except where lime has been applied
Rock fragments: 0 to 15 percent gravel throughout the profile

A or Ap horizon:
Hue—10YR
Value—3 to 6
Chroma—2 to 4
Texture—sand or loamy sand

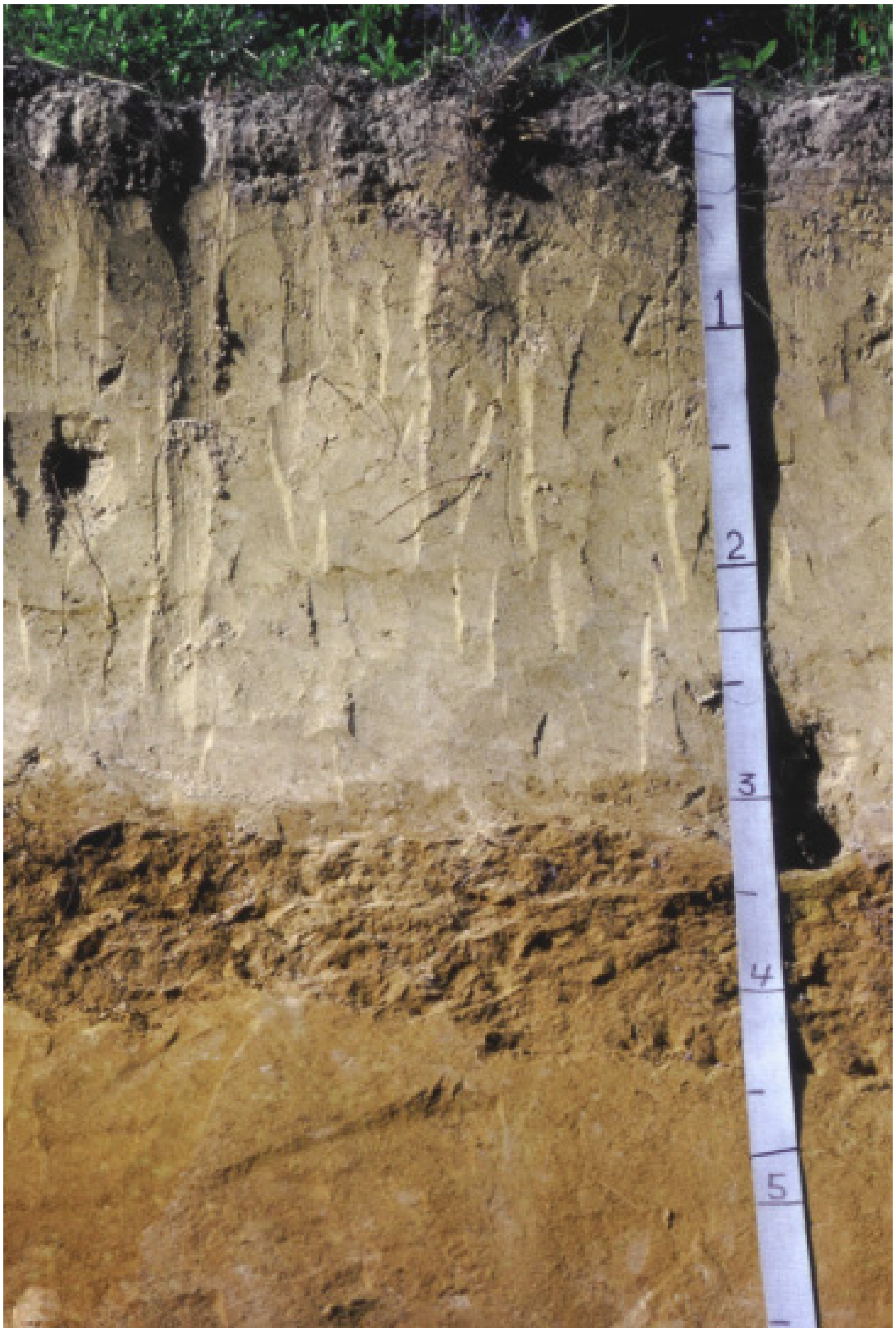

Figure 11.—Typical profile of Uchee loamy sand. This soil has thick, dark gray and light yellowish brown sandy surface horizons and a brownish yellow loamy subsoil.

E horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—4 or 6
Texture—sand or loamy sand

EB or BE horizon:
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—4 to 8
Texture—loamy sand or sandy loam

Bt horizon (upper part):
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam or sandy clay loam

Bt horizon (lower part):
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy clay loam, sandy clay, or clay

C horizon:
Hue—2.5YR to 10YR
Value—4 to 7
Chroma—3 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam or sandy clay loam that can have pockets of clayey material

Udorthents Series

Physiographic province: Southern Coastal Plain
Landform: Stream and marine terraces
Parent material: Loamy alluvial and marine sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Unspecified
Slope range: 0 to 70 percent

Associated Soils

- Catpoint soils, which are somewhat excessively drained and have recognizable soil horizons
- Conetoe soils, which are well drained and have recognizable soil horizons
- Dogue and Yeopim soils, which are moderately well drained, have a well developed subsoil, and are on river terraces
- Emporia and Kempsville soils, which are well drained, have a well developed subsoil, and are on uplands
- Munden soils, which are moderately well drained and have recognizable soil horizons

- Pamunkey soils, which are well drained, have a well developed subsoil, and are on river terraces
- Slagle soils, which are moderately well drained, have a well developed subsoil, and are on uplands

Taxonomic Classification

Udorthents

Typical Pedon

A typical profile is not given due to the variable nature of the soil material.

Range in Characteristics

Reaction: Extremely acid to strongly acid throughout the profile
Coarse fragments: 0 to 50 percent quartz gravel and ironstone fragments throughout the profile
Mica flakes: Common throughout the profile

Surface layer:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—4 to 8
Texture (fine-earth fraction)—loamy sand to clay loam
Thickness—ranging from 2 to 10 inches; commonly 2 to 5 inches

Lower layers:
Hue—neutral or 2.5YR to 5Y
Value—3 to 7
Chroma—0 to 8
Redoximorphic features— iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—fine sandy loam to clay
Thickness—layers extend to a depth of more than 60 inches

Wickham Series

Physiographic province: Southern Coastal Plain
Landform: Stream terraces
Parent material: Loamy alluvial sediments
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 6 percent

Associated Soils

- Dogue soils, which are moderately well drained and have more clay in the subsoil than the Wickham soils
- Masada and Turbeville soils, which have more clay in the subsoil than the Wickham soils
- Pamunkey soils, which have more than 35 percent base saturation in the control section

Taxonomic Classification

Fine-loamy, mixed, semiactive, thermic Typic Hapludults

Typical Pedon

Wickham fine sandy loam, 2 to 6 percent slopes; in a cultivated area, about 0.3 mile east of the junction of Highways VA-5 and VA-618, about 0.5 mile west of Highway VA-5 and Gunns Run, about 70 yards south of Highway VA-5; elevation 65 feet.

Ap—0 to 12 inches; brown (7.5YR 4/4) fine sandy loam; weak medium granular structure; very friable; slightly sticky and non-plastic; few fine roots; common medium tubular pores; strongly acid; abrupt smooth boundary.

Bt1—12 to 50 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; common fine roots; common medium tubular pores; few prominent clay films on faces of peds; few fine mica flakes; moderately acid; gradual smooth boundary.

Bt2—50 to 62 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few prominent clay films on faces of peds; few fine mica flakes; strongly acid.

Range in Characteristics

Solum thickness: 36 to 60 inches or more
Reaction: Strongly acid to moderately acid throughout the profile, except where lime has been applied
Mica flakes: None to common in the A, E, and B horizons and none to many in the C horizons
Feldspars: None to common throughout the profile

A horizon (where present):
Hue—5YR to 10YR
Value—4 or 5
Chroma—2 to 6
Texture—sandy loam, fine sandy loam, or loam

Ap horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—2 to 6
Texture—sandy loam, fine sandy loam, or loam; sandy clay loam or clay loam in eroded areas

E horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—2.5YR to 7.5YR; at least one subhorizon has hue of 2.5YR or 5YR
Value—4 to 6
Chroma—4 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red
Texture—sandy loam, loam, sandy clay loam, or clay loam

BC horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Redoximorphic features—masses of oxidized iron in shades of brown, yellow, and red

Texture—sandy loam, loam, sandy clay loam, or clay loam

C horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture—sand to sandy clay loam; few to many pebbles and cobbles in some pedons

Yeopim Series

Physiographic province: Southern Coastal Plain
Landform: Marine terraces
Parent material: Loamy and silty alluvial sediments
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Slope range: 0 to 6 percent

Associated Soils

- Dogue soils, which have more clay in the subsoil than the Yeopim soils
- Nimmo soils, which are poorly drained and have less clay in the subsoil than the Yeopim soils
- Pamunkey soils, which are well drained
- Roanoke soils, which are poorly drained and have more clay in the subsoil than the Yeopim soils
- Udorthents, which do not have a well developed subsoil

Taxonomic Classification

Fine-silty, mixed, semiactive, thermic Aquic Hapludults

Typical Pedon

Yeopim silt loam, 2 to 6 percent slopes; in a cultivated area, about 0.7 mile southwest of the junction of Highways VA-613 and VA-623, about 100 yards northwest of Highway VA-613, about 0.3 mile north-northeast of the James River; elevation 27 feet.

Ap—0 to 10 inches; yellowish brown (10YR 5/4) silt loam; moderate fine granular structure; friable; slightly sticky and slightly plastic; common fine roots; common fine and medium and few coarse tubular pores; moderately acid; abrupt smooth boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; moderately sticky and slightly plastic; common fine tubular pores; common distinct clay films on faces of peds; common fine distinct pale brown (10YR 6/3) iron depletions; moderately acid; abrupt smooth boundary.

Bt2—18 to 26 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds; common fine distinct brownish yellow (10YR 6/6) masses of oxidized iron; common fine prominent very dark brown (10YR 2/2) mineral grains; common very fine mica flakes; moderately acid; clear smooth boundary.

Bt3—26 to 40 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds; common medium prominent light brownish gray (10YR 6/2) iron depletions; common fine prominent very dark brown (10YR 2/2) mineral grains; common very fine mica flakes; moderately acid; gradual smooth boundary.

Bt4—40 to 54 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; few distinct clay films on faces of peds; common medium prominent light brownish gray (10YR 6/2) iron depletions; common fine prominent very dark brown (10YR 2/2) mineral grains; common very fine mica flakes; very strongly acid; gradual smooth boundary.

Bt5—54 to 64 inches; yellowish brown (10YR 5/4) clay loam; weak medium subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; few distinct clay films on faces of peds; common medium prominent brownish yellow (10YR 6/6) masses of oxidized iron; common fine prominent very dark brown (10YR 2/2) mineral grains; common very fine mica flakes; very strongly acid; gradual smooth boundary.

BC—64 to 72 inches; yellowish brown (10YR 5/6) loam; weak coarse subangular blocky structure; friable; moderately sticky and moderately plastic; few fine tubular pores; few distinct clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions; common fine prominent very dark brown (10YR 2/2) mineral grains; common very fine mica flakes; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more

Reaction: Extremely acid to moderately acid throughout the profile, except where lime has been applied

A horizon (where present):
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

Ap horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

E horizon (where present):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—2 to 4
Texture—fine sandy loam, loam, or silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, clay loam, or silty clay loam

BC horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—4 to 8
Redoximorphic features—iron depletions in shades of olive and gray and masses of oxidized iron in shades of brown, yellow, and red
Texture—loam, silt loam, or silty clay loam

Formation of the Soils

This section describes the factors and processes that have affected the formation and morphology of the soils in Charles City County.

Factors of Soil Formation

Soil forms through weathering and other processes that act upon parent material. The characteristics of a soil depend upon the interaction of parent material, climate, plants and animals, relief, and time.

Although all five factors affect the formation of every soil, the relative importance of each factor differs from place to place. In extreme cases, one factor may dominate in the formation of a soil and determine most of its properties. Generally, however, it is the combined action of the five soil-forming factors that determines the characteristics of the soil. Climate, plants, and animals are the active forces of soil formation. They act on the parent material that has accumulated through the deposition of sediments and slowly change it into soil.

Parent Material

Parent material is the unconsolidated material in which a soil forms. It is largely responsible for the chemical and mineralogical composition of the soil and the rate at which soil-forming processes take place.

The parent materials in Charles City County are alluvial, having been transported and deposited by marine and fluvial action. Episodes of deposition have occurred at different geologic times and sediments have been combined from different sources. These different episodes have resulted in four distinct areas of soils in the survey area.

The largest and oldest area consists of upland rises and side slopes at the highest elevations in the county. The dominant soils in this area are the loamy Emporia, Kempsville, and Slagle soils and the clayey Caroline and Craven soils.

The second area consists mostly of upland rises and steep side slopes at intermediate elevations in the county. The dominant soils in this area are the loamy Kempsville, Emporia, Remlik, and Uchee soils and the clayey Nevarc soils.

The third area consists of fluvial terraces at the lower elevations, primarily along the Chickahominy and James Rivers; these areas are flats, but not marshes. The dominant soils in this area are the Tomotley, Dragston, Altavista, and Seabrook soils. Some of the clayey soils in this area, such as the Dogue, Peawick, Newflat, and Chickahominy soils, are along the Chickahominy and the lower James Rivers. Pamunkey, Wickham, and Tetotum soils are along the James River in the southern and western parts of Charles City County.

The fourth area consists of flood plains and marshes along the major steams and rivers. The dominant soils on the flood plains are the Bibb, Mattan, and Nawney soils and the dominant soils in the marshes are the Lawnes soils. The Lawnes soils are mineral soils but have a thin layer of organic matter on the surface in many places.

Climate

Climate, particularly through the influence of precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. Water from precipitation dissolves minerals, supports biological activity, and transports mineral and organic residue through the solum. Temperature determines the type and rate of physical, chemical, and biological activities.

Because precipitation exceeds evapotranspiration in the growing season, the humid climate has caused the soils to be leached. Most of the soluble materials originally in the soil or released through weathering has been removed. Exceptions to this are alluvial soils, such as the Bibb soils, which are recharged by eroded sediments from surrounding uplands. Precipitation is largely responsible for the subsoil that characterizes most soils in the county. In addition to leaching soluble materials, water that percolates through the soil moves clay from the surface layer to the subsoil. Except for soils formed in recent alluvium, in sand, or on very steep slopes, the soils in the county typically have subsoils that contain more clay than the surface layer.

Climate also influences the formation of the blocky structure that is found in the subsoil of well developed soils. The development of peds, or aggregates, in the subsoil is caused partly by changes in volume of the soil mass that primarily are the result of alternate periods of wetting and drying.

Plant and Animal Life

Plants, animals, micro-organisms, and humans are important to the formation of soils in Charles City County. Plants generally are responsible for the content of organic matter, the amount of nutrients in the soil, and the color of the surface layer. Earthworms, cicada, and burrowing animals help keep the soil open and porous. Micro-organisms decompose the vegetation and dead animal matter, which releases nutrients for use by plants. Humans have changed the soil through cultivation.

Before settlement by humans, native vegetation, mainly oaks, hickories, and pines, was the major living organism that affected soil development. Most hardwoods use a large amount of the available calcium and other bases and constantly recycle them through leaf fall and decay. This has prevented the soils in the survey area from becoming as leached as they would have been under a coniferous forest cover. Also, since the soils form under forest vegetation, rapid decay of organic matter and constant recycling of nutrients have prevented organic matter accumulation in large quantities. In addition, the climate favors rapid decay of plant materials, oxidation of organic matter, and leaching of nutrients.

Human activities, such as clearing forests, cultivating crops, introducing new plants, and changing natural drainage, have also influenced soil development. The most important changes caused by humans are the formation of a plow layer caused by the mixing of the upper layers of the soils, accelerated erosion caused by cultivating steep slopes, and a change in the fertility of the soils caused by applying lime and fertilizer.

Relief

The underlying geologic formations, the geologic history of the general region, and the effects of dissection by rivers and streams largely determine the relief of an area. Relief, or topography, affects the formation of soils by influencing the quantity of water infiltration, the rate of surface water runoff, the rate of drainage in the soil, the soil temperature, and the rate of geologic erosion. Relief can alter the effects of climate on the parent material to the extent that several different kinds of soils may form in the same kind of parent material. Relief also affects the amount of radiant energy absorbed by the soils, which in turn affects the type of native vegetation growing on the soils.

Relief in Charles City County ranges from nearly level to very steep. The nearly level soils are common on upland flats, on flood plains of streams, and in marshes. Most of the nearly level soils often are wet because of frequent flooding. The soils in these areas have a seasonal high water table. The surface water runoff is usually slow. These soils typically have a subsoil or substratum that is gray or mottled gray, and the soils are somewhat poorly drained or poorly drained. Roanoke, Bibb, and Nimmo soils are examples of such soils.

The gently sloping to very steep soils generally are well drained or moderately well drained. On the gently sloping and sloping soils, geologic erosion is slight, surface water runoff is medium to rapid, and water infiltration is optimum. Translocation of bases and clay generally has occurred downward through the soil. However, on the steeper soils, surface runoff is very rapid, water infiltration and translocation of clay and bases through the soil are reduced, and the hazard of erosion is severe.

In most upland areas, the parent materials and other soil-forming factors are essentially the same. Relief has modified the effects of the other soil-forming factors in these areas. For example, the Emporia and Slagle soils formed in similar parent materials, yet the Emporia soils, being slightly higher on the landscape, are well drained while the adjacent Slagle soils are moderately well drained.

Time

Time influences the degree of development, or degree of horizon differentiation, within a soil. A soil that has little or no horizon development is considered a young, or immature, soil, and one that has strongly developed horizons is considered an old, or mature, soil. Other soils range in maturity between these two stages.

The oldest soils in Charles City County formed on well drained uplands and old stream terraces at the higher elevations. These older soils, such as the Turbeville and Emporia soils, have a strong degree of horizon differentiation. Conversely, soils such as the Bibb and Nawney soils formed in recent alluvium and show little or no horizon development. They are commonly stratified and have an irregular distribution of organic matter in the profile.

Morphology of the Soils

The soil-forming processes result in the development of different layers, or soil horizons, in a soil profile. The soil profile extends from the surface downward to material that is little altered by the soil-forming processes.

Most soils contain three major horizons called the A, B, and C horizons. These major horizons may be further subdivided by the use of numbers and letters to indicate changes within a horizon. An example would be the Bt horizon, a B horizon that has an accumulation of clay.

The A horizon is the surface layer. It has the largest accumulation of organic matter. The maximum extent of leaching, or eluviation, of clay and iron also occurs in the A horizon. If considerable leaching has taken place and organic matter has not darkened the material, this horizon is called an E horizon.

The B horizon underlies the A or E horizon and is commonly called the subsoil. It is the horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, and other compounds leached from the surface layer. In some soils the B horizon is formed by alteration in place rather than by illuviation. This alteration can occur through oxidation and reduction of iron or through the weathering of clay minerals. The B horizon commonly has a blocky structure and generally is firmer and lighter in color than the A and E horizons but darker than the C horizon.

The C horizon is below the A horizon or the B horizon, when it is present. It consists of material that has been little altered by the soil-forming processes but may have been modified by weathering.

Processes of Horizon Differentiation

Soils form through the decomposition and accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, and the formation and translocation of clay minerals. These processes take place continually, usually at the same time throughout the profile.

The accumulation of organic matter and its incorporation into the soil take place as plant residue decomposes. These additions darken the surface layer and help to form the A horizon. In many places, much of the surface layer has been eroded away or has been mixed with the materials from underlying layers through cultivation. Organic matter, once lost, normally takes a long time to replace. In Charles City County, the organic matter content of the surface layer ranges from low in the sandy soils, such as the Seabrook soils, to high in the marsh soils, such as the Lawnes soils. Most soils in the county have a low to medium amount of organic matter in the soil.

For soils to have distinct subsoil horizons, some of the lime and soluble salts must be leached before the translocation of clay minerals. Among the factors that affect this leaching are the kinds of salts originally present, the depth to which the soil solution percolates, and the texture of the soil profile.

Well drained and moderately well drained soils in the survey area have a yellowish brown to red subsoil. These colors are caused mainly by thin coatings of iron oxides on sand and silt grains, although in some soils the colors are inherited from the materials in which they formed. These soils have a weak to moderate subangular blocky structure, and the subsoil contains more clay than the overlying surface horizons.

The reduction and transfer of iron, called gleying, takes place mainly in the wetter, more poorly drained soils. Moderately well drained to somewhat poorly drained soils, such as the Slagle and Augusta soils, have yellowish brown and strong brown redoximorphic features, indicating the segregation of iron. In poorly drained soils, such as the Tomotley and Bethera soils, the subsoil and underlying material are grayish, indicating the reduction and transfer of iron by removal in solution.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the “National Soil Survey Handbook” (available in local offices of the Natural Resources Conservation Service or on the Internet).

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.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Association, soil. A group of soils or miscellaneous areas 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:

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, and K), expressed as a percentage of the total cation-exchange capacity.

Bottom land. An informal term loosely applied to various portions of a flood plain.

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.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque. A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

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 depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas 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 or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

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. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

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.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

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.

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 as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

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. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

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 overlying soil material. 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it 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 potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

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, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

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.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

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.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

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

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Masses. See Redoximorphic features.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

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

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

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

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

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

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.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

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

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.
Plastic limit. The moisture content at which a soil changes from semisolid to plastic.
Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.
Plowpan. A compacted layer formed in the soil directly below the plowed layer.
Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.
Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.
Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.
Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.
Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly 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

Redoximorphic concentrations. See Redoximorphic features.
Redoximorphic depletions. See Redoximorphic features.
Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:

A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*

B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*

C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:

A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*

B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (K_{sat}). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). 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.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

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.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Moderately sloping	6 to 10 percent
Strongly sloping	10 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep	45 percent and higher

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

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

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

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

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Temperature and Precipitation

(Recorded in the period 1949-92 at Richmond, Virginia)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	47.0	27.1	37.1	74	3	88	3.08	1.71	4.29	6	4.8
February----	50.3	29.2	39.7	76	8	108	3.08	1.86	4.17	6	4.6
March-------	58.8	36.1	47.4	85	18	264	3.60	2.20	4.86	7	2.5
April-------	70.2	45.2	57.7	92	27	531	2.93	1.64	4.08	5	0.1
May---------	77.9	54.4	66.1	94	36	810	3.72	2.29	5.00	7	0.0
June--------	85.2	62.8	74.0	99	46	1,019	3.56	1.80	5.10	5	0.0
July--------	88.7	67.8	78.3	100	54	1,186	5.12	2.44	7.44	7	0.0
August------	86.9	66.5	76.7	99	52	1,137	5.00	2.37	7.27	6	0.0
September---	80.8	59.2	70.0	97	41	900	3.32	1.55	4.84	5	0.0
October-----	70.6	47.2	58.9	89	27	586	3.47	1.55	5.11	4	0.0
November----	60.8	37.8	49.3	82	18	298	3.23	1.50	4.71	5	0.4
December----	50.1	29.9	40.0	75	9	122	3.27	1.68	4.66	6	2.0
Yearly:											
Average---	68.9	46.9	57.9	---	---	---	---	---	---	---	---
Extreme---	105	-8	---	101	1	---	---	---	---	---	---
Total-----	---	---	---	---	---	7,048	43.37	35.39	49.75	69	14.3

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minumum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Freeze Dates in Spring and Fall

(Recorded in the period 1949-92 at Richmond, Virginia)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 29	Apr. 12	Apr. 25
2 year in 10 later than--	Mar. 23	Apr. 7	Apr. 20
5 year in 10 later than--	Mar. 12	Mar. 28	Apr. 10
First freezing temperature in fall:			
1 yr in 10 earlier than--	Nov. 5	Oct. 21	Oct. 13
2 yr in 10 earlier than--	Nov. 11	Oct. 26	Oct. 18
5 yr in 10 earlier than--	Nov. 22	Nov. 6	Oct. 28

Growing Season

(Recorded for the period 1949-92 at Richmond, Virginia)

Probability	Daily Minimum Temperature During growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	229	199	180
8 years in 10	238	207	187
5 years in 10	254	222	199
2 years in 10	271	237	212
1 year in 10	279	245	218

Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1A	Altavista fine sandy loam, 0 to 3 percent slopes	1,328	1.0
2A	Augusta sandy loam, 0 to 2 percent slopes	904	0.7
3A	Bethera silt loam, 0 to 2 percent slopes	861	0.7
4A	Bibb fine sandy loam, 0 to 2 percent slopes, frequently flooded	6,975	5.3
5A	Bojac loamy fine sand, 0 to 2 percent slopes	108	*
5B	Bojac loamy fine sand, 2 to 6 percent slopes	402	0.3
6B	Caroline silt loam, 2 to 6 percent slopes	302	0.2
7B	Caroline-Emporia complex, 2 to 6 percent slopes	6,465	4.9
7C	Caroline-Emporia complex, 6 to 10 percent slopes	163	0.1
8B	Catpoint loamy sand, 0 to 4 percent slopes	512	0.4
9A	Chickahominy loam, 0 to 2 percent slopes	8,661	6.6
10A	Chickahominy loam, 0 to 2 percent slopes, ponded	325	0.2
11B	Conetoe loamy sand, 0 to 4 percent slopes	431	0.3
12B	Craven loam, 2 to 6 percent slopes	2,180	1.7
13C3	Craven clay loam, 6 to 10 percent slopes, severely eroded	168	0.1
14B	Craven-Caroline complex, 2 to 6 percent slopes	1,557	1.2
15C3	Craven-Caroline complex, 6 to 10 percent slopes, severely eroded	358	0.3
16C	Craven-Remlik complex, 6 to 10 percent slopes	1,700	1.3
17C	Craven-Uchee complex, 6 to 10 percent slopes	9,256	7.1
18A	Dogue silt loam, 0 to 2 percent slopes	630	0.5
18B	Dogue silt loam, 2 to 6 percent slopes	6,581	5.0
18C	Dogue silt loam, 6 to 10 percent slopes	144	0.1
19A	Dragston fine sandy loam, 0 to 2 percent slopes	202	0.2
20B	Emporia fine sandy loam, 2 to 6 percent slopes	853	0.7
21B	Emporia gravelly fine sandy loam, 2 to 6 percent slopes	332	0.3
22B	Emporia loam, 2 to 6 percent slopes	166	0.1
23B	Emporia-Kempsville complex, 2 to 6 percent slopes	3,469	2.7
24B	Izagora silt loam, 0 to 4 percent slopes	1,664	1.3
25B	Kempsville loamy sand, 2 to 6 percent slopes	814	0.6
26A	Lawnes muck, 0 to 1 percent slopes, very frequently flooded	4,727	3.6
27B	Masada loam, 2 to 6 percent slopes	1,409	1.1
28B3	Masada sandy clay loam, 2 to 6 percent slopes, severely eroded	264	0.2
29A	Mattan mucky loam, 0 to 1 percent slopes, very frequently flooded	2,059	1.6
30A	Munden loamy sand, 0 to 2 percent slopes	270	0.2
31A	Nahunta silt loam, 0 to 2 percent slopes	798	0.6
32B	Nansemond loamy sand, 0 to 4 percent slopes	274	0.2
33A	Nawney silt loam, 0 to 2 percent slopes, frequently flooded	711	0.5
34A	Nawney silt loam, 0 to 2 percent slopes, ponded	1,964	1.5
35D	Nevarc-Remlik complex, 10 to 15 percent slopes	5,621	4.3
35E	Nevarc-Remlik complex, 15 to 25 percent slopes	5,347	4.1
35F	Nevarc-Remlik complex, 25 to 60 percent slopes	2,744	2.1
36A	Newflat silt loam, 0 to 2 percent slopes	7,572	5.8
37A	Nimmo sandy loam, 0 to 2 percent slopes	165	0.1
38A	Pamunkey loam, 0 to 2 percent slopes	703	0.5
38B	Pamunkey loam, 2 to 6 percent slopes	1,758	1.3
38C	Pamunkey loam, 6 to 10 percent slopes	125	*
39A	Peawick silt loam, 0 to 2 percent slopes	3,486	2.7
39B	Peawick silt loam, 2 to 6 percent slopes	3,633	2.8
40A	Roanoke silt loam, 0 to 2 percent slopes	2,233	1.7
41A	Seabrook loamy sand, 0 to 2 percent slopes	418	0.3
42B	Slagle fine sandy loam, 0 to 4 percent slopes	2,233	1.7
43B	Slagle-Emporia complex, 2 to 6 percent slopes	4,092	3.1
44A	Tomotley fine sandy loam, 0 to 2 percent slopes	643	0.5
45B	Turbeville loam, 2 to 6 percent slopes	563	0.4
46B	Uchee loamy sand, 2 to 6 percent slopes	264	0.2
47B	Udorthents, loamy, gently sloping	591	0.5
48B	Udorthents, smoothed, gently sloping	367	0.3
49A	Wickham fine sandy loam, 0 to 2 percent slopes	487	0.4
49B	Wickham fine sandy loam, 2 to 6 percent slopes	521	0.4
50B3	Wickham sandy clay loam, 2 to 6 percent slopes, severely eroded	225	0.2
51A	Yeopim silt loam, 0 to 2 percent slopes	309	0.2
51B	Yeopim silt loam, 2 to 6 percent slopes	2,013	1.5
W	Water	14,700	11.2
	Total	130,800	100.0

* Less than 0.1 percent.

Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields

Yields are those that can be expected under a high level of management. They are for nonirrigated areas. 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 soil name	Land capability	Virginia Soil Management Group	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
			Bu	Tons	AUM	Bu	Bu
1A:							
Altavista----------	2w	B	160	8.0	11.5	50	64
2A:							
Augusta-----------	4w	Z	100	2.0	5.0	35	40
3A:							
Bethera-----------	6w	OO	65	2.0	3.0	20	24
4A:							
Bibb--------------	6w	EE	---	---	2.0	---	---
5A:							
Bojac-------------	2s	DD	85	3.5	6.0	25	56
5B:							
Bojac-------------	2e	DD	85	3.5	6.0	25	56
6B:							
Caroline----------	2e	AA	100	3.0	8.0	35	56
7B:							
Caroline----------	2e	AA	100	3.0	8.0	35	56
Emporia-----------	2e	R	120	4.0	8.5	40	56
7C:							
Caroline----------	3e	AA	88	2.6	6.6	31	50
Emporia-----------	3e	R	105	3.5	8.0	35	49
8B:							
Catpoint----------	3s	II	65	2.0	3.0	20	48
9A:							
Chickahominy------	4w	LL	65	3.0	4.5	20	24
10A:							
Chickahominy------	6w	LL	55	2.0	3.5	15	14
11B:							
Conetoe-----------	2s	DD	85	3.5	9.0	25	56
12B:							
Craven------------	2e	HH	85	3.0	5.3	25	48
13C3:							
Craven------------	4e	HH	52	1.8	5.0	15	30
14B:							
Craven------------	2e	HH	85	3.0	5.3	25	48
Caroline----------	2e	AA	100	3.0	8.0	35	56
15C3:							
Craven------------	4e	HH	52	1.8	3.0	15	30
Caroline----------	3e	AA	62	1.8	4.0	22	35

Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
			Bu	Tons	AUM	Bu	Bu
16C:							
Craven------------	3e	HH	75	2.6	5.3	22	42
Remlik------------	4s	DD	75	3.1	6.6	22	49
17C:							
Craven------------	3e	HH	75	2.6	5.3	22	42
Uchee-------------	4s	DD	75	3.1	6.6	22	49
18A:							
Dogue-------------	2w	K	130	4.5	9.5	40	64
18B:							
Dogue-------------	2e	K	130	4.5	9.5	40	64
18C:							
Dogue-------------	3e	K	114	4.0	8.0	35	56
19A:							
Dragston----------	4w	E	140	4.0	6.0	40	64
20B:							
Emporia-----------	2e	R	120	4.0	8.5	40	56
21B:							
Emporia-----------	2e	R	108	3.6	7.5	36	50
22B:							
Emporia-----------	2e	R	120	4.0	8.5	40	56
23B:							
Emporia-----------	2e	R	120	4.0	8.5	40	56
Kempsville--------	2e	S	120	3.5	9.5	40	56
24B:							
Izagora-----------	2e	J	130	3.5	9.0	40	56
25B:							
Kempsville--------	2e	S	120	3.5	9.5	40	56
26A:							
Lawnes------------	7w	PP	---	---	---	---	---
27B:							
Masada------------	2e	L	130	4.0	10.6	40	64
28B3:							
Masada------------	3e	L	91	2.8	8.0	28	45
29A:							
Mattan------------	7w	PP	---	---	---	---	---
30A:							
Munden------------	2w	F	140	6.0	7.0	40	64
31A:							
Nahunta-----------	2w	OO	65	2.0	3.0	15	24
32B:							
Nansemond---------	2e	F	140	4.0	7.5	40	64

Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
			Bu	Tons	AUM	Bu	Bu
33A, 34A:							
Nawney------------	7w	PP	---	---	---	---	---
35D:							
Nevarc------------	4e	HH	68	2.4	5.5	20	38
Remlik------------	4e	DD	68	2.8	5.0	20	45
35E:							
Nevarc------------	6e	HH	---	---	4.5	---	---
Remlik------------	6e	DD	---	---	4.5	---	---
35F:							
Nevarc------------	7e	HH	---	---	---	---	---
Remlik------------	7e	DD	---	---	---	---	---
36A:							
Newflat-----------	4w	LL	65	3.0	5.0	20	24
37A:							
Nimmo-------------	4w	E	140	4.0	5.0	40	64
38A:							
Pamunkey----------	1	B	160	4.5	9.0	50	64
38B:							
Pamunkey----------	2e	B	160	4.5	9.0	50	64
38C:							
Pamunkey----------	3e	B	141	4.0	8.0	44	48
39A:							
Peawick-----------	2w	HH	85	4.5	7.0	25	48
39B:							
Peawick-----------	2e	HH	85	4.5	7.0	25	48
40A:							
Roanoke-----------	4w	NN	65	3.0	4.0	20	24
41A:							
Seabrook----------	3s	EE	85	3.0	4.0	25	48
42B:							
Slagle------------	2e	K	130	4.5	7.5	40	64
43B:							
Slagle------------	2e	K	130	4.5	7.5	40	64
Emporia-----------	2e	R	120	4.0	8.5	40	56
44A:							
Tomotley----------	4w	OO	65	4.5	5.0	20	24
45B:							
Turbeville--------	2e	O	130	4.0	8.5	40	64
46B:							
Uchee-------------	3s	DD	85	3.5	6.0	25	56

Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
			Bu	Tons	AUM	Bu	Bu
47B:							
Udorthents--------	---		---	---	---	---	---
48B:							
Udorthents--------	---		---	---	---	---	---
49A:							
Wickham-----------	1	B	160	4.5	9.5	50	64
49B:							
Wickham-----------	2e	B	160	4.5	9.5	50	64
50B3:							
Wickham-----------	3e	B	112	3.1	8.0	35	45
51A:							
Yeopim------------	2w	K	130	4.5	9.0	40	64
51B:							
Yeopim------------	2e	K	130	4.5	9.0	40	64

Prime Farmland and other Important Farmland

(Only the soils considered prime are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Map unit name
1A	Altavista fine sandy loam, 0 to 3 percent slopes
2A	Augusta sandy loam, 0 to 2 percent slopes
5A	Bojac loamy fine sand, 0 to 2 percent slopes
5B	Bojac loamy fine sand, 2 to 6 percent slopes
6B	Caroline silt loam, 2 to 6 percent slopes
7B	Caroline-Emporia complex, 2 to 6 percent slopes
11B	Conetoe loamy sand, 0 to 4 percent slopes
12B	Craven loam, 2 to 6 percent slopes
14B	Craven-Caroline complex, 2 to 6 percent slopes
18A	Dogue silt loam, 0 to 2 percent slopes
18B	Dogue silt loam, 2 to 6 percent slopes
19A	Dragston fine sandy loam, 0 to 2 percent slopes (prime farmland if drained)
20B	Emporia fine sandy loam, 2 to 6 percent slopes
21B	Emporia gravelly fine sandy loam, 2 to 6 percent slopes
22B	Emporia loam, 2 to 6 percent slopes
23B	Emporia-Kempsville complex, 2 to 6 percent slopes
24B	Izagora silt loam, 0 to 4 percent slopes
25B	Kempsville loamy sand, 2 to 6 percent slopes
27B	Masada loam, 2 to 6 percent slopes
30A	Munden loamy sand, 0 to 2 percent slopes
32B	Nansemond loamy sand, 0 to 4 percent slopes
38A	Pamunkey loam, 0 to 2 percent slopes
38B	Pamunkey loam, 2 to 6 percent slopes
42B	Slagle fine sandy loam, 0 to 4 percent slopes
43B	Slagle-Emporia complex, 2 to 6 percent slopes
45B	Turbeville loam, 2 to 6 percent slopes
49A	Wickham fine sandy loam, 0 to 2 percent slopes
49B	Wickham fine sandy loam, 2 to 6 percent slopes
51A	Yeopim silt loam, 0 to 2 percent slopes
51B	Yeopim silt loam, 2 to 6 percent slopes

Hydric Soils List

Map symbol	Soil name
3A	Bethera silt loam, 0 to 2 percent slopes
4A	Bibb fine sandy loam, 0 to 2 percent slopes, frequently flooded
9A	Chickahominy loam, 0 to 2 percent slopes
10A	Chickahominy loam, 0 to 2 percent slopes, ponded
26A	Lawnes muck, 0 to 1 percent slopes, very frequently flooded
29A	Mattan mucky loam, 0 to 1 percent slopes, very frequently flooded
33A	Nawney silt loam, 0 to 2 percent slopes, frequently flooded
34A	Nawney silt loam, 0 to 2 percent slopes, ponded
37A	Nimmo sandy loam, 0 to 2 percent slopes
40A	Roanoke silt loam, 0 to 2 percent slopes
44A	Tomotley fine sandy loam, 0 to 2 percent slopes

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
1A:				
Altavista	Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Too acid	0.11	Too acid	0.42
2A:				
Augusta	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.11	Too acid	0.42
3A:				
Bethera	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Too acid	1.00
	Too acid	0.94	Ponding	1.00
4A:				
Bibb	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
	Too acid	0.73	Too acid	1.00
5A, 5B:				
Bojac	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.68	Filtering capacity	0.99
	Droughty	0.03	Droughty	0.03
6B:				
Caroline	Somewhat limited		Somewhat limited	
	Slow water movement	0.89	Slow water movement	0.78
7B:				
Caroline	Somewhat limited		Somewhat limited	
	Slow water movement	0.89	Slow water movement	0.78
Emporia	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.68	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge	
	Rating class and limiting features	Value	Rating class and limiting features	Value
7C:				
Caroline------------	Somewhat limited		Somewhat limited	
	Slow water movement	0.89	Slow water movement	0.78
	Slope	0.01	Slope	0.01
Emporia-------------	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.68	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
8B:				
Catpoint------------	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.68	Filtering capacity	0.99
	Leaching	0.45	Droughty	0.09
9A:				
Chickahominy--------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.94	Too acid	1.00
10A:				
Chickahominy--------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Too acid	1.00
11B:				
Conetoe-------------	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.56	Filtering capacity	0.99
	Leaching	0.45		
12B:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	0.91
	Too acid	0.32	Depth to saturated zone	0.86
13C3:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	1.00
	Too acid	0.73	Depth to saturated zone	0.86

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
14B:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	0.91
	Too acid	0.32	Depth to saturated zone	0.86
Caroline------------	Somewhat limited		Somewhat limited	
	Slow water movement	0.89	Slow water movement	0.78
15C3:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	1.00
	Too acid	0.73	Depth to saturated zone	0.86
Caroline------------	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.73	Slow water movement	0.78
	Slope	0.01	Slope	0.01
16C:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	0.91
	Too acid	0.32	Depth to saturated zone	0.86
Remlik--------------	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.89	Filtering capacity	0.99
	Leaching	0.45	Slope	0.01
17C:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Too acid	0.91
	Too acid	0.32	Depth to saturated zone	0.86
Uchee---------------	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.62	Filtering capacity	0.99
	Leaching	0.45	Slow water movement	0.22

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge	
	Rating class and limiting features	Value	Rating class and limiting features	Value
18A, 18B, 18C:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Slow water movement	0.30	Slow water movement	0.22
	Too acid	0.02	Too acid	0.07
19A:				
Dragston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.68	Filtering capacity	0.99
20B:				
Emporia	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.68	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
21B, 22B:				
Emporia	Somewhat limited		Somewhat limited	
	Slow water movement	0.89	Too acid	0.91
	Too acid	0.32	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
23B:				
Emporia	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.68	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
Kempsville	Somewhat limited		Somewhat limited	
	Too acid	0.32	Too acid	0.91
24B:				
Izagora	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Too acid	0.01	Too acid	0.03
25B:				
Kempsville	Somewhat limited		Somewhat limited	
	Too acid	0.32	Too acid	0.91

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
26A:				
Lawnes	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
27B, 28B3:				
Masada	Somewhat limited		Somewhat limited	
	Too acid	0.32	Too acid	0.91
29A:				
Mattan	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
30A:				
Munden	Very limited		Very limited	
	Depth to saturated zone	0.99	Too acid	1.00
	Too acid	0.68	Depth to saturated zone	0.99
31A:				
Nahunta	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.68	Too acid	1.00
32B:				
Nansemond	Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Too acid	0.32	Too acid	0.91
33A:				
Nawney	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
	Too acid	0.73	Too acid	1.00
34A:				
Nawney	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
35D:				
Nevarc	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.99	Too acid	1.00
	Too acid	0.89	Depth to saturated zone	0.99

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge	
	Rating class and limiting features	Value	Rating class and limiting features	Value
35E, 35F:				
Nevarc	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Slow water movement	1.00
Remlik	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.89	Filtering capacity	0.99
	Slope	0.84	Slope	0.84
	Depth to saturated zone	0.99	Too acid	1.00
Remlik	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.89	Filtering capacity	0.99
36A:				
Newflat	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.73	Too acid	1.00
37A:				
Nimmo	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.73	Too acid	1.00
	Runoff	0.40		
38A, 38B:				
Pamunkey	Somewhat limited		Somewhat limited	
	Too acid	0.02	Too acid	0.07
38C:				
Pamunkey	Somewhat limited		Somewhat limited	
	Too acid	0.02	Too acid	0.07
	Slope	0.01	Slope	0.01
39A, 39B:				
Peawick	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.99	Too acid	1.00
	Too acid	0.89	Depth to saturated zone	0.99
40A:				
Roanoke	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slow water movement	1.00
	Too acid	0.73	Too acid	1.00

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
41A:				
Seabrook	Very limited		Very limited	
	Filtering capacity	0.99	Filtering capacity	0.99
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Droughty	0.20	Too acid	0.42
42B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Slow water movement	0.89	Too acid	0.91
	Too acid	0.32	Slow water movement	0.78
43B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Slow water movement	0.89	Too acid	0.91
	Too acid	0.32	Slow water movement	0.78
Emporia	Somewhat limited		Very limited	
	Slow water movement	0.89	Too acid	1.00
	Too acid	0.68	Slow water movement	0.78
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
44A:				
Tomotley	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.89	Too acid	1.00
	Leaching	0.70		
45B:				
Turbeville	Somewhat limited		Very limited	
	Too acid	0.68	Too acid	1.00
	Low adsorption	0.59	Low adsorption	0.15
46B:				
Uchee	Very limited		Very limited	
	Filtering capacity	0.99	Too acid	1.00
	Too acid	0.62	Filtering capacity	0.99
	Leaching	0.45	Slow water movement	0.22
47B, 48B:				
Udorthents	Not rated		Not rated	
49A, 49B:				
Wickham	Somewhat limited		Somewhat limited	
	Too acid	0.32	Too acid	0.91

Agricultural Disposal of Manure, Food-Processing Waste, and Sewage Sludge—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge	
	Rating class and limiting features	Value	Rating class and limiting features	Value
50B3:				
Wickham-------------	Somewhat limited		Somewhat limited	
	Too acid	0.32	Too acid	0.91
51A, 51B:				
Yeopim--------------	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Slow water movement	0.30	Too acid	0.42
	Too acid	0.11	Slow water movement	0.22

Agricultural Disposal of Wastewater by Irrigation and Overland Flow

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
1A:				
Altavista	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Too acid	0.42	Depth to saturated zone	0.99
			Too acid	0.42
2A:				
Augusta	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	0.42	Depth to saturated zone	1.00
			Too acid	0.42
3A:				
Bethera	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	1.00	Seepage	1.00
	Ponding	1.00	Too acid	1.00
4A:				
Bibb	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Too acid	1.00	Seepage	1.00
5A:				
Bojac	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Filtering capacity	0.99	Too acid	1.00
	Droughty	0.03		
5B:				
Bojac	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Filtering capacity	0.99	Too acid	1.00
	Too steep for surface application	0.08		
6B:				
Caroline	Somewhat limited		Very limited	
	Slow water movement	0.78	Seepage	1.00
	Too steep for surface application	0.08		

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
7B:				
Caroline	Somewhat limited		Very limited	
	Slow water movement	0.78	Seepage	1.00
	Too steep for surface application	0.08		
Emporia	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Slow water movement	0.78	Too acid	1.00
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
7C:				
Caroline	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Slow water movement	0.78	Too steep for surface application	0.22
	Too steep for sprinkler application	0.10		
Emporia	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
	Slow water movement	0.78	Too steep for surface application	0.22
8B:				
Catpoint	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Filtering capacity	0.99	Too acid	1.00
	Droughty	0.09		
9A, 10A:				
Chickahominy	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
11B:				
Conetoe	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Filtering capacity	0.99	Too acid	1.00

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
12B:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Too acid	0.91	Too acid	0.91
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
13C3:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Too acid	1.00	Depth to saturated zone	0.86
	Too steep for surface application	1.00	Too steep for surface application	0.22
14B:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Too acid	0.91	Too acid	0.91
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
Caroline	Somewhat limited		Very limited	
	Slow water movement	0.78	Seepage	1.00
	Too steep for surface application	0.08		
15C3:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Too acid	1.00	Depth to saturated zone	0.86
	Too steep for surface application	1.00	Too steep for surface application	0.22
Caroline	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Too steep for surface application	1.00	Too acid	1.00
	Slow water movement	0.78	Too steep for surface application	0.22
16C:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Too steep for surface application	1.00	Too acid	0.91
	Too acid	0.91	Depth to saturated zone	0.86

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
Remlik	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
	Filtering capacity	0.99	Too steep for surface application	0.22
17C:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Too steep for surface application	1.00	Too acid	0.91
	Too acid	0.91	Depth to saturated zone	0.86
Uchee	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Too steep for surface application	1.00	Too acid	1.00
	Filtering capacity	0.99	Too steep for surface application	0.22
18A:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Slow water movement	0.22	Depth to saturated zone	0.99
	Too acid	0.07	Too acid	0.07
18B:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Slow water movement	0.22	Depth to saturated zone	0.99
	Too steep for surface application	0.08	Too acid	0.07
18C:				
Dogue	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Slow water movement	0.22	Too steep for surface application	0.2

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation		Overland flow of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
19A:				
Dragston	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.99	Too acid	1.00
20B:				
Emporia	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Slow water movement	0.78	Too acid	1.00
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
21B, 22B:				
Emporia	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Slow water movement	0.78	Too acid	0.91
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
23B:				
Emporia	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Slow water movement	0.78	Too acid	1.00
	Depth to saturated zone	0.09	Depth to saturated zone	0.09
Kempsville	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Too steep for surface application	0.08	Too acid	0.91
24B:				
Izagora	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Too acid	0.03	Too acid	0.03
25B:				
Kempsville	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Too steep for surface application	0.08	Too acid	0.91
26A:				
Lawnes	Very limited		Very limited	
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation		Overland flow of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
27B, 28B3:				
Masada	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Too steep for surface application	0.08	Too acid	0.91
29A:				
Mattan	Very limited		Very limited	
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
30A:				
Munden	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Too acid	1.00
			Depth to saturated zone	0.99
31A:				
Nahunta	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Depth to saturated zone	1.00
			Too acid	1.00
32B:				
Nansemond	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Too acid	0.91	Depth to saturated zone	0.99
			Too acid	0.91
33A:				
Nawney	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Too acid	1.00	Seepage	1.00
34A:				
Nawney	Very limited		Very limited	
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
35D:				
Nevarc	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Slow water movement	1.00	Too steep for surface application	1.00
	Too acid	1.00	Too acid	1.00

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
Remlik	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Too steep for surface application	1.00
	Filtering capacity	0.99	Too acid	1.00
			Too acid	1.00
35E, 35F:				
Nevarc	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Too steep for surface application	1.00
	Slow water movement	1.00	Too acid	1.00
Remlik	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Too steep for surface application	1.00
	Too acid	1.00	Too acid	1.00
36A:				
Newflat	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
37A:				
Nimmo	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Depth to saturated zone	1.00
			Too acid	1.00
38A:				
Pamunkey	Somewhat limited		Very limited	
	Too acid	0.07	Seepage	1.00
			Too acid	0.07
38B:				
Pamunkey	Somewhat limited		Very limited	
	Too steep for surface application	0.08	Seepage	1.00
	Too acid	0.07	Too acid	0.07

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
38C:				
Pamunkey	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.10	Too steep for surface application	0.22
	Too acid	0.07	Too acid	0.07
39A, 39B:				
Peawick	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
40A:				
Roanoke	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
41A:				
Seabrook	Very limited		Very limited	
	Filtering capacity	0.99	Seepage	1.00
	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Too acid	0.42	Too acid	0.42
42B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Too acid	0.91	Depth to saturated zone	0.99
	Slow water movement	0.78	Too acid	0.91
43B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Too acid	0.91	Depth to saturated zone	0.99
	Slow water movement	0.78	Too acid	0.91
Emporia	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Slow water movement	0.78	Too acid	1.00
	Depth to saturated zone	0.09	Depth to saturated zone	0.09

Agricultural Disposal of Wastewater by Irrigation and Overland Flow—Continued

Map symbol and soil name	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
44A:				
Tomotley	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Too acid	1.00	Depth to saturated zone	1.00
			Too acid	1.00
45B:				
Turbeville	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Low adsorption	0.59	Too acid	1.00
	Too steep for surface application	0.08	Low adsorption	0.59
46B:				
Uchee	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Filtering capacity	0.99	Too acid	1.00
	Slow water movement	0.22		
47B, 48B:				
Udorthents	Not rated		Not rated	
49A:				
Wickham	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
			Too acid	0.91
49B, 50B3:				
Wickham	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Too steep for surface application	0.08	Too acid	0.91
51A, 51B:				
Yeopim	Somewhat limited		Very limited	
	Depth to saturated zone	0.95	Seepage	1.00
	Too acid	0.42	Depth to saturated zone	0.95
	Slow water movement	0.22	Too acid	0.42

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
1A:				
Altavista	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Slow water movement	1.00	Too acid	0.42
	Too acid	0.77		
2A:				
Augusta	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Too acid	0.42
	Too acid	0.07		
3A:				
Bethera	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Too acid	1.00
	Ponding	1.00	Ponding	1.00
4A:				
Bibb	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Slow water movement	1.00	Too acid	1.00
5A:				
Bojac	Very limited		Very limited	
	Depth to saturated zone	1.00	Too acid	1.00
	Slow water movement	0.32	Filtering capacity	0.99
5B:				
Bojac	Very limited		Very limited	
	Depth to saturated zone	1.00	Too acid	1.00
	Slow water movement	0.32	Filtering capacity	0.99
			Too steep for surface application	0.08

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
6B:				
Caroline------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.60
			Too steep for surface application	0.08
7B:				
Caroline------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.60
			Too steep for surface application	0.08
Emporia-------------	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	0.09	Slow water movement	0.60
	Too acid	0.07	Depth to saturated zone	0.09
7C:				
Caroline------------	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Slope	1.00	Slow water movement	0.60
			Too steep for sprinkler irrigation	0.22
Emporia-------------	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Slope	1.00	Too acid	1.00
	Depth to saturated zone	0.09	Slow water movement	0.60
8B:				
Catpoint------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Too acid	1.00
	Too acid	0.07	Filtering capacity	0.99
9A:				
Chickahominy--------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slow water movement	1.00
	Too acid	0.55	Too acid	1.00

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
10A:				
Chickahominy	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slow water movement	1.00
	Ponding	1.00	Too acid	1.00
11B:				
Conetoe	Somewhat limited		Very limited	
	Slow water movement	0.32	Too acid	1.00
			Filtering capacity	0.99
12B:				
Craven	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.94
	Depth to saturated zone	1.00	Too acid	0.91
	Too acid	0.55	Depth to saturated zone	0.86
13C3:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Slope	1.00	Slow water movement	0.94
14B:				
Craven	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.94
	Depth to saturated zone	1.00	Too acid	0.91
	Too acid	0.55	Depth to saturated zone	0.86
Caroline	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.60
			Too steep for surface application	0.08
15C3:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Slope	1.00	Slow water movement	0.94

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
Caroline	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Slope	1.00	Too steep for surface application	1.00
			Slow water movement	0.60
16C:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Depth to saturated zone	1.00	Slow water movement	0.94
	Slope	1.00	Too acid	0.91
Remlik	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.62	Too acid	1.00
	Too acid	0.55	Filtering capacity	0.99
17C:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Depth to saturated zone	1.00	Slow water movement	0.94
	Slope	1.00	Too acid	0.91
Uchee	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Slope	1.00	Too steep for surface application	1.00
	Too acid	0.03	Filtering capacity	0.99
18A:				
Dogue	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Slow water movement	0.15
	Too acid	0.55	Too acid	0.07
18B:				
Dogue	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Slow water movement	0.15

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
	Too acid	0.55	Too steep for surface application	0.08
18C:				
Dogue	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Slope	1.00	Too steep for sprinkler irrigation	0.22
19A:				
Dragston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.32	Too acid	1.00
	Too acid	0.07	Filtering capacity	0.99
20B, 21B, 22B:				
Emporia	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	0.09	Slow water movement	0.60
	Too acid	0.07	Depth to saturated zone	0.09
23B:				
Emporia	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	0.09	Slow water movement	0.60
	Too acid	0.07	Depth to saturated zone	0.09
Kempsville	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.91
	Too acid	0.07	Too steep for surface application	0.08
24B:				
Izagora	Very limited		Somewhat limited	
	Slow water movement	1.00	Slow water movement	0.94
	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too acid	0.14	Too acid	0.03
25B:				
Kempsville	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.91
	Too acid	0.07	Too steep for surface application	0.08

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
26A:				
Lawnes	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
27B, 28B3:				
Masada	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.91
	Too acid	0.07	Too steep for surface application	0.08
29A:				
Mattan	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
30A:				
Munden	Very limited		Very limited	
	Depth to saturated zone	1.00	Too acid	1.00
	Slow water movement	0.62	Depth to saturated zone	0.99
	Too acid	0.07		
31A:				
Nahunta	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Too acid	1.00
	Too acid	0.07		
32B:				
Nansemond	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Slow water movement	0.32	Too acid	0.91
	Too acid	0.14		
33A:				
Nawney	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to	1.00	Flooding	1.00
	Depth to	1.00	Too acid	1.00
	Slow water movement	1.00		

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
34A:				
Nawney	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
35D, 35E, 35F:				
Nevarc	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
	Depth to saturated zone	0.99	Too acid	1.00
Remlik	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
	Too acid	0.55	Too acid	1.00
36A:				
Newflat	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slow water movement	1.00
	Too acid	0.14	Too acid	1.00
37A:				
Nimmo	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Too acid	1.00
	Too acid	0.14		
38A:				
Pamunkey	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.07
38B:				
Pamunkey	Very limited		Somewhat limited	
	Slow water movement	1.00	Too steep for surface application	0.08
			Too acid	0.07

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
38C:				
Pamunkey	Very limited		Very limited	
	Slow water movement	1.00	Too steep for surface application	1.00
	Slope	1.00	Too steep for sprinkler irrigation	0.22
			Too acid	0.07
39A, 39B:				
Peawick	Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.99	Too acid	1.00
	Too acid	0.55	Depth to saturated zone	0.99
40A:				
Roanoke	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Too acid	1.00
	Too acid	0.14	Slow water movement	0.94
41A:				
Seabrook	Very limited		Very limited	
	Depth to saturated zone	1.00	Filtering capacity	0.99
	Too acid	0.07	Depth to saturated zone	0.86
			Too acid	0.42
42B:				
Slagle	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Too acid	0.91
	Too acid	0.14	Slow water movement	0.60
42B:				
Slagle	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Too acid	0.91
	Too acid	0.14	Slow water movement	0.60
43B:				
Slagle	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Too acid	0.91
	Too acid	0.14	Slow water movement	0.60

Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Rate Treatment—Continued

Map symbol and soil name	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Emporia	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Depth to saturated zone	0.09	Slow water movement	0.60
	Too acid	0.07	Depth to saturated zone	0.09
44A:				
Tomotley	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Too acid	1.00
	Too acid	0.55		
45B:				
Turbeville	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
			Low adsorption	0.59
			Too steep for surface application	0.08
46B:				
Uchee	Very limited		Very limited	
	Slow water movement	1.00	Too acid	1.00
	Too acid	0.03	Filtering capacity	0.99
			Slow water movement	0.15
47B, 48B:				
Udorthents	Not rated		Not rated	
49A:				
Wickham	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.91
49B, 50B3:				
Wickham	Very limited		Somewhat limited	
	Slow water movement	1.00	Too acid	0.91
			Too steep for surface application	0.08
51A, 51B:				
Yeopim	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.95
	Depth to saturated zone	1.00	Too acid	0.42
			Slow water movement	0.15

Forestland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
1A:				
Altavista	loblolly pine	91	129	loblolly pine
	longleaf pine	87	114	
	southern red oak	77	52	
	white oak	77	57	
2A:				
Augusta	American sycamore	90	100	American sycamore, cherrybark oak, loblolly pine, sweetgum, yellow-poplar
	loblolly pine	90	129	
	southern red oak	80	57	
	sweetgum	90	100	
	white oak	70	57	
3A:				
Bethera	sweetgum	95	114	sweetgum
4A:				
Bibb	loblolly pine	100	157	eastern cottonwood, loblolly pine, sweetgum, yellow-poplar
	sweetgum	90	100	
	water oak	90	86	
5A, 5B:				
Bojac	loblolly pine	80	114	loblolly pine, sweetgum
	southern red oak	70	57	
	sweetgum	80	86	
	Virginia pine	75	114	
6B:				
Caroline	loblolly pine	76	100	loblolly pine
	shortleaf pine	70	114	
	southern red oak	70	57	
	Virginia pine	70	114	
	white oak	75	57	
7B, 7C:				
Caroline	loblolly pine	76	100	loblolly pine
	shortleaf pine	70	114	
	southern red oak	70	57	
	Virginia pine	70	114	
	white oak	75	57	
Emporia	loblolly pine	75	100	loblolly pine, sweetgum
	southern red oak	70	57	
8B:				
Catpoint	loblolly pine	80	114	loblolly pine
	sweetgum	80	86	
	water oak	70	57	
9A:				
Chickahominy	loblolly pine	88	129	loblolly pine, sweetgum
	sweetgum	95	114	
10A:				
Chickahominy	sweetgum	65	43	---
11B:				
Conetoe	loblolly pine	85	114	loblolly pine, longleaf pine
	southern red oak	70	57	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
12B:				
Craven-------------------	loblolly pine-------	88	129	loblolly pine
	southern red oak----	90	72	
	white oak-----------	90	72	
	willow oak----------	85	86	
13C3:				
Craven-------------------	loblolly pine-------	80	114	loblolly pine
	southern red oak----	82	72	
14B:				
Craven-------------------	loblolly pine-------	88	129	loblolly pine
	southern red oak----	90	72	
	white oak-----------	90	72	
	willow oak----------	85	86	
Caroline-----------------	loblolly pine-------	76	100	loblolly pine
	shortleaf pine------	70	114	
	southern red oak----	70	57	
	Virginia pine-------	70	114	
	white oak-----------	75	57	
15C3:				
Craven-------------------	loblolly pine-------	80	114	loblolly pine
	southern red oak----	82	72	
Caroline-----------------	loblolly pine-------	76	100	loblolly pine
	shortleaf pine------	70	114	
	southern red oak----	70	57	
	Virginia pine-------	70	114	
	white oak-----------	75	57	
16C:				
Craven-------------------	loblolly pine-------	88	129	loblolly pine
	southern red oak----	90	72	
	white oak-----------	90	72	
	willow oak----------	85	86	
Remlik-------------------	loblolly pine-------	80	114	loblolly pine
	southern red oak----	74	57	
	Virginia pine-------	74	114	
	yellow-poplar-------	80	72	
17C:				
Craven-------------------	loblolly pine-------	88	129	loblolly pine
	southern red oak----	90	72	
	white oak-----------	90	72	
	willow oak----------	85	86	
Uchee--------------------	loblolly pine-------	80	114	loblolly pine, longleaf pine
	longleaf pine-------	67	72	
	southern red oak----	80	72	
18A, 18B, 18C:				
Dogue--------------------	loblolly pine-------	90	129	loblolly pine
	southern red oak----	80	57	
	sweetgum------------	90	100	
	white oak-----------	80	57	
	yellow-poplar-------	93	100	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
19A:				
Dragston	loblolly pine	86	129	loblolly pine, sweetgum, yellow-poplar
	southern red oak	80	57	
	sweetgum	90	100	
	yellow-poplar	90	86	
20B:				
Emporia	loblolly pine	75	100	loblolly pine, sweetgum
	southern red oak	70	57	
	white oak	85	57	
21B, 22B:				
Emporia	loblolly pine	75	100	loblolly pine, sweetgum
	southern red oak	70	57	
23B:				
Emporia	loblolly pine	75	100	loblolly pine, sweetgum
	southern red oak	70	57	
Kempsville	loblolly pine	82	114	loblolly pine
	southern red oak	74	60	
	sweetgum	80	86	
	Virginia pine	74	114	
	yellow-poplar	82	72	
24B:				
Izagora	loblolly pine	90	129	loblolly pine, sweetgum, water oak, yellow-poplar
	sweetgum	90	100	
	water oak	90	86	
	yellow-poplar	100	114	
25B:				
Kempsville	loblolly pine	82	114	loblolly pine
	southern red oak	74	60	
	sweetgum	80	86	
	Virginia pine	74	114	
	yellow-poplar	82	72	
26A:				
Lawnes	---	---	---	---
27B, 28B3:				
Masada	eastern white pine	82	143	eastern white pine, loblolly pine, yellow-poplar
	loblolly pine	80	114	
	shortleaf pine	85	143	
	southern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	80	72	
29A:				
Mattan	baldcypress	100	143	---
30A:				
Munden	loblolly pine	90	129	loblolly pine
	southern red oak	76	72	
	sweetgum	90	100	
	white oak	76	57	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
31A:				
Nahunta-----------------	loblolly pine-------	87	129	loblolly pine
	southern red oak----	72	58	
32B:				
Nansemond---------------	loblolly pine-------	86	129	black walnut,
	shortleaf pine------	77	129	loblolly pine,
	southern red oak----	82	72	sweetgum, yellow-
	sweetgum------------	90	100	poplar
	yellow-poplar-------	90	86	
33A:				
Nawney------------------	baldcypress---------	100	143	water tupelo
	sweetgum------------	94	114	
34A:				
Nawney------------------	baldcypress---------	100	143	---
	sweetgum------------	90	100	
35D, 35E, 35F:				
Nevarc------------------	loblolly pine-------	77	100	loblolly pine
	southern red oak----	70	57	
	sweetgum------------	76	72	
	white oak-----------	70	57	
	yellow-poplar-------	80	72	
Remlik------------------	loblolly pine-------	80	114	loblolly pine
	southern red oak----	74	57	
	Virginia pine-------	74	114	
	yellow-poplar-------	80	72	
36A:				
Newflat-----------------	loblolly pine-------	90	129	loblolly pine,
	southern red oak----	70	57	sweetgum
	sweetgum------------	95	114	
37A:				
Nimmo-------------------	loblolly pine-------	95	143	loblolly pine,
	southern red oak----	80	72	sweetgum
	sweetgum------------	95	114	
	water oak-----------	80	72	
	white oak-----------	80	57	
38A, 38B, 38C:				
Pamunkey----------------	loblolly pine-------	86	129	black walnut,
	shortleaf pine------	80	129	loblolly pine,
	southern red oak----	80	57	yellow-poplar
	Virginia pine-------	80	114	
	yellow-poplar-------	90	86	
39A, 39B:				
Peawick-----------------	loblolly pine-------	77	100	loblolly pine
	southern red oak----	73	72	
40A:				
Roanoke-----------------	southern red oak----	75	72	sweetgum
	sweetgum------------	90	100	
	white oak-----------	75	57	
	willow oak----------	76	57	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
41A:				
Seabrook	loblolly pine	81	114	loblolly pine, longleaf pine
	southern red oak	75	62	
42B:				
Slagle	loblolly pine	86	129	loblolly pine, sweetgum, yellow-poplar
	southern red oak	76	62	
	sweetgum	86	100	
	water oak	76	72	
	yellow-poplar	90	86	
43B:				
Slagle	loblolly pine	86	129	loblolly pine, sweetgum, yellow-poplar
	southern red oak	76	57	
	sweetgum	86	100	
	water oak	76	72	
	yellow-poplar	90	86	
Emporia	loblolly pine	75	100	loblolly pine, sweetgum
	southern red oak	70	57	
44A:				
Tomotley	loblolly pine	97	143	loblolly pine
	water oak	78	72	
	willow oak	86	86	
45B:				
Turbeville	loblolly pine	80	114	loblolly pine, yellow-poplar
	shortleaf pine	70	114	
	southern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	84	86	
46B:				
Uchee	loblolly pine	80	114	loblolly pine, longleaf pine
	longleaf pine	67	72	
	southern red oak	80	72	
47B, 48B:				
Udorthents	---	---	---	---
49A, 49B:				
Wickham	loblolly pine	90	129	loblolly pine
	southern red oak	82	57	
	white oak	84	72	
	yellow-poplar	89	86	
50B3:				
Wickham	loblolly pine	85	114	loblolly pine
	southern red oak	82	72	
51A, 51B:				
Yeopim	loblolly pine	91	129	American sycamore, loblolly pine, sweetgum, yellow-poplar
	southern red oak	75	62	

Haul Roads, Log Landings, and Soil Rutting on Forestland

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
2A:						
Augusta	Slight		Moderately suited		Moderate	
			Wetness	0.50	Low strength	0.50
3A:						
Bethera	Moderate		Poorly suited		Severe	
	Low strength	0.50	Wetness	1.00	Low strength	1.00
			Ponding	0.50		
			Low strength	0.50		
4A:						
Bibb	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
5A, 5B:						
Bojac	Slight		Well suited		Moderate	
					Low strength	0.50
6B:						
Caroline	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
7B:						
Caroline	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
Emporia	Slight		Well suited		Moderate	
					Low strength	0.50
7C:						
Caroline	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Emporia	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
8B:						
Catpoint	Slight		Well suited		Moderate	
					Low strength	0.50
9A:						
Chickahominy	Moderate		Poorly suited		Severe	
	Low strength	0.50	Wetness	1.00	Low strength	1.00
			Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10A:						
Chickahominy	Slight		Poorly suited		Severe	
			Ponding	1.00	Low strength	1.00
			Wetness	1.00		
			Low strength	0.50		
11B:						
Conetoe	Slight		Well suited		Moderate	
					Low strength	0.50
12B:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
13C3:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
14B:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
Caroline	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
15C3:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Caroline	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
16C:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Remlik	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
17C:						
Craven	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Uchee	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
18A, 18B:						
Dogue	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
18C:						
Dogue	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19A:						
Dragston	Moderate		Moderately suited		Moderate	
	Low strength	0.50	Wetness	0.50	Low strength	0.50
20B, 21B:						
Emporia	Slight		Well suited		Moderate	
					Low strength	0.50
22B:						
Emporia	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
23B:						
Emporia	Slight		Well suited		Moderate	
					Low strength	0.50
Kempsville	Slight		Well suited		Moderate	
					Low strength	0.50
24B:						
Izagora	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
25B:						
Kempsville	Slight		Well suited		Moderate	
					Low strength	0.50
26A:						
Lawnes	Severe		Poorly suited		Severe	
	Flooding	1.00	Ponding	1.00	Low strength	1.00
	Wetness	1.00	Flooding	1.00	Wetness	0.50
	Low strength	0.50	Low strength	0.50		
27B, 28B3:						
Masada	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
29A:						
Mattan	Severe		Poorly suited		Severe	
	Flooding	1.00	Ponding	1.00	Low strength	1.00
	Wetness	1.00	Flooding	1.00	Wetness	0.50
			Wetness	1.00		
30A:						
Munden	Slight		Well suited		Moderate	
					Low strength	0.50
31A:						
Nahunta	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
			Wetness	0.50		
32B:						
Nansemond	Slight		Well suited		Moderate	
					Low strength	0.50

Haul Roads, Log Landings, and Soil Rutting on Forestland—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
33A:						
Nawney	Severe		Poorly suited		Severe	
	Flooding	1.00	Flooding	1.00	Low strength	1.00
	Wetness	1.00	Wetness	1.00	Wetness	0.50
	Low strength	0.50	Low strength	0.50		
34A:						
Nawney	Severe		Poorly suited		Severe	
	Flooding	1.00	Ponding	1.00	Low strength	1.00
	Wetness	1.00	Flooding	1.00	Wetness	0.50
	Low strength	0.50	Wetness	1.00		
35D:						
Nevarc	Slight		Poorly suited		Moderate	
			Slope	1.00	Low strength	0.50
Remlik	Slight		Poorly suited		Moderate	
			Slope	1.00	Low strength	0.50
35E:						
Nevarc	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
Remlik	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
35F:						
Nevarc	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
	Low strength	0.50				
Remlik	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
36A:						
Newflat	Moderate		Moderately suited		Severe	
	Low strength	0.50	Wetness	0.50	Low strength	1.00
			Low strength	0.50		
37A:						
Nimmo	Slight		Poorly suited		Moderate	
			Wetness	1.00	Low strength	0.50
38A, 38B:						
Pamunkey	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
38C:						
Pamunkey	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
39A, 39B:						
Peawick	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00

Haul Roads, Log Landings, and Soil Rutting on Forestland—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40A:						
Roanoke	Moderate		Poorly suited		Severe	
	Low strength	0.50	Wetness	1.00	Low strength	1.00
			Low strength	0.50		
41A:						
Seabrook	Slight		Well suited		Moderate	
					Low strength	0.50
42B:						
Slagle	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
43B:						
Slagle	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
Emporia	Slight		Well suited		Moderate	
					Low strength	0.50
44A:						
Tomotley	Slight		Poorly suited		Moderate	
			Wetness	1.00	Low strength	0.50
45B:						
Turbeville	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
46B:						
Uchee	Slight		Well suited		Moderate	
					Low strength	0.50
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B:						
Wickham	Slight		Well suited		Moderate	
					Low strength	0.50
50B3:						
Wickham	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
51A, 51B:						
Yeopim	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00

Hazard of Erosion and Suitability for Roads on Forestland

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Slight		Slight		Moderately suited	
					Low strength	0.50
2A:						
Augusta	Slight		Slight		Moderately suited	
					Wetness	0.50
3A:						
Bethera	Slight		Slight		Poorly suited	
					Wetness	1.00
					Ponding	0.50
					Low strength	0.50
4A:						
Bibb	Slight		Slight		Poorly suited	
					Flooding	1.00
5A, 5B:						
Bojac	Slight		Slight		Well suited	
6B:						
Caroline	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
7B:						
Caroline	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
Emporia	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
7C:						
Caroline	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Emporia	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
8B:						
Catpoint	Slight		Slight		Well suited	
9A:						
Chickahominy	Slight		Slight		Poorly suited	
					Wetness	1.00
					Low strength	0.50
10A:						
Chickahominy	Slight		Slight		Poorly suited	
					Ponding	1.00
					Wetness	1.00
					Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland—Continued

Map symbol and soil name	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11B:						
Conetoe	Slight		Slight		Well suited	
12B:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
13C3:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
14B:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
Caroline	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
15C3:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Caroline	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
16C:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Remlik	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
17C:						
Craven	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Uchee	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
18A:						
Dogue	Slight		Slight		Moderately suited	
					Low strength	0.50
18B:						
Dogue	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
18C:						
Dogue	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland—Continued

Map symbol and soil name	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19A:						
Dragston	Slight		Slight		Moderately suited	
					Wetness	0.50
20B, 21B:						
Emporia	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
22B:						
Emporia	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
23B:						
Emporia	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
Kempsville	Slight		Slight		Well suited	
24B:						
Izagora	Slight		Slight		Moderately suited	
					Low strength	0.50
25B:						
Kempsville	Slight		Slight		Well suited	
26A:						
Lawnes	Slight		Slight		Poorly suited	
					Ponding	1.00
					Flooding	1.00
					Low strength	0.50
27B, 28B3:						
Masada	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
29A:						
Mattan	Very Severe		Very Severe		Poorly suited	
	Organic matter content high	1.00	Organic matter content high	1.00	Ponding	1.00
					Flooding	1.00
					Wetness	1.00
30A:						
Munden	Slight		Slight		Well suited	
31A:						
Nahunta	Slight		Slight		Moderately suited	
					Low strength	0.50
					Wetness	0.50
32B:						
Nansemond	Slight		Slight		Well suited	
33A:						
Nawney	Slight		Slight		Poorly suited	
					Flooding	1.00
					Wetness	1.00
					Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland—Continued

Map symbol and soil name	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
34A:						
Nawney	Slight		Slight		Poorly suited	
					Ponding	1.00
					Flooding	1.00
					Wetness	1.00
35D:						
Nevarc	Slight		Severe		Poorly suited	
			Slope/erodibility	0.95	Slope	1.00
Remlik	Slight		Moderate		Poorly suited	
			Slope/erodibility	0.50	Slope	1.00
35E:						
Nevarc	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Remlik	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
35F:						
Nevarc	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Remlik	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
36A:						
Newflat	Slight		Slight		Moderately suited	
					Wetness	0.50
					Low strength	0.50
37A:						
Nimmo	Slight		Slight		Poorly suited	
					Wetness	1.00
38A:						
Pamunkey	Slight		Slight		Moderately suited	
					Low strength	0.50
38B:						
Pamunkey	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
38C:						
Pamunkey	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
39A:						
Peawick	Slight		Slight		Moderately suited	
					Low strength	0.50
39B:						
Peawick	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland—Continued

Map symbol and soil name	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
40A:						
Roanoke	Slight		Slight		Poorly suited	
					Wetness	1.00
					Low strength	0.50
41A:						
Seabrook	Slight		Slight		Well suited	
42B:						
Slagle	Slight		Slight		Moderately suited	
					Low strength	0.50
43B:						
Slagle	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
Emporia	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
44A:						
Tomotley	Slight		Slight		Poorly suited	
					Wetness	1.00
45B:						
Turbeville	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
46B:						
Uchee	Slight		Slight		Well suited	
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A:						
Wickham	Slight		Slight		Well suited	
49B:						
Wickham	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
50B3:						
Wickham	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
51A:						
Yeopim	Slight		Slight		Moderately suited	
					Low strength	0.50
51B:						
Yeopim	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50

Forestland Planting and Harvesting

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Well suited		Well suited		Moderately suited	
					Low strength	0.50
2A:						
Augusta	Well suited		Well suited		Well suited	
3A:						
Bethera	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
4A:						
Bibb	Well suited		Well suited		Well suited	
5A, 5B:						
Bojac	Well suited		Well suited		Well suited	
6B:						
Caroline	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
7B:						
Caroline	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
Emporia	Well suited		Well suited		Well suited	
7C:						
Caroline	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
Emporia	Well suited		Moderately suited		Well suited	
			Slope	0.50		
8B:						
Catpoint	Well suited		Well suited		Well suited	
9A, 10A:						
Chickahominy	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
11B:						
Conetoe	Well suited		Well suited		Well suited	

Forestland Planting and Harvesting—Continued

Map symbol and soil name	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
12B:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
13C3:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
14B:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
Caroline	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
15C3:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
Caroline	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
16C:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
Remlik	Well suited		Moderately suited		Well suited	
			Slope	0.50		
17C:						
Craven	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
Uchee	Well suited		Moderately suited		Well suited	
			Slope	0.50		
18A, 18B:						
Dogue	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
18C:						
Dogue	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
			Slope	0.50		

Forestland Planting and Harvesting—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19A:						
Dragston	Well suited		Well suited		Well suited	
20B:						
Emporia	Well suited		Well suited		Well suited	
21B:						
Emporia	Well suited		Moderately suited		Well suited	
			Rock fragments	0.50		
22B:						
Emporia	Well suited		Well suited		Moderately suited	
					Low strength	0.50
23B:						
Emporia	Well suited		Well suited		Well suited	
Kempsville	Well suited		Well suited		Well suited	
24B:						
Izagora	Well suited		Well suited		Moderately suited	
					Low strength	0.50
25B:						
Kempsville	Well suited		Well suited		Well suited	
26A:						
Lawnes	Poorly suited		Poorly suited		Poorly suited	
	Wetness	0.75	Wetness	0.75	Wetness	1.00
					Low strength	0.50
27B, 28B3:						
Masada	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
29A:						
Mattan	Poorly suited		Poorly suited		Poorly suited	
	Wetness	0.75	Wetness	0.75	Wetness	1.00
					Low strength	0.50
30A:						
Munden	Well suited		Well suited		Well suited	
31A:						
Nahunta	Well suited		Well suited		Moderately suited	
					Low strength	0.50
32B:						
Nansemond	Well suited		Well suited		Well suited	
33A:						
Nawney	Moderately suited		Poorly suited		Poorly suited	
	Wetness	0.50	Wetness	0.75	Wetness	1.00
					Low strength	0.50

Forestland Planting and Harvesting—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
34A:						
Nawney	Poorly suited		Poorly suited		Poorly suited	
	Wetness	0.75	Wetness	0.75	Wetness	1.00
					Low strength	0.50
35D:						
Nevarc	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Slope	0.50		
Remlik	Well suited		Moderately suited		Well suited	
			Slope	0.50		
35E:						
Nevarc	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
Remlik	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
35F:						
Nevarc	Poorly suited		Unsuited		Poorly suited	
	Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
	Slope	0.50	Stickiness; high plasticity index	0.75		
Remlik	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
36A:						
Newflat	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
37A:						
Nimmo	Well suited		Well suited		Well suited	
38A, 38B:						
Pamunkey	Well suited		Well suited		Moderately suited	
					Low strength	0.50
38C:						
Pamunkey	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
39A, 39B:						
Peawick	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
40A:						
Roanoke	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50

Forestland Planting and Harvesting—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41A:						
Seabrook	Well suited		Well suited		Well suited	
42B:						
Slagle	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
43B:						
Slagle	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
Emporia	Well suited		Well suited		Well suited	
44A:						
Tomotley	Well suited		Well suited		Well suited	
45B:						
Turbeville	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
46B:						
Uchee	Well suited		Well suited		Well suited	
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B:						
Wickham	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
50B3:						
Wickham	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
51A, 51B:						
Yeopim	Well suited		Well suited		Moderately suited	
					Low strength	0.50

Forestland Site Preparation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
1A:				
Altavista	Well suited		Well suited	
2A:				
Augusta	Well suited		Well suited	
3A:				
Bethera	Well suited		Well suited	
4A:				
Bibb	Well suited		Well suited	
5A, 5B:				
Bojac	Well suited		Well suited	
6B:				
Caroline	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
7B, 7C:				
Caroline	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
Emporia	Well suited		Well suited	
8B:				
Catpoint	Well suited		Well suited	
9A, 10A:				
Chickahominy	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
11B:				
Conetoe	Well suited		Well suited	
12B, 13C3:				
Craven	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
14B, 15C3:				
Craven	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
Caroline	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		

Forestland Site Preparation—Continued

Map symbol and soil name	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
	Rating class and limiting features	Value	Rating class and limiting features	Value
16C:				
Craven	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
Remlik	Well suited		Well suited	
17C:				
Craven	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
Uchee	Well suited		Well suited	
18A, 18B, 18C:				
Dogue	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
19A:				
Dragston	Well suited		Well suited	
20B, 21B, 22B:				
Emporia	Well suited		Well suited	
23B:				
Emporia	Well suited		Well suited	
Kempsville	Well suited		Well suited	
24B:				
Izagora	Well suited		Well suited	
25B:				
Kempsville	Well suited		Well suited	
26A:				
Lawnes	Unsuited		Unsuited	
	Wetness	0.75	Wetness	1.00
27B, 28B3:				
Masada	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
29A:				
Mattan	Unsuited		Unsuited	
	Wetness	0.75	Wetness	1.00
30A:				
Munden	Well suited		Well suited	
31A:				
Nahunta	Well suited		Well suited	
32B:				
Nansemond	Well suited		Well suited	

Forestland Site Preparation—Continued

Map symbol and soil name	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
33A:				
Nawney	Poorly suited		Unsuited	
	Wetness	0.50	Wetness	1.00
34A:				
Nawney	Unsuited		Unsuited	
	Wetness	0.75	Wetness	1.00
35D:				
Nevarc	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
Remlik	Well suited		Well suited	
35E:				
Nevarc	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Stickiness; high plasticity index	0.50		
Remlik	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
35F:				
Nevarc	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Stickiness; high plasticity index	0.50		
Remlik	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
36A:				
Newflat	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
37A:				
Nimmo	Well suited		Well suited	
38A, 38B, 38C:				
Pamunkey	Well suited		Well suited	
39A, 39B:				
Peawick	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
40A:				
Roanoke	Poorly suited		Well suited	
	Stickiness; high plasticity index	0.50		
41A:				
Seabrook	Well suited		Well suited	
42B:				
Slagle	Well suited		Well suited	

Forestland Site Preparation—Continued

Map symbol and soil name	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
	Rating class and limiting features	Value	Rating class and limiting features	Value
43B:				
Slagle	Well suited		Well suited	
Emporia	Well suited		Well suited	
44A:				
Tomotley	Well suited		Well suited	
45B:				
Turbeville	Poorly suited Stickiness; high plasticity index	 0.50	Well suited	
46B:				
Uchee	Well suited		Well suited	
47B, 48B:				
Udorthents	Not rated		Not rated	
49A, 49B, 50B3:				
Wickham	Well suited		Well suited	
51A, 51B:				
Yeopim	Well suited		Well suited	

Damage by Fire and Seedling Mortality on Forestland

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
1A:				
Altavista	Moderate		Low	
	Texture/rock fragments	0.50		
2A:				
Augusta	Moderate		Low	
	Texture/rock fragments	0.50		
3A:				
Bethera	Low		High	
	Texture/rock fragments	0.10	Wetness	1.00
			Soil reaction	0.50
4A:				
Bibb	Low		High	
	Texture/rock fragments	0.10	Wetness	1.00
5A:				
Bojac	High		Low	
	Texture/rock fragments	1.00		
5B:				
Bojac	Moderate		Low	
	Texture/rock fragments	0.50		
6B:				
Caroline	Moderate		Low	
	Texture/rock fragments	0.50		
7B, 7C:				
Caroline	Moderate		Low	
	Texture/rock fragments	0.50		
Emporia	Moderate		Low	
	Texture/rock fragments	0.50		
8B:				
Catpoint	High		Low	
	Texture/rock fragments	1.00		

Damage by Fire and Seedling Mortality on Forestland—Continued

Map symbol and soil name	Potential for damage to soil by fire		Potential for seedling mortality	
	Rating class and limiting features	Value	Rating class and limiting features	Value
9A, 10A:				
Chickahominy--------	Moderate		High	
	Texture/rock fragments	0.50	Wetness	1.00
			Soil reaction	0.50
11B:				
Conetoe-------------	High		Low	
	Texture/rock fragments	1.00		
12B:				
Craven--------------	Moderate		Low	
	Texture/rock fragments	0.50		
13C3:				
Craven--------------	Low		Low	
14B:				
Craven--------------	Moderate		Low	
	Texture/rock fragments	0.50		
Caroline------------	Moderate		Low	
	Texture/rock fragments	0.50		
15C3:				
Craven--------------	Moderate		Low	
	Texture/rock fragments	0.50		
Caroline------------	Low		Low	
16C:				
Craven--------------	Moderate		Low	
	Texture/rock fragments	0.50		
Remlik--------------	High		Moderate	
	Texture/rock fragments	1.00	Soil reaction	0.50
17C:				
Craven--------------	Moderate		Low	
	Texture/rock fragments	0.50		
Uchee---------------	High		Low	
	Texture/surface depth/rock fragments	1.00		
18A, 18B, 18C:				
Dogue---------------	Moderate		Moderate	
	Texture/rock fragments	0.50	Soil reaction	0.50

Damage by Fire and Seedling Mortality on Forestland—Continued

Map symbol and soil name	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
19A:				
Dragston	Moderate		Low	
	Texture/surface depth/rock fragments	0.50		
20B, 21B:				
Emporia	Moderate		Low	
	Texture/rock fragments	0.50		
22B:				
Emporia	Moderate		Low	
	Texture/surface depth/rock fragments	0.50		
23B:				
Emporia	Moderate		Low	
	Texture/rock fragments	0.50		
Kempsville	High		Low	
	Texture/rock fragments	1.00		
24B:				
Izagora	Moderate		Low	
	Texture/rock fragments	0.50		
25B:				
Kempsville	High		Low	
	Texture/rock fragments	1.00		
26A:				
Lawnes	Low		High	
			Wetness	1.00
			Salinity	0.50
27B, 28B3:				
Masada	Moderate		Low	
	Texture/rock fragments	0.50		
29A:				
Mattan	Low		High	
			Wetness	1.00
			Soil reaction	0.50
30A:				
Munden	High		Low	
	Texture/rock fragments	1.00		

Damage by Fire and Seedling Mortality on Forestland—Continued

Map symbol and soil name	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
31A:				
Nahunta-------------	Low		High	
	Texture/surface depth/rock fragments	0.10	Wetness	1.00
32B:				
Nansemond-----------	High		Low	
	Texture/rock fragments	1.00		
33A, 34A:				
Nawney--------------	Low		High	
	Texture/rock fragments	0.10	Wetness	1.00
35D, 35E, 35F:				
Nevarc--------------	Moderate		Moderate	
	Texture/rock fragments	0.50	Soil reaction	0.50
Remlik--------------	High		Moderate	
	Texture/rock fragments	1.00	Soil reaction	0.50
36A:				
Newflat-------------	Moderate		High	
	Texture/rock fragments	0.50	Wetness	1.00
37A:				
Nimmo---------------	Low		High	
	Texture/rock fragments	0.10	Wetness	1.00
38A, 38B, 38C:				
Pamunkey------------	Moderate		Low	
	Texture/rock fragments	0.50		
39A, 39B:				
Peawick-------------	Moderate		Moderate	
	Texture/rock fragments	0.50	Soil reaction	0.50
40A:				
Roanoke-------------	Moderate		High	
	Texture/rock fragments	0.50	Wetness	1.00
41A:				
Seabrook------------	High		Low	
	Texture/rock fragments	1.00		
42B:				
Slagle--------------	Moderate		Low	
	Texture/rock fragments	0.50		

Damage by Fire and Seedling Mortality on Forestland—Continued

Map symbol and soil name	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
43B:				
Slagle	Moderate		Low	
	Texture/rock fragments	0.50		
Emporia	Moderate		Low	
	Texture/rock fragments	0.50		
44A:				
Tomotley	Low		High	
	Texture/surface depth/rock fragments	0.10	Wetness	1.00
			Soil reaction	0.50
45B:				
Turbeville	Moderate		Low	
	Texture/rock fragments	0.50		
46B:				
Uchee	High		Low	
	Texture/surface depth/rock fragments	1.00		
47B, 48B:				
Udorthents	Not rated		Not rated	
49A, 49B:				
Wickham	Moderate		Low	
	Texture/rock fragments	0.50		
50B3:				
Wickham	Moderate		Low	
	Texture/surface depth/rock fragments	0.50		
51A, 51B:				
Yeopim	Moderate		Low	
	Texture/rock fragments	0.50		

Camp Areas, Picnic Areas, and Playgrounds

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
2A:						
Augusta	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
3A:						
Bethera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
4A:						
Bibb	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
5A:						
Bojac	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.34	Too sandy	0.34	Too sandy	0.34
5B:						
Bojac	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.34	Too sandy	0.34	Slope	0.50
					Too sandy	0.34
6B:						
Caroline	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
7B:						
Caroline	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
Emporia	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
7C:						
Caroline	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.60	Slow water movement	0.60	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.60
Emporia	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.60	Slow water movement	0.60	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.60
8B:						
Catpoint	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.42	Too sandy	0.42	Too sandy	0.42
9A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
10A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
11B:						
Conetoe	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
12B:						
Craven	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94	Slow water movement	0.94
					Slope	0.50
13C3:						
Craven	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.94	Slow water movement	0.94	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.94
14B:						
Craven	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94	Slow water movement	0.94
					Slope	0.50
Caroline	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15C3:						
Craven	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.94	Slow water movement	0.94	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.94
Caroline	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.60	Slow water movement	0.60	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.60
16C:						
Craven	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.94	Slow water movement	0.94	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.94
Remlik	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	1.00
17C:						
Craven	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.94	Slow water movement	0.94	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.94
Uchee	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.84	Too sandy	0.84	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	0.84
18A:						
Dogue	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
	Slow water movement	0.15	Slow water movement	0.15	Slow water movement	0.15
18B:						
Dogue	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	0.50
	Slow water movement	0.15	Slow water movement	0.15	Depth to saturated zone	0.39
					Slow water movement	0.15
18C:						
Dogue	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	1.00
	Slow water movement	0.15	Slow water movement	0.15	Depth to saturated zone	0.39
	Slope	0.01	Slope	0.01	Slow water movement	0.15
19A:						
Dragston	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.81	Depth to saturated zone	0.48	Depth to saturated zone	0.81

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
20B:						
Emporia	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
21B:						
Emporia	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.60	Slow water movement	0.60	Gravel content	1.00
	Gravel content	0.06	Gravel content	0.06	Slow water movement	0.60
					Slope	0.50
22B:						
Emporia	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
23B:						
Emporia	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
Kempsville	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.72	Too sandy	0.72	Too sandy	0.72
					Slope	0.50
24B:						
Izagora	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94	Slow water movement	0.94
25B:						
Kempsville	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.72	Too sandy	0.72	Too sandy	0.72
					Slope	0.50
26A:						
Lawnes	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
	Ponding	1.00	Organic matter content	1.00	Flooding	1.00
27B, 28B3:						
Masada	Not limited		Not limited		Somewhat limited	
					Slope	0.50
29A:						
Mattan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.60	Ponding	1.00

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
30A:						
Munden	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.84	Too sandy	0.84	Too sandy	0.84
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
31A:						
Nahunta	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
32B:						
Nansemond	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.81	Too sandy	0.81	Too sandy	0.81
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
33A:						
Nawney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
34A:						
Nawney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
35D:						
Nevarc	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.94	Slow water movement	0.94	Slope	1.00
	Slope	0.84	Slope	0.84	Slow water movement	0.94
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
Remlik	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.84	Slope	0.84	Too sandy	1.00
35E, 35F:						
Nevarc	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94	Slow water movement	0.94
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
Remlik	Very limited		Very limited		Very limited	
	Slope	1.00	Too sandy	1.00	Slope	1.00
	Too sandy	1.00	Slope	1.00	Too sandy	1.00

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
36A:						
Newflat	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Depth to saturated zone	0.99	Slow water movement	1.00
37A:						
Nimmo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
38A:						
Pamunkey	Not limited		Not limited		Not limited	
38B:						
Pamunkey	Not limited		Not limited		Somewhat limited	
					Slope	0.50
38C:						
Pamunkey	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
39A:						
Peawick	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
39B:						
Peawick	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	0.50
					Depth to saturated zone	0.39
40A:						
Roanoke	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.94	Slow water movement	0.94	Slow water movement	0.94
41A:						
Seabrook	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.81	Too sandy	0.81	Too sandy	0.81
42B:						
Slagle	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39

Camp Areas, Picnic Areas, and Playgrounds—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
43B:						
Slagle	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	0.50
					Depth to saturated zone	0.39
Emporia	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
					Slope	0.50
44A:						
Tomotley	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
45B:						
Turbeville	Not limited		Not limited		Somewhat limited	
					Slope	0.50
46B:						
Uchee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.84	Too sandy	0.84	Too sandy	0.84
					Slope	0.50
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A:						
Wickham	Not limited		Not limited		Not limited	
49B, 50B3:						
Wickham	Not limited		Not limited		Somewhat limited	
					Slope	0.50
51A:						
Yeopim	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.15	Slow water movement	0.15	Slow water movement	0.15
	Depth to saturated zone	0.07	Depth to saturated zone	0.03	Depth to saturated zone	0.07
51B:						
Yeopim	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.15	Slow water movement	0.15	Slope	0.50
	Depth to saturated zone	0.07	Depth to saturated zone	0.03	Slow water movement	0.15
					Depth to saturated zone	0.07

Paths, Trails, and Golf Fairways

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
1A:						
Altavista	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
2A:						
Augusta	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
3A:						
Bethera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
4A:						
Bibb	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
5A, 5B:						
Bojac	Somewhat limited		Somewhat limited		Not limited	
	Too sandy	0.34	Too sandy	0.34		
6B:						
Caroline	Not limited		Not limited		Not limited	
7B:						
Caroline	Not limited		Not limited		Not limited	
Emporia	Not limited		Not limited		Not limited	
7C:						
Caroline	Not limited		Not limited		Somewhat limited	
					Slope	0.01
Emporia	Not limited		Not limited		Somewhat limited	
					Slope	0.01
8B:						
Catpoint	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.42	Too sandy	0.42	Droughty	0.34
9A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
10A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
11B:						
Conetoe	Somewhat limited		Somewhat limited		Not limited	
	Too sandy	0.87	Too sandy	0.87		
12B:						
Craven	Not limited		Not limited		Not limited	
13C3:						
Craven	Not limited		Not limited		Somewhat limited	
					Slope	0.01
14B:						
Craven	Not limited		Not limited		Not limited	
Caroline	Not limited		Not limited		Not limited	
15C3:						
Craven	Not limited		Not limited		Somewhat limited	
					Slope	0.01
Caroline	Not limited		Not limited		Somewhat limited	
					Slope	0.01
16C:						
Craven	Not limited		Not limited		Somewhat limited	
					Slope	0.01
Remlik	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Droughty	0.31
					Slope	0.01
17C:						
Craven	Not limited		Not limited		Somewhat limited	
					Slope	0.01
Uchee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.84	Too sandy	0.84	Droughty	0.01
					Slope	0.01
18A, 18B:						
Dogue	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
18C:						
Dogue	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
					Slope	0.01

Paths, Trails, and Golf Fairways—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
19A:						
Dragston	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
20B:						
Emporia	Not limited		Not limited		Not limited	
21B:						
Emporia	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
22B:						
Emporia	Not limited		Not limited		Not limited	
23B:						
Emporia	Not limited		Not limited		Not limited	
Kempsville	Somewhat limited		Somewhat limited		Not limited	
	Too sandy	0.72	Too sandy	0.72		
24B:						
Izagora	Not limited		Not limited		Not limited	
25B:						
Kempsville	Somewhat limited		Somewhat limited		Not limited	
	Too sandy	0.72	Too sandy	0.72		
26A:						
Lawnes	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Flooding	1.00
	Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
	Ponding	1.00	Ponding	1.00		
27B, 28B3:						
Masada	Not limited		Not limited		Not limited	
29A:						
Mattan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Flooding	1.00
	Ponding	1.00	Ponding	1.00	Organic matter content	1.00
	Flooding	0.60	Flooding	0.60		
30A:						
Munden	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.84	Too sandy	0.84	Depth to saturated zone	0.19
31A:						
Nahunta	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94

Paths, Trails, and Golf Fairways—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
32B:						
Nansemond-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.81	Too sandy	0.81	Depth to saturated zone	0.19
33A:						
Nawney--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
34A:						
Nawney--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
35D:						
Nevarc--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.84
					Depth to saturated zone	0.19
Remlik--------------	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Slope	0.84
					Droughty	0.31
35E:						
Nevarc--------------	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
					Depth to saturated zone	0.19
Remlik--------------	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.50			Droughty	0.31
35F:						
Nevarc--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to saturated zone	0.19
Remlik--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Too sandy	1.00	Slope	1.00
	Too sandy	1.00	Slope	1.00	Droughty	0.31
36A:						
Newflat-------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
37A:						
Nimmo---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
38A, 38B:						
Pamunkey	Not limited		Not limited		Not limited	
38C:						
Pamunkey	Not limited		Not limited		Somewhat limited	
					Slope	0.01
39A, 39B:						
Peawick	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
40A:						
Roanoke	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
41A:						
Seabrook	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.81	Too sandy	0.81	Droughty	0.83
42B:						
Slagle	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
43B:						
Slagle	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
Emporia	Not limited		Not limited		Not limited	
44A:						
Tomotley	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
45B:						
Turbeville	Not limited		Not limited		Not limited	
46B:						
Uchee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.84	Too sandy	0.84	Droughty	0.01
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham	Not limited		Not limited		Not limited	
51A, 51B:						
Yeopim	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03

Dwellings and Small Commercial Buildings

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
1A:						
Altavista	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
2A:						
Augusta	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
3A:						
Bethera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
4A:						
Bibb	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
5A, 5B:						
Bojac	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.16		
6B:						
Caroline	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.47		
7B:						
Caroline	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.47		
Emporia	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.82		
			Shrink-swell	0.50		
7C:						
Caroline	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.01	Depth to saturated zone	0.47	Shrink-swell	0.50
			Slope	0.01		

Dwellings and Small Commercial Buildings—Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Emporia----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Depth to saturated zone	0.82	Slope	1.00
			Shrink-swell	0.50		
			Slope	0.01		
8B:						
Catpoint----------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.16		
9A:						
Chickahominy----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
10A:						
Chickahominy----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
11B:						
Conetoe----------	Not limited		Not limited		Not limited	
12B:						
Craven----------	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
13C3:						
Craven----------	Somewhat limited		Very limited		Very limited	
	Slope	0.01	Depth to saturated zone	0.99	Slope	1.00
			Slope	0.01		
14B:						
Craven----------	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
Caroline----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.47		
15C3:						
Craven----------	Somewhat limited		Very limited		Very limited	
	Slope	0.01	Depth to saturated zone	0.99	Slope	1.00
			Slope	0.01		

Dwellings and Small Commercial Buildings—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Caroline------------	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.01	Depth to saturated zone	0.47	Shrink-swell	0.50
			Slope	0.01		
16C:						
Craven--------------	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Slope	1.00
	Slope	0.01	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.01		
Remlik--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Depth to saturated zone	0.16	Slope	1.00
			Slope	0.01		
17C:						
Craven--------------	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Slope	1.00
	Slope	0.01	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.01		
Uchee---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Depth to saturated zone	0.61	Slope	1.00
			Slope	0.01		
18A, 18B:						
Dogue---------------	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
18C:						
Dogue---------------	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.39	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.39
19A:						
Dragston------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
20B:						
Emporia-------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.82		
			Shrink-swell	0.50		
21B, 22B:						
Emporia-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.82	Shrink-swell	0.50
			Shrink-swell	0.50		

Dwellings and Small Commercial Buildings—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
23B:						
Emporia	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.82		
			Shrink-swell	0.50		
Kempsville	Not limited		Not limited		Not limited	
24B:						
Izagora	Not limited		Very limited		Not limited	
			Depth to saturated zone	0.99		
			Shrink-swell	0.50		
25B:						
Kempsville	Not limited		Not limited		Not limited	
26A:						
Lawnes	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
27B, 28B3:						
Masada	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
29A:						
Mattan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
30A:						
Munden	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
31A:						
Nahunta	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
32B:						
Nansemond	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
33A:						
Nawney	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Dwellings and Small Commercial Buildings—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
34A:						
Nawney	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
35D:						
Nevarc	Somewhat limited		Very limited		Very limited	
	Slope	0.84	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	0.84	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
Remlik	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.84	Slope	0.84	Slope	1.00
			Depth to saturated zone	0.16		
35E, 35F:						
Nevarc	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
Remlik	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to saturated zone	0.16		
36A:						
Newflat	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
37A:						
Nimmo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
38A, 38B:						
Pamunkey	Not limited		Not limited		Not limited	
38C:						
Pamunkey	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
39A, 39B:						
Peawick	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39	Shrink-swell	1.00	Depth to saturated zone	0.39

Dwellings and Small Commercial Buildings—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
40A:						
Roanoke	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
41A:						
Seabrook	Not limited		Very limited		Not limited	
			Depth to saturated zone	0.99		
42B:						
Slagle	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
43B:						
Slagle	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
Emporia	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.82		
			Shrink-swell	0.50		
44A:						
Tomotley	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
45B:						
Turbeville	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
46B:						
Uchee	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.61		
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham	Not limited		Not limited		Not limited	
51A, 51B:						
Yeopim	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.07	Depth to saturated zone	1.00	Depth to saturated zone	0.07

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
1A:						
Altavista	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.78	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Depth to saturated zone	0.19	Cutbanks cave	1.00		
2A:						
Augusta	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	0.22	Cutbanks cave	1.00		
3A:						
Bethera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Cutbanks cave	0.10		
4A:						
Bibb	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
			Flooding	0.80		
5A, 5B:						
Bojac	Not limited		Very limited		Not limited	
			Cutbanks cave	1.00		
			Depth to saturated zone	0.16		
6B:						
Caroline	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.47		
	Shrink-swell	0.50	Too clayey	0.12		
			Cutbanks cave	0.10		
7B:						
Caroline	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.47		
	Shrink-swell	0.50	Too clayey	0.12		
			Cutbanks cave	0.10		
Emporia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.82		
			Cutbanks cave	0.10		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
7C:						
Caroline	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.47	Slope	0.01
	Shrink-swell	0.50	Too clayey	0.12		
	Slope	0.01	Cutbanks cave	0.10		
Emporia	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.82	Slope	0.01
	Slope	0.01	Cutbanks cave	0.10		
			Slope	0.01		
8B:						
Catpoint	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.34
			Depth to saturated zone	0.16		
9A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.28		
	Shrink-swell	1.00	Cutbanks cave	0.10		
10A:						
Chickahominy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	1.00	Too clayey	0.28		
11B:						
Conetoe	Not limited		Very limited		Not limited	
			Cutbanks cave	1.00		
12B:						
Craven	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Too clayey	0.28		
			Cutbanks cave	0.10		
13C3:						
Craven	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Depth to saturated zone	0.99	Slope	0.01
			Too clayey	0.28		
			Cutbanks cave	0.10		
14B:						
Craven	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Too clayey	0.28		
			Cutbanks cave	0.10		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Caroline------------	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.47		
	Shrink-swell	0.50	Too clayey	0.12		
			Cutbanks cave	0.10		
15C3:						
Craven--------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Depth to saturated zone	0.99	Slope	0.01
			Too clayey	0.28		
			Cutbanks cave	0.10		
Caroline------------	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.47	Slope	0.01
	Shrink-swell	0.50	Too clayey	0.12		
	Slope	0.01	Cutbanks cave	0.10		
16C:						
Craven--------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.99	Slope	0.01
	Shrink-swell	0.50	Too clayey	0.28		
	Slope	0.01	Cutbanks cave	0.10		
Remlik--------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.31
			Depth to saturated zone	0.16	Slope	0.01
			Slope	0.01		
17C:						
Craven--------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.99	Slope	0.01
	Shrink-swell	0.50	Too clayey	0.28		
	Slope	0.01	Cutbanks cave	0.10		
Uchee---------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.01
			Depth to saturated zone	0.61	Slope	0.01
			Slope	0.01		
18A, 18B:						
Dogue---------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Depth to saturated zone	0.19	Too clayey	0.03		
18C:						
Dogue---------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Cutbanks cave	0.10	Slope	0.01
	Depth to saturated zone	0.19	Too clayey	0.03		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
19A:						
Dragston	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.48	Depth to saturated zone	1.00	Depth to saturated zone	0.48
			Cutbanks cave	1.00		
20B:						
Emporia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.82		
			Cutbanks cave	0.10		
21B:						
Emporia	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.82	Gravel content	0.06
	Shrink-swell	0.50				
			Cutbanks cave	0.10		
22B:						
Emporia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.82		
	Shrink-swell	0.50				
			Cutbanks cave	0.10		
23B:						
Emporia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.82		
			Cutbanks cave	0.10		
Kempsville	Not limited		Somewhat limited		Not limited	
			Cutbanks cave	0.10		
24B:						
Izagora	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
			Cutbanks cave	0.10		
25B:						
Kempsville	Not limited		Somewhat limited		Not limited	
			Cutbanks cave	0.10		
26A:						
Lawnes	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
27B, 28B3:						
Masada	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
29A:						
Mattan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
30A:						
Munden	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.19	Depth to saturated zone	1.00	Depth to saturated zone	0.19
			Cutbanks cave	1.00		
31A:						
Nahunta	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Cutbanks cave	0.10		
32B:						
Nansemond	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.19	Depth to saturated zone	1.00	Depth to saturated zone	0.19
			Cutbanks cave	1.00		
33A:						
Nawney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
34A:						
Nawney	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Flooding	0.80	Depth to saturated zone	1.00
35D:						
Nevarc	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Slope	0.84
	Slope	0.84	Slope	0.84	Depth to saturated zone	0.1
	Shrink-swell	0.50	Too clayey	0.12		
Remlik	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.84	Cutbanks cave	1.00	Slope	0.84
			Slope	0.84	Droughty	0.31
			Depth to saturated zone	0.16		
35E, 35F:						
Nevarc	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Too clayey	0.12		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Remlik	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Cutbanks cave	1.00	Droughty	0.31
			Depth to saturated zone	0.16		
36A:						
Newflat	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	1.00	Too clayey	0.28		
	Depth to saturated zone	0.99	Cutbanks cave	0.10		
37A:						
Nimmo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Cutbanks cave	1.00		
38A, 38B:						
Pamunkey	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Cutbanks cave	0.10		
38C:						
Pamunkey	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
	Slope	0.01	Slope	0.01		
39A, 39B:						
Peawick	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	1.00	Too clayey	0.50		
	Depth to saturated zone	0.19	Cutbanks cave	0.10		
40A:						
Roanoke	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.28		
	Shrink-swell	0.50	Cutbanks cave	0.10		
41A:						
Seabrook	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.83
			Depth to saturated zone	0.99		
42B:						
Slagle	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Depth to saturated zone	0.19				

Roads and Streets, Shallow Excavations, and Lawns and Landscaping—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
43B:						
Slagle	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Depth to saturated zone	0.19				
Emporia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.82		
			Cutbanks cave	0.10		
44A:						
Tomotley	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	0.22	Cutbanks cave	1.00		
45B:						
Turbeville	Somewhat limited		Somewhat limited		Not limited	
	Shrink-swell	0.50	Too clayey	0.12		
	Low strength	0.10	Cutbanks cave	0.10		
46B:						
Uchee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.01
			Depth to saturated zone	0.61		
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham	Not limited		Somewhat limited		Not limited	
			Cutbanks cave	0.10		
51A, 51B:						
Yeopim	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03	Cutbanks cave	0.10		

Sewage Disposal

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:				
Altavista	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	0.50
	Slow water movement	0.50		
2A:				
Augusta	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50	Seepage	1.00
3A:				
Bethera	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
4A:				
Bibb	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00
5A:				
Bojac	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.43		
5B:				
Bojac	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.43	Slope	0.32
6B:				
Caroline	Very limited		Somewhat limited	
	Slow water movement	1.00	Slope	0.32
	Depth to saturated zone	0.94		

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
7B:				
Caroline------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slope	0.32
	Depth to saturated zone	0.94		
Emporia-------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.32
	Slow water movement	1.00	Slope	0.32
7C:				
Caroline------------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	0.94		
	Slope	0.01		
Emporia-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.32
	Slope	0.01		
8B:				
Catpoint------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Filtering capacity	1.00		
	Depth to saturated zone	0.43		
9A:				
Chickahominy--------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
10A:				
Chickahominy--------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
11B:				
Conetoe-------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
12B:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
13C3:				
Craven--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Slope	1.00
	Slope	0.01	Seepage	1.00
14B:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
Caroline------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slope	0.32
	Depth to saturated zone	0.94		
15C3:				
Craven--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Slope	1.00
	Slope	0.01	Seepage	1.00
Caroline------------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	0.94		
	Slope	0.01		
16C:				
Craven--------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
Remlik--------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.43	Slope	1.00
	Slope	0.01		

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
17C:				
Craven	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
Uchee	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Slope	1.00
	Slope	0.01		
18A:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.01
18B:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	0.32
			Seepage	0.01
18C:				
Dogue	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	1.00
			Seepage	0.01
	Slope	0.01		
19A:				
Dragston	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
20B, 21B, 22B:				
Emporia	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.32
			Slope	0.32
	Slow water movement	1.00		
23B:				
Emporia	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.32
			Slope	0.32
	Slow water movement	1.00		

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Kempsville----------	Somewhat limited		Very limited	
	Slow water movement	0.50	Seepage	1.00
			Slope	0.32
24B:				
Izagora-------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
25B:				
Kempsville----------	Somewhat limited		Very limited	
	Slow water movement	0.50	Seepage	1.00
			Slope	0.32
26A:				
Lawnes--------------	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
27B, 28B3:				
Masada--------------	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
29A:				
Mattan--------------	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
30A:				
Munden--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00
31A:				
Nahunta-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50	Seepage	0.50
32B:				
Nansemond-----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
33A:				
Nawney	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50	Seepage	0.50
34A:				
Nawney	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
35D:				
Nevarc	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
			Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Seepage	1.00		
Remlik	Very limited		Very limited	
	Seepage	1.00	Slope	1.00
	Slope	0.84	Seepage	1.00
	Depth to saturated zone	0.43		
35E, 35F:				
Nevarc	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
			Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Slope	1.00		
Remlik	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.43		
36A:				
Newflat	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
37A:				
Nimmo	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.50		

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
38A:				
Pamunkey	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
38B:				
Pamunkey	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
38C:				
Pamunkey	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.01		
39A:				
Peawick	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	1.00		
39B:				
Peawick	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	1.00	Slope	0.32
40A:				
Roanoke	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00		
41A:				
Seabrook	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
			Depth to saturated zone	1.00
	Seepage	1.00		
	Filtering capacity	1.00		
42B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00		
43B:				
Slagle	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	0.32

Sewage Disposal—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Emporia-------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.32
	Slow water movement	1.00	Slope	0.32
44A:				
Tomotley------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.68	Seepage	0.50
45B:				
Turbeville----------	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
45B:				
Turbeville----------	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
46B:				
Uchee---------------	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
			Slope	0.32
	Depth to saturated zone	0.99		
47B, 48B:				
Udorthents----------	Not rated		Not rated	
49A:				
Wickham-------------	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
49B, 50B3:				
Wickham-------------	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
51A:				
Yeopim--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00		
51B:				
Yeopim--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	0.32

Landfills

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Seepage	1.00				
2A:						
Augusta	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Too sandy	0.50			Too sandy	0.50
3A:						
Bethera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Hard to compact	1.00
	Too clayey	0.50			Ponding	1.00
4A:						
Bibb	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
5A, 5B:						
Bojac	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50				
6B:						
Caroline	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
7B:						
Caroline	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
Emporia	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
	Depth to saturated zone	0.09				
7C:						
Caroline	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Slope	0.01	Too clayey	1.00
	Slope	0.01			Slope	0.01

Landfills—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
Emporia-------------	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Slope	0.01	Too clayey	1.00
	Depth to saturated zone	0.09			Slope	0.01
	Slope	0.01				
8B:						
Catpoint------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50				
9A:						
Chickahominy--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
10A:						
Chickahominy--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
11B:						
Conetoe-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
12B:						
Craven--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.47
13C3:						
Craven--------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.47
	Seepage	1.00	Seepage	1.00	Seepage	0.16
	Slope	0.01	Slope	0.01	Slope	0.01
14B:						
Craven--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.47
Caroline------------	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
15C3:						
Craven--------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.47
	Seepage	1.00	Seepage	1.00	Seepage	0.16
	Slope	0.01	Slope	0.01	Slope	0.01

Landfills—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
Caroline	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Slope	0.01	Too clayey	1.00
	Slope	0.01			Slope	0.01
16C:						
Craven	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.01	Depth to saturated zone	0.47
	Slope	0.01			Slope	0.01
Remlik	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50	Slope	0.01	Too sandy	0.50
	Slope	0.01			Slope	0.01
17C:						
Craven	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.01	Depth to saturated zone	0.47
	Slope	0.01			Slope	0.01
Uchee	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Seepage	1.00	Slope	0.01
			Slope	0.01		
18A, 18B:						
Dogue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.86
18C:						
Dogue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.01	Depth to saturated zone	0.86
	Slope	0.01			Slope	0.01
19A:						
Dragston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Depth to saturated zone	0.96
20B, 21B, 22B:						
Emporia	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
	Depth to saturated zone	0.09				
23B:						
Emporia	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
	Depth to saturated zone	0.09				

Landfills—Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Kempsville----------	Not limited		Very limited		Somewhat limited	
			Seepage	1.00	Seepage	0.50
24B:						
Izagora-------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.47
25B:						
Kempsville----------	Not limited		Very limited		Somewhat limited	
			Seepage	1.00	Seepage	0.50
26A:						
Lawnes--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00		
27B, 28B3:						
Masada--------------	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
29A:						
Mattan--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00		
30A:						
Munden--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	1.00
	Too sandy	1.00	Seepage	1.00	Seepage	1.00
	Seepage	1.00			Depth to saturated zone	0.86
31A:						
Nahunta-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
32B:						
Nansemond-----------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Seepage	1.00	Seepage	1.00	Seepage	0.50
33A:						
Nawney--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		

Landfills—Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
34A:						
Nawney	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00		
35D:						
Nevarc	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Slope	0.84	Too clayey	1.00
	Seepage	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.86
	Depth to saturated zone	0.99			Slope	0.84
Remlik	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	0.84	Slope	0.84	Slope	0.84
	Too sandy	0.50			Too sandy	0.50
35E, 35F:						
Nevarc	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	1.00	Depth to	0.75	Too clayey	1.00
	Seepage	1.00			Depth to saturated zone	0.86
Remlik	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
36A:						
Newflat	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
37A:						
Nimmo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00	Seepage	1.00	Too sandy	1.00
	Seepage	1.00			Seepage	1.00
38A, 38B:						
Pamunkey	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
38C:						
Pamunkey	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
39A, 39B:						
Peawick	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.75	Too clayey	1.00
	Depth to saturated zone	0.99			Depth to saturated zone	0.86

Landfills—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
40A:						
Roanoke	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
	Seepage	1.00				
41A:						
Seabrook	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.47
42B:						
Slagle	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
43B:						
Slagle	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
Emporia	Very limited		Not limited		Very limited	
	Too clayey	1.00			Too clayey	1.00
	Depth to saturated zone	0.09				
44A:						
Tomotley	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
45B:						
Turbeville	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
46B:						
Uchee	Not limited		Very limited		Not limited	
			Seepage	1.00		
47B, 48B:						
Udorthents	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham	Not limited		Not limited		Not limited	
51A, 51B:						
Yeopim	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50

Source of Gravel and Sand

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
1A:				
Altavista	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
2A:				
Augusta	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.10
3A:				
Bethera	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
4A:				
Bibb	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.16
5A, 5B:				
Bojac	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.04
	Thickest layer	0.00	Bottom layer	0.08
6B:				
Caroline	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
7B, 7C:				
Caroline	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Emporia	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
8B:				
Catpoint	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.09
	Bottom layer	0.00	Thickest layer	0.09
9A, 10A:				
Chickahominy	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Source of Gravel and Sand—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
11B:				
Conetoe	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.11
	Thickest layer	0.00	Bottom layer	0.42
12B, 13C3:				
Craven	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
14B, 15C3:				
Craven	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Caroline	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
16C:				
Craven	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Remlik	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.04
	Thickest layer	0.00	Thickest layer	0.34
17C:				
Craven	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Uchee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
18A, 18B, 18C:				
Dogue	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
19A:				
Dragston	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.36
20B, 21B, 22B:				
Emporia	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
23B:				
Emporia	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
Kempsville	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.04
	Thickest layer	0.00	Bottom layer	0.04

Source of Gravel and Sand—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
24B:				
Izagora	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
25B:				
Kempsville	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.04
	Thickest layer	0.00	Bottom layer	0.04
26A:				
Lawnes	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.43
27B, 28B3:				
Masada	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
29A:				
Mattan	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
30A:				
Munden	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.38
31A:				
Nahunta	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
32B:				
Nansemond	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.03
33A, 34A:				
Nawney	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
35D, 35E, 35F:				
Nevarc	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Remlik	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.04
	Thickest layer	0.00	Thickest layer	0.34
36A:				
Newflat	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Source of Gravel and Sand—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
37A:				
Nimmo----------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.85
38A, 38B, 38C:				
Pamunkey------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
39A, 39B:				
Peawick-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
40A:				
Roanoke-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
41A:				
Seabrook------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.10
	Thickest layer	0.00	Bottom layer	0.45
42B:				
Slagle--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
43B:				
Slagle--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Emporia-------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
44A:				
Tomotley------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.11
45B:				
Turbeville----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
46B:				
Uchee---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
47B, 48B:				
Udorthents----------	Not rated		Not rated	

Source of Gravel and Sand—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
49A, 49B, 50B3:				
Wickham-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
51A, 51B:				
Yeopim--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Source of Reclamation Material, Roadfill, and Topsoil

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Fair		Fair		Fair	
	Organic matter content low	0.12	Low strength	0.22	Wetness depth	0.53
	Too acid	0.20	Wetness depth	0.53	Too acid	0.76
2A:						
Augusta	Fair		Fair		Fair	
	Organic matter content low	0.12	Wetness depth	0.14	Wetness depth	0.14
	Too acid	0.50			Too acid	0.68
					Hard to reclaim (rock fragments)	0.92
3A:						
Bethera	Fair		Poor		Poor	
	Too clayey	0.08	Wetness depth	0.00	Wetness depth	0.00
	Too acid	0.50	Low strength	0.00	Too clayey	0.06
	Organic matter content low	0.88	Shrink-swell	0.89	Too acid	0.76
4A:						
Bibb	Fair		Poor		Poor	
	Too acid	0.12	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.88			Too acid	0.59
	Water erosion	0.99			Hard to reclaim (rock fragments)	0.92
5A, 5B:						
Bojac	Poor		Good		Good	
	Wind erosion	0.00				
	Organic matter content low	0.12				
	Too acid	0.50				
6B:						
Caroline	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.54				
7B, 7C:						
Caroline	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.54				
Emporia	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Too acid	0.68
	Too acid	0.16	Shrink-swell	0.99		

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8B:						
Catpoint	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.30
	Organic matter content low	0.12			Too acid	0.68
	Too acid	0.16				
9A:						
Chickahominy	Poor		Poor		Poor	
	Too clayey	0.00	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
	Too acid	0.50	Shrink-swell	0.12	Too acid	0.24
10A:						
Chickahominy	Poor		Poor		Poor	
	Too clayey	0.00	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
	Too acid	0.50	Shrink-swell	0.12	Too acid	0.59
11B:						
Conetoe	Poor		Good		Poor	
	Wind erosion	0.00			Too sandy	0.00
	Too sandy	0.00			Too acid	0.82
	Organic matter content low	0.12				
12B:						
Craven	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.12	Shrink-swell	0.87	Too acid	0.59
	Organic matter content low	0.12	Wetness depth	0.89	Wetness depth	0.89
13C3:						
Craven	Fair		Fair		Fair	
	Organic matter content low	0.12	Wetness depth	0.89	Too acid	0.59
					Wetness depth	0.89
	Too acid	0.50				
	Water erosion	0.99				
14B:						
Craven	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.12	Shrink-swell	0.87	Too acid	0.59
	Organic matter content low	0.12	Wetness depth	0.89	Wetness depth	0.89
Caroline	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.54				

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
15C3:						
Craven	Fair		Fair		Fair	
	Organic matter content low	0.12	Wetness depth	0.89	Too acid	0.59
	Too acid	0.50			Wetness depth	0.89
	Water erosion	0.99				
Caroline	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.50				
16C:						
Craven	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.12	Shrink-swell	0.87	Too acid	0.59
	Organic matter content low	0.12	Wetness depth	0.89	Wetness depth	0.89
Remlik	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00			Too acid	0.24
	Too acid	0.01				
17C:						
Craven	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.12	Shrink-swell	0.87	Too acid	0.59
	Organic matter content low	0.12	Wetness depth	0.89	Wetness depth	0.89
Uchee	Poor		Good		Poor	
	Wind erosion	0.00			Too sandy	0.00
	Too sandy	0.00			Too acid	0.76
	Organic matter content low	0.12				
18A, 18B, 18C:						
Dogue	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.01	Wetness depth	0.53	Too acid	0.24
	Organic matter content low	0.12	Shrink-swell	0.89	Wetness depth	0.53
19A:						
Dragston	Fair		Fair		Fair	
	Organic matter content low	0.12	Wetness depth	0.29	Wetness depth	0.29
	Too acid	0.50			Too acid	0.68
20B:						
Emporia	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Too acid	0.68
	Too acid	0.16	Shrink-swell	0.99		

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
21B:						
Emporia	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.97	Too acid	0.68
	Too acid	0.16				
22B:						
Emporia	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Too acid	0.68
	Too acid	0.16	Shrink-swell	0.97		
23B:						
Emporia	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Too acid	0.68
	Too acid	0.16	Shrink-swell	0.99		
Kempsville	Poor		Good		Good	
	Wind erosion	0.00				
	Too acid	0.54				
	Organic matter content low	0.88				
24B:						
Izagora	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Wetness depth	0.89
	Too acid	0.50	Wetness depth	0.89	Too acid	0.98
	Water erosion	0.99				
25B:						
Kempsville	Poor		Good		Good	
	Wind erosion	0.00				
	Too acid	0.54				
	Organic matter content low	0.88				
26A:						
Lawnes	Fair		Poor		Poor	
	Too acid	0.54	Wetness depth	0.00	Wetness depth	0.00
	Sodium content	0.60			Sodium content	0.60
					Salinity	0.97
27B, 28B3:						
Masada	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.54				
29A:						
Mattan	Fair		Poor		Poor	
	Too acid	0.50	Wetness depth	0.00	Wetness depth	0.00
					Organic matter content high	0.00
					Too acid	0.24

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
30A:						
Munden	Poor		Fair		Fair	
	Wind erosion	0.00	Wetness depth	0.53	Wetness depth	0.53
	Organic matter content low	0.12			Too acid	0.68
	Too acid	0.50				
31A:						
Nahunta	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Wetness depth	0.04
			Wetness depth	0.04	Too acid	0.68
	Too acid	0.50				
	Water erosion	0.90				
32B:						
Nansemond	Poor		Fair		Poor	
	Wind erosion	0.00	Wetness depth	0.53	Rock fragments	0.00
	Too acid	0.12			Wetness depth	0.53
	Organic matter content low	0.12			Too acid	0.59
33A, 34A:						
Nawney	Fair		Poor		Poor	
	Too acid	0.50	Wetness depth	0.00	Wetness depth	0.00
			Shrink-swell	0.91	Too acid	0.59
35D:						
Nevarc	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.01	Wetness depth	0.53	Slope	0.16
	Organic matter content low	0.12	Shrink-swell	0.93	Wetness depth	0.53
Remlik	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00			Slope	0.16
	Too acid	0.01			Too acid	0.24
35E:						
Nevarc	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Too acid	0.01	Slope	0.50	Too clayey	0.00
	Organic matter content low	0.12	Wetness depth	0.53	Wetness depth	0.53
Remlik	Poor		Fair		Poor	
	Too sandy	0.00	Slope	0.50	Slope	0.00
	Wind erosion	0.00			Too sandy	0.00
	Too acid	0.01			Too acid	0.24
35F:						
Nevarc	Poor		Poor		Poor	
	Too clayey	0.00	Slope	0.00	Slope	0.00
	Too acid	0.01	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Wetness depth	0.53	Wetness depth	0.53

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Remlik--------------	Poor		Poor		Poor	
	Too sandy	0.00	Slope	0.00	Slope	0.00
	Wind erosion	0.00			Too sandy	0.00
	Too acid	0.01			Too acid	0.24
36A:						
Newflat-------------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.12	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.12	Shrink-swell	0.12	Too acid	0.59
37A:						
Nimmo---------------	Fair		Poor		Poor	
	Organic matter content low	0.12	Wetness depth	0.00	Wetness depth	0.00
	Too acid	0.50			Too acid	0.59
38A, 38B, 38C:						
Pamunkey------------	Fair		Poor		Good	
	Organic matter content low	0.12	Low strength	0.00		
	Too acid	0.84				
39A, 39B:						
Peawick-------------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.12	Too acid	0.24
			Wetness depth	0.53	Wetness depth	0.53
	Too acid	0.50				
40A:						
Roanoke-------------	Poor		Poor		Poor	
	Too clayey	0.00	Wetness depth	0.00	Wetness depth	0.00
	Too acid	0.12	Low strength	0.00	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.59
41A:						
Seabrook------------	Poor		Fair		Fair	
	Wind erosion	0.00	Wetness depth	0.89	Too sandy	0.01
	Too sandy	0.01			Too acid	0.68
	Organic matter content low	0.12			Wetness depth	0.89
42B:						
Slagle--------------	Fair		Poor		Fair	
	Too acid	0.12	Low strength	0.00	Wetness depth	0.53
	Organic matter content low	0.12	Wetness depth	0.53	Too clayey	0.53
			Shrink-swell	0.87	Too acid	0.59
	Too clayey	0.92				
43B:						
Slagle--------------	Fair		Poor		Fair	
	Too acid	0.12	Low strength	0.00	Wetness depth	0.53
	Organic matter content low	0.12	Wetness depth	0.53	Too clayey	0.53
			Shrink-swell	0.87	Too acid	0.59
	Too clayey	0.92				

Source of Reclamation Material, Roadfill, and Topsoil—Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Emporia-------------	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Too acid	0.68
	Too acid	0.16	Shrink-swell	0.99		
44A:						
Tomotley------------	Fair		Poor		Poor	
	Too acid	0.01	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.88	Low strength	0.78	Too acid	0.59
45B:						
Turbeville----------	Poor		Fair		Poor	
	Too clayey	0.00	Low strength	0.10	Too clayey	0.00
	Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
	Too acid	0.50				
46B:						
Uchee---------------	Poor		Good		Poor	
	Wind erosion	0.00			Too sandy	0.00
	Too sandy	0.00			Too acid	0.76
	Organic matter content low	0.12				
47B, 48B:						
Udorthents----------	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham-------------	Fair		Good		Fair	
	Organic matter content low	0.12			Too clayey	0.53
	Too acid	0.54				
	Too clayey	0.92				
51A, 51B:						
Yeopim--------------	Fair		Poor		Fair	
	Organic matter content low	0.12	Low strength	0.00	Wetness depth	0.76
	Too acid	0.84	Wetness depth	0.76		
	Water erosion	0.99				

Ponds and Embankments

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1A:						
Altavista	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Cutbanks cave	1.00
			Piping	0.60	Depth to saturated zone	0.01
			Seepage	0.04		
2A:						
Augusta	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.10	Slow refill	0.30
3A:						
Bethera	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.01	Depth to saturated zone	1.00	Slow refill	0.30
			Ponding	1.00	Cutbanks cave	0.10
4A:						
Bibb	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.16		
5A, 5B:						
Bojac	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.08	Depth to water	1.00
6B:						
Caroline	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.01	Hard to pack	0.56	Depth to water	1.00
7B, 7C:						
Caroline	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.01	Hard to pack	0.56	Depth to water	1.00
Emporia	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.57	Depth to saturated zone	0.09	Depth to water	1.00
			Seepage	0.02		
			Piping	0.01		
8B:						
Catpoint	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.09	Depth to water	1.00
9A:						
Chickahominy	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.30
			Hard to pack	0.76	Cutbanks cave	0.10

Ponds and Embankments—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10A:						
Chickahominy--------	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Ponding	1.00		
			Hard to pack	0.77		
11B:						
Conetoe-------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.42	Depth to water	1.00
12B:						
Craven--------------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Slow refill	1.00
					Cutbanks cave	0.10
					Depth to saturated zone	0.06
13C3:						
Craven--------------	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.86	Cutbanks cave	0.10
					Depth to saturated zone	0.06
14B:						
Craven--------------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Slow refill	1.00
					Cutbanks cave	0.10
					Depth to saturated zone	0.06
Caroline------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.01	Hard to pack	0.56	Depth to water	1.00
15C3:						
Craven--------------	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.86	Cutbanks cave	0.10
					Depth to saturated zone	0.06
Caroline------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.01	Hard to pack	0.64	Depth to water	1.00
16C:						
Craven--------------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Slow refill	1.00
					Cutbanks cave	0.10
					Depth to saturated zone	0.06
Remlik--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.34	Depth to water	1.00
17C:						
Craven--------------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Slow refill	1.00
					Cutbanks cave	0.10
					Depth to saturated zone	0.06

Ponds and Embankments—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Uchee---------------	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
18A, 18B, 18C:						
Dogue---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.11	Depth to saturated zone	0.99	Slow refill	0.89
					Cutbanks cave	0.10
					Depth to saturated zone	0.01
19A:						
Dragston------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.36		
20B:						
Emporia-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.57	Depth to saturated zone	0.09	Depth to water	1.00
			Seepage	0.02		
			Piping	0.01		
21B, 22B:						
Emporia-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.57	Depth to saturated zone	0.09	Depth to water	1.00
			Seepage	0.02		
23B:						
Emporia-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.57	Depth to saturated zone	0.09	Depth to water	1.00
			Seepage	0.02		
			Piping	0.01		
Kempsville----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.04	Depth to water	1.00
24B:						
Izagora-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	0.86	Slow refill	0.30
					Cutbanks cave	0.10
					Depth to saturated zone	0.06
25B:						
Kempsville----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.04	Depth to water	1.00
26A:						
Lawnes--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.30
			Piping	1.00	Salinity and saturated zone	0.01

Ponds and Embankments—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Pond reservoir areas: Value	Embankments, dikes, and levees: Rating class and limiting features	Embankments, dikes, and levees: Value	Aquifer-fed excavated ponds: Rating class and limiting features	Aquifer-fed excavated ponds: Value
27B:						
Masada	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Hard to pack	0.26	Depth to water	1.00
28B3:						
Masada	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Hard to pack	0.40	Depth to water	1.00
29A:						
Mattan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Ponding	1.00	Slow refill	0.30
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	1.00		
30A:						
Munden	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Cutbanks cave	1.00
			Seepage	0.38	Depth to saturated zone	0.0
31A:						
Nahunta	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
			Piping	0.14	Cutbanks cave	0.10
32B:						
Nansemond	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Cutbanks cave	1.00
			Seepage	0.03	Depth to saturated zone	0.01
33A:						
Nawney	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
			Piping	0.20	Cutbanks cave	0.10
34A:						
Nawney	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Ponding	1.00	Slow refill	0.30
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.20		
35D:						
Nevarc	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Depth to water	1.00
	Slope	0.01				
	Slope	0.01				
Remlik	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.34	Depth to water	1.00
	Slope	0.01				
35E:						
Nevarc	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Depth to water	1.00
	Slope	0.12				

Ponds and Embankments—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
Remlik--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.34	Depth to water	1.00
	Slope	0.12				
35F:						
Nevarc--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.99	Depth to water	1.00
	Slope	0.94				
Remlik--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.34	Depth to water	1.00
	Slope	0.94				
36A:						
Newflat-------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	0.63		
37A:						
Nimmo---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.85		
38A, 38B, 38C:						
Pamunkey------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.05	Depth to water	1.00
39A, 39B:						
Peawick-------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	0.99	Depth to water	1.00
			Hard to pack	0.60		
40A:						
Roanoke-------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
41A:						
Seabrook------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.86	Cutbanks cave	1.00
			Seepage	0.45	Depth to saturated zone	0.06
42B:						
Slagle--------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.01	Depth to saturated zone	0.99	Slow refill	0.99
					Cutbanks cave	0.10
			Piping	0.03	Depth to saturated zone	0.01

Ponds and Embankments—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
43B:						
Slagle---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.01	Depth to saturated zone	0.99	Slow refill	0.99
			Piping	0.03	Cutbanks cave	0.10
					Depth to saturated zone	0.01
Emporia-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.57	Depth to saturated zone	0.09	Depth to water	1.00
			Seepage	0.02		
			Piping	0.01		
44A:						
Tomotley------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.11	Slow refill	0.30
45B:						
Turbeville----------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Hard to pack	0.49	Depth to water	1.00
46B:						
Uchee---------------	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
47B, 48B:						
Udorthents----------	Not rated		Not rated		Not rated	
49A, 49B, 50B3:						
Wickham-------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			Depth to water	1.00
51A, 51B:						
Yeopim--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.11	Depth to saturated zone	0.95	Slow refill	0.89
			Piping	0.25	Cutbanks cave	0.10
					Depth to saturated zone	0.02

Engineering Soil Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1A:												
Altavista-------	0-11	Fine sandy loam, sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	95-100	90-100	55-95	27-75	21-40	6-16
	11-62	Loam, clay loam, sandy clay loam, fine sandy loam	CL, SC, SC-SM	A-6, A-7	0	0	95-100	90-100	65-100	35-80	27-44	12-25
	62-74	Stratified fine sandy loam to loamy fine sand to fine sand, sandy loam, fine sandy loam, sand, gravelly sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-4, A-6	0	0	90-100	50-100	25-85	2-55	16-32	2-13
2A:												
Augusta---------	0-13	Sandy loam, fine sandy loam, loam	ML, SC-SM, SM	A-2-4, A-4	0	0	90-100	90-100	55-95	27-75	17-35	2-13
	13-27	Sandy clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	90-100	75-100	32-80	29-44	13-25
	27-72	Gravelly loamy sand, sandy loam, loam, sandy clay loam, clay loam, stratified loamy sand to gravelly loamy sand	SC-SM, SW-SC, CL	A-1-b, A-2-4, A-4, A-6	0	0	80-100	70-100	35-100	10-80	16-40	2-21

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
3A:												
Bethera---------	0-12	Silt loam, loam, fine sandy loam	CL	A-4, A-6	0	0	100	100	70-100	40-90	22-43	6-13
	12-72	Clay loam, clay, sandy clay, silty clay, silty clay loam	CH, CL	A-7-6	0	0	100	100	85-100	45-95	44-60	25-36
4A:												
Bibb------------	0-9	Fine sandy loam, sandy loam, silt loam, loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	98-100	95-100	55-100	30-90	18-35	2-12
	9-41	Fine sandy loam, sandy loam, silt loam, loam	CL-ML, SC-SM	A-2-4, A-4	0	0	98-100	95-100	55-100	30-90	20-34	4-15
	41-65	Gravelly loamy coarse sand, sandy loam, silt loam, loam, fine sandy loam, stratified sand to loamy sand to loamy fine sand to gravel to muck	ML, CL-ML, SC-SM, SM	A-4, A-3, A-2-4, A-1-b	0	0	60-100	50-100	25-100	2-90	0-31	NP-12

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
5A:												
Bojac-----------	0-10	Loamy fine sand, sandy loam, fine sandy loam	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	45-85	15-55	0-22	NP-4
	10-35	Sandy loam, fine sandy loam, loam, sandy clay loam, clay loam	CL, SC	A-2-4, A-4	0	0	95-100	90-100	55-100	27-80	21-38	6-19
	35-70	Loamy sand, loamy fine sand, coarse sand, stratified coarse sand to loamy fine sand	SW-SM, SP, SC-SM, SM	A-1, A-2-4, A-3	0	0	90-100	80-100	40-85	4-45	0-21	NP-4
5B:												
Bojac-----------	0-10	Loamy fine sand, sandy loam, fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	95-100	90-100	45-85	15-55	0-22	NP-4
	10-35	Sandy loam, fine sandy loam, loam, sandy clay loam, clay loam	CL, SC	A-2-4, A-4	0	0	95-100	90-100	55-100	27-80	21-38	6-19
	35-70	Loamy sand, loamy fine sand, coarse sand, stratified coarse sand to loamy fine sand	SC-SM, SM, SP, SW-SM	A-1, A-2-4, A-3	0	0	90-100	80-100	40-85	4-45	0-21	NP-4

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
6B:												
Caroline--------	0-5	Silt loam, loam, fine sandy loam, sandy loam	CL	A-4	0	0	90-100	85-100	52-100	26-90	26-39	9-17
	5-70	Clay, clay loam, sandy clay, silty clay loam, silty clay, sandy clay loam	CL, CH	A-7-6	0	0	90-100	85-100	72-100	38-95	39-63	21-40
7B:												
Caroline--------	0-5	Silt loam, loam, fine sandy loam, sandy loam	CL	A-4	0	0	90-100	85-100	52-100	26-90	26-39	9-17
	5-70	Clay, clay loam, sandy clay, silty clay loam, silty clay, sandy clay loam	CL, CH	A-7-6	0	0	90-100	85-100	72-100	38-95	39-63	21-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Emporia---------	0-11	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	ML, CL, SC, SM	A-2-4, A-4, A-6	0	0-3	90-100	70-100	50-95	28-75	19-33	3-12
	11-31	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CL, SC	A-2-4, A-4, A-6, A-7	0	0-3	90-100	70-100	56-100	25-80	24-44	9-25
	31-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, gravelly sandy clay loam, fine sandy loam	CL, SC, CH	A-2-4, A-4, A-6, A-7	0	0-3	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	ML, SC, SM, CL	A-6, A-1, A-2-6, A-4	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29
7C:												
Caroline--------	0-5	Silt loam, loam, fine sandy loam, sandy loam	CL	A-4	0	0	90-100	85-100	52-100	26-90	26-39	9-17
	5-70	Clay, clay loam, sandy clay, silty clay loam, silty clay, sandy clay loam	CL, CH	A-7-6	0	0	90-100	85-100	72-100	38-95	39-63	21-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Emporia---------	0-11	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	SM, CL, ML, SC	A-2-4, A-4, A-6	0	0-3	90-100	70-100	50-95	28-75	19-33	3-12
	11-31	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CL, SC	A-2-4, A-4, A-7, A-6	0	0-3	90-100	70-100	56-100	25-80	24-44	9-25
	31-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CH, CL, SC	A-7, A-6, A-4, A-2-4	0	0-3	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	CL, ML, SC, SM	A-1, A-2-6, A-6, A-4	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8B:												
Catpoint--------	0-8	Loamy sand, loamy fine sand, sand, fine sand, gravelly sand	SC-SM, SM, SW-SM	A-1-b, A-3, A-2-4	0	0	85-100	55-100	30-85	3-45	0-24	NP-6
	8-24	Loamy sand, loamy fine sand, sand, fine sand, gravelly sand	SW-SM, SC-SM, SM	A-2-4, A-3, A-1-b	0	0	85-100	55-100	30-85	3-45	0-23	NP-6
	24-41	Loamy sand, fine sand, sand, loamy fine sand, sandy loam, fine sandy loam, gravelly loamy sand	SW-SM, SC-SM, SM	A-2-4, A-3, A-1-b	0	0	85-100	55-100	30-85	10-55	0-27	NP-10
	41-66	Loamy sand, fine sand, sand, loamy fine sand, sandy loam, fine sandy loam, very gravelly loamy sand	SW-SM, SM, GW-GM, GM, SC-SM	A-3, A-1-b, A-2-4	0	0-5	25-100	20-100	10-85	10-55	0-27	NP-10
9A:												
Chickahominy----	0-5	Loam, silt loam, very fine sandy loam	CL, CL-ML, SC	A-4	0	0	98-100	95-100	81-100	48-90	21-39	6-17
	5-64	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-7-6	0	0	98-100	95-100	72-100	56-95	45-69	25-44

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
10A:												
Chickahominy----	0-5	Loam, silt loam, very fine sandy loam	SC, CL-ML, CL	A-4	0	0	98-100	95-100	81-100	48-90	21-39	6-17
	8-72	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-7-6	0	0	95-100	80-100	72-100	56-95	45-69	25-44
11B:												
Conetoe---------	0-22	Loamy sand, loamy fine sand, fine sand, sand	SC-SM, SM, SP-SM	A-3, A-2-4	0	0	100	100	50-85	5-45	0-26	NP-6
	22-42	Sandy loam, sandy clay loam, fine sandy loam	SC-SM, SC	A-4, A-2-4	0	0	100	100	60-90	30-55	20-36	6-17
	42-72	Sand, fine sand, loamy sand, loamy fine sand, sandy loam, fine sandy loam, sandy clay loam	SC-SM, SM, SP-SM	A-4, A-3, A-2-4	0	0	100	100	50-90	5-55	0-36	NP-17
12B:												
Craven----------	0-10	Loam, silt loam, fine sandy loam	CL, ML, SC, SM	A-6, A-4	0	0	100	95-100	70-100	38-90	19-41	3-19
	10-45	Clay, silty clay, silty clay loam, clay loam	CH, CL	A-7-6	0	0	100	95-100	86-100	66-95	43-63	25-40
	45-70	Clay loam, clay, silty clay loam, silty clay, sandy clay loam, sandy clay	CL, CH	A-7-6, A-6	0	0	100	95-100	75-100	35-95	35-63	17-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
13C3:												
Craven----------	0-6	Clay loam, sandy clay loam	CH, CL	A-6, A-7-6	0	0	100	95-100	80-100	50-80	38-53	19-29
	6-20	Clay, silty clay, silty clay loam, clay loam	CH, CL	A-7-6	0	0	100	95-100	86-100	66-95	43-67	25-44
	20-64	Sandy clay loam, sandy loam, loamy sand	SC-SM, SC, SM	A-6, A-4, A-2-4	0	0	100	95-100	50-90	15-55	16-44	2-25
14B:												
Craven----------	0-10	Loam, silt loam, fine sandy loam	SM, SC, ML, CL	A-4, A-6	0	0	100	95-100	70-100	38-90	19-41	3-19
	10-45	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	95-100	86-100	66-95	43-63	25-40
	45-70	Clay loam, clay, silty clay loam, silty clay, sandy clay loam, sandy clay	CL, CH	A-7-6, A-6	0	0	100	95-100	75-100	35-95	35-63	17-40
Caroline--------	0-5	Silt loam, loam, fine sandy loam, sandy loam	CL	A-4	0	0	90-100	85-100	52-100	26-90	26-39	9-17
	5-70	Clay, clay loam, sandy clay, silty clay loam, silty clay, sandy clay loam	CL, CH	A-7-6	0	0	90-100	85-100	72-100	38-95	39-63	21-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
15C3:												
Craven----------	0-6	Clay loam, sandy clay loam	CH, CL	A-7-6, A-6	0	0	100	95-100	80-100	50-80	38-53	19-29
	6-20	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	95-100	86-100	66-95	43-67	25-44
	20-64	Sandy clay loam, sandy loam, loamy sand	SC, SC-SM, SM	A-4, A-2-4, A-6	0	0	100	95-100	50-90	15-55	16-44	2-25
Caroline--------	0-5	Clay loam, sandy clay loam	CL, CH	A-6, A-7-6	0	0	90-100	85-100	68-100	30-80	40-51	21-29
	5-70	Clay, clay loam, sandy clay, silty clay loam, silty clay, sandy clay loam	CH, CL	A-7-6	0	0	90-100	85-100	72-100	38-95	39-63	21-40
16C:												
Craven----------	0-10	Loam, silt loam, fine sandy loam	ML, CL, SM, SC	A-4, A-6	0	0	100	95-100	70-100	38-90	19-41	3-19
	10-45	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	95-100	86-100	66-95	43-63	25-40
	45-70	Clay loam, clay, silty clay loam, silty clay, sandy clay loam, sandy clay	CL, CH	A-7-6, A-6	0	0	100	95-100	75-100	35-95	35-63	17-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Remlik----------	0-29	Fine sand, sand, loamy sand, loamy fine sand, gravelly sand	SP, SM, SP-SM, SC-SM	A-1, A-2-4, A-3	0	0	80-100	50-100	25-85	2-45	0-20	NP-2
	29-50	Fine sandy loam, sandy loam, sandy clay loam, gravelly fine sandy loam, loamy sand, loamy fine sand	SC-SM, SC	A-2-4, A-6, A-4	0	0	80-100	50-100	25-90	15-55	15-36	1-17
	50-72	Loamy fine sand, sand, loamy sand, sandy loam, gravelly sand	SC, SC-SM, SM, SP, SP-SM	A-2-4, A-3, A-1	0	0	80-100	50-100	25-85	2-45	0-30	NP-12
17C:												
Craven----------	0-10	Loam, silt loam, fine sandy loam	CL, ML, SM, SC	A-6, A-4	0	0	100	95-100	70-100	38-90	19-41	3-19
	10-45	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	95-100	86-100	66-95	43-63	25-40
	45-70	Clay loam, clay, silty clay loam, silty clay, sandy clay loam, sandy clay	CL, CH	A-6, A-7-6	0	0	100	95-100	75-100	35-95	35-63	17-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Uchee-----------	0-4	Loamy sand, sand	SM, SC-SM	A-1-b, A-2-4	0	0	90-100	80-100	40-75	5-30	0-29	NP-6
	4-26	Loamy sand, sand	SC-SM, SM	A-2-4, A-1-b	0	0	90-100	80-100	40-75	5-30	0-29	NP-6
	26-50	Sandy clay loam, sandy loam, sandy clay, clay, loamy sand	SC, SC-SM	A-2-4, A-4, A-6	0	0	90-100	80-100	40-95	12-60	15-49	1-28
	50-72	Sandy clay loam, sandy loam, clay, sandy clay	CL, SC	A-7, A-6, A-4	0	0	90-100	80-100	50-100	25-95	26-59	10-36
18A:												
Dogue-----------	0-12	Silt loam, loam, fine sandy loam	CL, ML, SC, SM	A-4	0	0	95-100	80-100	56-100	32-90	17-28	2-10
	12-52	Clay, clay loam, sandy clay, sandy clay loam	CH, CL, SC	A-7-6, A-6	0	0	95-100	80-100	65-100	30-95	39-59	21-36
	52-72	Clay loam, sandy clay loam, sandy clay, sandy loam	SC, CH, CL	A-4, A-7-6, A-6	0	0	95-100	80-100	50-100	25-95	22-59	6-36
18B:												
Dogue-----------	0-12	Silt loam, loam, fine sandy loam	SM, CL, ML, SC	A-4	0	0	95-100	80-100	56-100	32-90	17-28	2-10
	12-52	Clay, clay loam, sandy clay, sandy clay loam	CH, CL, SC	A-6, A-7-6	0	0	95-100	80-100	65-100	30-95	39-59	21-36
	52-72	Clay loam, sandy clay loam, sandy clay, sandy loam	CH, CL, SC	A-4, A-6, A-7-6	0	0	95-100	80-100	50-100	25-95	22-59	6-36

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
18C:												
Dogue-----------	0-12	Silt loam, loam, fine sandy loam	CL, ML, SC, SM	A-4	0	0	95-100	80-100	56-100	32-90	17-28	2-10
	12-52	Clay, clay loam, sandy clay, sandy clay loam	CL, CH, SC	A-7-6, A-6	0	0	95-100	80-100	65-100	30-95	39-59	21-36
	52-72	Clay loam, sandy clay loam, sandy clay, sandy loam	CH, CL, SC	A-4, A-7-6, A-6	0	0	95-100	80-100	50-100	25-95	22-59	6-36
19A:												
Dragston--------	0-4	Fine sandy loam, sandy loam, loamy sand, loam, loamy fine sand	CL-ML, SC-SM, SM	A-4, A-2-4	0	0	100	95-100	50-95	15-75	17-28	1-7
	4-25	Fine sandy loam, sandy loam, loam, loamy sand, loamy fine sand	CL, CL-ML, SC, SC-SM	A-2-4, A-4	0	0	100	95-100	50-95	15-75	0-30	NP-12
	25-75	Sand, fine sand, loamy sand, loamy fine sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-2-4, A-3	0	0	95-100	85-100	45-85	5-55	0-25	NP-7

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
20B:												
Emporia---------	0-11	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	SC, SM, ML, CL	A-4, A-6, A-2-4	0	0-3	90-100	70-100	50-95	28-75	19-33	3-12
	11-31	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CL, SC	A-6, A-7, A-4, A-2-4	0	0-3	90-100	70-100	56-100	25-80	24-44	9-25
	31-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, gravelly sandy clay loam, fine sandy loam	CH, CL, SC	A-2-4, A-4, A-6, A-7	0	0-3	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	CL, SM, SC, ML	A-6, A-4, A-1, A-2-6	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
21B:												
Emporia---------	0-8	Gravelly fine sandy loam, very gravelly sandy loam, gravelly sandy loam, fine sandy loam	CL, ML, SC, SM	A-4, A-2-4, A-6	0	0-3	70-100	50-100	35-85	20-55	19-33	3-12
	8-23	Sandy clay loam, clay loam, gravelly sandy clay loam, very gravelly sandy clay loam, sandy loam	SC, CL	A-7, A-6	0	0-3	80-100	50-100	40-100	20-80	27-44	12-25
	23-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CH, CL, SC	A-2-4, A-4, A-6, A-7	0	0-3	80-100	70-100	45-100	25-80	26-59	10-36
	60-70	Sandy loam, very gravelly sandy loam, clay	SM, SC, ML, CL	A-2-6, A-4, A-6, A-1	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
22B:												
Emporia---------	0-4	Loam, fine sandy loam, sandy loam, gravelly fine sandy loam	ML, SC, SM, CL	A-2-4, A-6, A-4	0	0	90-100	70-100	50-95	28-75	19-33	3-12
	4-22	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	SC, CL	A-7, A-6, A-4, A-2-4	0	0	90-100	70-100	56-100	25-80	24-44	9-25
	22-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, gravelly sandy clay loam, fine sandy loam	SC, CH, CL	A-7, A-6, A-4, A-2-4	0	0	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	SM, SC, ML, CL	A-6, A-4, A-2-6, A-1	0	0	70-100	50-100	30-100	15-95	18-50	2-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
23B:												
Emporia---------	0-11	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	ML, CL, SC, SM	A-6, A-4, A-2-4	0	0-3	90-100	70-100	50-95	28-75	19-33	3-12
	11-31	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	CL, SC	A-2-4, A-7, A-6, A-4	0	0-3	90-100	70-100	56-100	25-80	24-44	9-25
	31-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, gravelly sandy clay loam, fine sandy loam	CL, SC, CH	A-6, A-4, A-2-4, A-7	0	0-3	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	CL, ML, SC, SM	A-2-6, A-1, A-6, A-4	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Kempsville------	0-8	Loamy sand, sandy loam, fine sandy loam, gravelly sandy loam	SC-SM, SM	A-2-4, A-1	0	0	90-100	50-100	35-85	16-55	17-28	2-7
	8-40	Sandy loam, fine sandy loam, loam, sandy clay loam, gravelly sandy loam	SC, CL	A-4, A-2-4	0	0	90-100	50-100	35-95	16-75	23-36	7-16
	40-64	Sandy clay loam, loam, fine sandy loam, sandy loam, gravelly sandy clay loam	SC, CL	A-6	0	0	90-100	50-100	40-95	20-75	27-44	12-25
	64-72	Sandy loam, fine sandy loam, loam, sandy clay loam, loamy sand, very gravelly sandy loam	SC, SC-SM, SM, SW-SM	A-1, A-2-4, A-4, A-6	0	0	90-100	50-100	25-95	10-75	16-40	2-21
24B:												
Izagora---------	0-10	Silt loam, loam, fine sandy loam	CL-ML, CL	A-4	0	0	100	100	66-100	38-90	21-35	6-13
	10-35	Clay loam, silty clay loam, loam, silt loam	CL	A-7-6, A-6	0	0	100	100	85-100	60-95	27-44	12-25
	35-72	Clay loam, clay, silty clay	CH, CL	A-7-6	0	0	100	100	86-100	66-95	43-63	25-40

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
25B:												
Kempsville------	0-8	Loamy sand, sandy loam, fine sandy loam, gravelly sandy loam	SM, SC-SM	A-1, A-2-4	0	0	90-100	50-100	35-85	16-55	17-28	2-7
	8-40	Sandy loam, fine sandy loam, loam, sandy clay loam, gravelly sandy loam	SC, CL	A-4, A-2-4	0	0	90-100	50-100	35-95	16-75	23-36	7-16
	40-64	Sandy clay loam, loam, fine sandy loam, sandy loam, gravelly sandy clay loam	CL, SC	A-6	0	0	90-100	50-100	40-95	20-75	27-44	12-25
	64-72	Sandy loam, fine sandy loam, loam, sandy clay loam, loamy sand, very gravelly sandy loam	SC, SM, SW-SM, SC-SM	A-6, A-4, A-1, A-2-4	0	0	90-100	50-100	25-95	10-75	16-40	2-21
26A:												
Lawnes----------	0-13	Muck, mucky loam, sandy loam, fine sandy loam, loam, silt loam	PT	A-8	0	0	100	100	60-100	30-100	---	---
	13-55	Loam, sandy loam, stratified sand to mucky silty clay loam, muck	CL-ML, CL, ML, SC	A-2-4, A-4	0	0	100	100	50-95	5-75	17-56	2-20
	55-62	Sand, stratified sand to mucky silty clay loam, muck	PT, SP-SC, SC, CL, CL-ML, ML	A-4, A-2-4	0	0	100	100	50-95	3-75	0-70	NP-20

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
27B:												
Masada----------	0-10	Loam, fine sandy loam, sandy loam, sandy clay loam	CL, SC	A-4, A-6	0	0-3	90-100	80-100	50-95	25-75	21-43	6-21
	10-58	Clay, clay loam, gravelly clay, sandy clay	CH, CL	A-6, A-7-6	0	0-5	80-100	60-100	55-100	45-95	37-63	19-40
	58-70	Clay loam, sandy loam, sandy clay loam, gravelly sandy clay loam	CL	A-4, A-6, A-7-6	0	0-5	80-100	60-100	35-100	21-80	26-50	10-29
28B3:												
Masada----------	0-6	Sandy clay loam	SC, CL	A-6	0	0-3	90-100	80-100	65-90	30-55	30-47	13-24
	6-54	Clay, clay loam, gravelly clay, sandy clay	CL, CH	A-7-6, A-6	0	0-5	80-100	60-100	55-100	45-95	37-63	19-40
	54-64	Clay loam, sandy loam, sandy clay loam, gravelly sandy clay loam	CL	A-4, A-7-6, A-6	0	0-5	80-100	60-100	35-100	21-80	26-50	10-29
29A:												
Mattan----------	0-12	Mucky loam, mucky silt loam, mucky sandy loam, mucky silty clay loam, muck	CL	A-6	0	0	100	100	70-100	40-95	30-40	10-20
	12-39	Muck	PT	A-8	0	0	100	100	95-100	90-100	12-30	NP-11
	39-70	Mucky fine sandy loam, loamy sand, stratified loamy sand to mucky silty clay loam	ML, CL, SC, SM	A-6, A-4, A-2-4	0	0	100	100	50-100	15-95	21-64	4-24

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
30A:												
Munden----------	0-6	Loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam	SC-SM, SM	A-4, A-2-4	0	0	100	90-100	45-95	15-75	0-24	NP-6
	6-38	Fine sandy loam, sandy loam, loam	SC, SC-SM	A-6, A-2-4, A-4	0	0	100	90-100	55-85	30-55	18-30	4-12
	38-74	Sand, loamy sand, loamy coarse sand, loamy fine sand, fine sand, fine sandy loam, sandy loam	SP-SM, SC-SM, SM	A-3, A-2-4	0	0	100	90-100	45-85	5-55	0-25	NP-7
31A:												
Nahunta---------	0-4	Silt loam, loam	ML, CL, CL-ML	A-4	0	0	100	100	85-100	60-90	19-37	3-12
	4-72	Silt loam, clay loam, loam, silty clay loam	CL	A-7-6, A-6	0	0	100	100	90-100	70-95	27-44	12-25

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
32B:												
Nansemond-------	0-19	Loamy sand, loamy fine sand, sandy loam, fine sandy loam	SC-SM, SM	A-1, A-2-4, A-4	0	0	100	92-100	45-85	15-55	16-24	1-6
	19-43	Gravelly fine sandy loam, gravelly sandy loam, fine sandy loam	SC, SC-SM	A-2-4, A-4	0	0	100	50-100	35-85	16-55	20-30	6-12
	43-60	Gravelly loamy sand, gravelly sandy loam, gravelly sand, sandy loam, fine sand, loamy fine sand	SC-SM	A-1-b, A-2, A-4	0	0	100	50-100	25-70	2-40	15-24	1-7
	60-70	Sandy loam, fine sand, loamy fine sand, gravelly loamy sand, gravelly sandy loam, gravelly sand	SC-SM, SC	A-4, A-2, A-1-b	0	0	100	50-100	25-70	2-40	20-29	6-12
33A:												
Nawney----------	0-14	Silt loam, sandy loam, fine sandy loam, loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	50-100	15-95	18-49	2-18
	14-72	Sandy clay loam, sandy loam, loam, fine sandy loam, clay loam, silty clay loam, stratified sand to clay	SM, SC, ML, CL	A-7, A-6, A-4, A-2-4	0	0	100	95-100	50-100	5-95	0-60	NP-32

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
34A:												
Nawney----------	0-14	Silt loam, sandy loam, fine sandy loam, loam, silty clay loam	CL	A-7, A-6	0	0	100	95-100	50-100	15-95	18-49	2-18
	14-72	Sandy clay loam, sandy loam, loam, fine sandy loam, clay loam, silty clay loam, stratified sand to clay	ML, CL, SC, SM	A-7, A-6, A-4, A-2-4	0	0	100	80-100	40-100	5-95	0-60	NP-32
35D:												
Nevarc----------	0-11	Sandy loam, fine sandy loam, loam, very fine sandy loam, silt loam	SC, SC-SM	A-2-4, A-4	0	0	98-100	95-100	60-100	30-90	20-33	4-12
	11-54	Clay, sandy clay, silty clay, clay loam, sandy clay loam, silty clay loam	CH, CL	A-7	0	0	98-100	95-100	76-100	35-95	43-63	24-40
	54-72	Fine sandy loam, sandy loam, loamy sand, sand, stratified sand to clay	ML, SM, SC, CL	A-2-4, A-4, A-6	0	0	98-100	95-100	50-100	5-95	16-53	2-32

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Remlik----------	0-29	Fine sand, sand, loamy sand, loamy fine sand, gravelly sand	SC-SM, SM, SP-SM, SP	A-1, A-2-4, A-3	0	0	80-100	50-100	25-85	2-45	0-20	NP-2
	29-50	Fine sandy loam, sandy loam, sandy clay loam, gravelly fine sandy loam, loamy sand, loamy fine sand	SC-SM, SC	A-2-4, A-4, A-6	0	0	80-100	50-100	25-90	15-55	15-36	1-17
	50-72	Loamy fine sand, sand, loamy sand, sandy loam, gravelly sand	SC, SP, SP-SM, SM, SC-SM	A-1, A-3, A-2-4	0	0	80-100	50-100	25-85	2-45	0-30	NP-12
35E:												
Nevarc----------	0-11	Sandy loam, fine sandy loam, loam, very fine sandy loam, silt loam	SC, SC-SM	A-4, A-2-4	0	0	98-100	95-100	60-100	30-90	20-33	4-12
	11-54	Clay, sandy clay, silty clay, clay loam, sandy clay loam, silty clay loam	CH, CL	A-7	0	0	98-100	95-100	76-100	35-95	43-63	24-40
	54-72	Fine sandy loam, sandy loam, loamy sand, sand, stratified sand to clay	ML, CL, SC, SM	A-2-4, A-6, A-4	0	0	98-100	95-100	50-100	5-95	16-53	2-32

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Remlik----------	0-29	Fine sand, sand, loamy sand, loamy fine sand, gravelly sand	SP, SC-SM, SM, SP-SM	A-1, A-3, A-2-4	0	0	80-100	50-100	25-85	2-45	0-20	NP-2
	29-50	Fine sandy loam, sandy loam, sandy clay loam, gravelly fine sandy loam, loamy sand, loamy fine sand	SC-SM, SC	A-4, A-6, A-2-4	0	0	80-100	50-100	25-90	15-55	15-36	1-17
	50-72	Loamy fine sand, sand, loamy sand, sandy loam, gravelly sand	SP, SP-SM, SC-SM, SC, SM	A-2-4, A-3, A-1	0	0	80-100	50-100	25-85	2-45	0-30	NP-12
35F:												
Nevarc----------	0-11	Sandy loam, fine sandy loam, loam, very fine sandy loam, silt loam	SC, SC-SM	A-2-4, A-4	0	0	98-100	95-100	60-100	30-90	20-33	4-12
	11-54	Clay, sandy clay, silty clay, clay loam, sandy clay loam, silty clay loam	CL, CH	A-7	0	0	98-100	95-100	76-100	35-95	43-63	24-40
	54-72	Fine sandy loam, sandy loam, loamy sand, sand, stratified sand to clay	CL, SC, SM, ML	A-4, A-2-4, A-6	0	0	98-100	95-100	50-100	5-95	16-53	2-32

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Remlik----------	0-29	Fine sand, sand, loamy sand, loamy fine sand, gravelly sand	SC-SM, SM, SP, SP-SM	A-3, A-2-4, A-1	0	0	80-100	50-100	25-85	2-45	0-20	NP-2
	29-50	Fine sandy loam, sandy loam, sandy clay loam, gravelly fine sandy loam, loamy sand, loamy fine sand	SC-SM, SC	A-2-4, A-6, A-4	0	0	80-100	50-100	25-90	15-55	15-36	1-17
	50-72	Loamy fine sand, sand, loamy sand, sandy loam, gravelly sand	SP, SM, SC-SM, SC, SP-SM	A-2-4, A-3, A-1	0	0	80-100	50-100	25-85	2-45	0-30	NP-12
36A:												
Newflat---------	0-6	Silt loam, loam, very fine sandy loam	CL-ML, ML	A-4	0	0	100	100	82-100	58-90	21-41	6-17
	6-55	Silty clay, clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	100	86-100	66-95	45-69	25-44
	55-64	Clay loam, clay, silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	86-100	66-95	41-69	21-44

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
37A:												
Nimmo-----------	0-14	Sandy loam, fine sandy loam, loamy fine sand, loamy sand	ML, SC, SC-SM, SM	A-4, A-2-4	0	0	100	95-100	50-85	15-55	17-32	1-9
	14-32	Fine sandy loam, sandy loam, loam	CL, SC	A-2-4, A-4	0	0	100	95-100	60-95	30-75	18-30	4-12
	32-64	Coarse sand, loamy sand, loamy fine sand, sand, fine sand, gravelly sand	SP-SM, SC-SM, SM	A-2-4, A-3	0	0	100	70-100	35-85	5-45	0-21	NP-4
38A:												
Pamunkey--------	0-10	Loam, fine sandy loam, sandy loam, silt loam	CL, CL-ML, ML	A-4	0	0	90-100	80-100	50-100	25-90	17-31	2-10
	10-16	Loam, fine sandy loam, sandy clay loam, clay loam, silty clay loam	CL, SC	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25
	16-72	Clay loam, fine sandy loam, sandy clay loam, loam, silty clay loam	SC, CL	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38B:												
Pamunkey--------	0-10	Loam, fine sandy loam, sandy loam, silt loam	CL, CL-ML, ML	A-4	0	0	90-100	80-100	50-100	25-90	17-31	2-10
	10-16	Loam, fine sandy loam, sandy clay loam, clay loam, silty clay loam	SC, CL	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25
	16-72	Clay loam, fine sandy loam, sandy clay loam, loam, silty clay loam	CL, SC	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25
38C:												
Pamunkey--------	0-10	Loam, fine sandy loam, sandy loam, silt loam	CL, CL-ML, ML	A-4	0	0	90-100	80-100	50-100	25-90	17-31	2-10
	10-16	Loam, fine sandy loam, sandy clay loam, clay loam, silty clay loam	CL, SC	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25
	16-72	Clay loam, fine sandy loam, sandy clay loam, loam, silty clay loam	SC, CL	A-6	0	0-3	90-100	80-100	55-100	32-95	27-44	12-25
39A, 39B:												
Peawick---------	0-5	Silt loam, loam	CL, CL-ML	A-4	0	0	98-100	95-100	80-100	55-90	21-39	6-17
	5-36	Silty clay, clay, silty clay loam, clay loam	CH, CL	A-7-6	0	0	98-100	95-100	85-100	65-95	45-69	25-44
	36-64	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	98-100	95-100	85-100	65-95	45-69	25-44

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
40A:												
Roanoke---------	0-5	Silt loam, loam, fine sandy loam	SC, CL, CL-ML, SC-SM	A-6, A-4	0	0	95-100	85-100	60-100	35-90	21-43	6-18
	5-55	Clay, silty clay, clay loam, silty clay loam, sandy clay loam	CL, CH	A-7-6	0	0	95-100	85-100	70-100	30-95	39-67	21-44
	55-75	Stratified sandy loam to sandy clay loam, very gravelly sand, clay	SM, GC-GM, CL-ML, SC-SM	A-1, A-2-6, A-4	0	0-5	60-100	45-100	22-100	2-95	18-59	2-36
41A:												
Seabrook--------	0-9	Loamy sand, loamy fine sand, fine sand	SM, SC-SM	A-2-4	0	0	100	100	45-85	15-45	0-28	NP-7
	9-60	Loamy sand, loamy fine sand, fine sand, sand, loamy coarse sand	SM, SC-SM	A-3, A-2-4	0	0	100	100	50-85	5-45	0-25	NP-7
	60-80	Gravelly sand, sand, loamy sand, loamy fine sand, fine sand, loamy coarse sand	SM, SW, SC-SM	A-1-b, A-3, A-2-4	0	0	70-100	50-100	25-85	2-45	0-25	NP-7

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
42B:												
Slagle----------	0-10	Fine sandy loam, sandy loam, loam	SC, CL, SC-SM	A-4, A-2-4	0	0-2	95-100	92-100	55-95	28-75	20-33	4-12
	10-44	Sandy clay loam, loam, clay loam, fine sandy loam	SC, CL	A-6, A-7	0	0-2	95-100	92-100	65-100	40-80	29-50	12-29
	44-63	Sandy clay loam, loam, clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0-2	95-100	92-100	65-100	40-95	29-50	12-29
43B:												
Slagle----------	0-10	Fine sandy loam, sandy loam, loam	SC-SM, SC, CL	A-4, A-2-4	0	0-2	95-100	92-100	55-95	28-75	20-33	4-12
	10-44	Sandy clay loam, loam, clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0-2	95-100	92-100	65-100	40-80	29-50	12-29
	44-63	Sandy clay loam, loam, clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0-2	95-100	92-100	65-100	40-95	29-50	12-29

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Emporia---------	0-11	Fine sandy loam, sandy loam, loam, gravelly fine sandy loam	CL, ML, SC, SM	A-2-4, A-4, A-6	0	0-3	90-100	70-100	50-95	28-75	19-33	3-12
	11-31	Clay loam, sandy clay loam, loam, sandy loam, fine sandy loam, gravelly sandy clay loam	SC, CL	A-2-4, A-7, A-6, A-4	0	0-3	90-100	70-100	56-100	25-80	24-44	9-25
	31-60	Clay, sandy clay, sandy clay loam, loam, clay loam, sandy loam, gravelly sandy clay loam, fine sandy loam	CH, CL, SC	A-2-4, A-6, A-7, A-4	0	0-3	90-100	70-100	45-100	25-80	26-59	10-36
	60-72	Sandy loam, very gravelly sandy loam, clay	CL, SM, ML, SC	A-2-6, A-4, A-6, A-1	0	0-3	70-100	50-100	30-100	15-95	18-50	2-29
44A:												
Tomotley--------	0-4	Fine sandy loam, loam, loamy fine sand, loamy sand	SC-SM, SM	A-4, A-2-4	0	0	98-100	92-100	45-85	15-55	18-43	2-13
	4-15	Fine sandy loam, sandy clay loam, clay loam, loam	SC, CL-ML, SC-SM, CL	A-7, A-6, A-4	0	0	98-100	92-100	65-100	38-80	20-44	6-25
	15-65	Sandy clay loam, fine sandy loam, clay loam, loam	SC, CL, SC-SM	A-6	0	0	98-100	92-100	65-100	38-80	28-45	12-25
	65-75	Loamy sand, stratified sand to clay		A-3, A-7, A-2-4, A-4, A-6	0	0	100	100	50-100	5-95	0-57	NP-36

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
45B:												
Turbeville------	0-8	Loam, fine sandy loam	CL	A-4	0	0	95-100	92-100	65-95	40-75	26-39	9-17
	8-72	Clay, sandy clay, clay loam	CH, CL	A-7-6	0	0	95-100	92-100	75-100	33-95	39-67	21-44
46B:												
Uchee-----------	0-4	Loamy sand, sand	SM, SC-SM	A-2-4, A-1-b	0	0	90-100	80-100	40-75	5-30	0-29	NP-6
	4-26	Loamy sand, sand	SC-SM, SM	A-2-4, A-1-b	0	0	90-100	80-100	40-75	5-30	0-29	NP-6
	26-50	Sandy clay loam, sandy loam, sandy clay, clay, loamy sand	SC-SM, SC	A-6, A-4, A-2-4	0	0	90-100	80-100	40-95	12-60	15-49	1-28
	50-72	Sandy clay loam, sandy loam, clay, sandy clay	SC, CL	A-4, A-6, A-7	0	0	90-100	80-100	50-100	25-95	26-59	10-36
47B, 48B:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
49A:												
Wickham---------	0-12	Fine sandy loam, sandy loam, loam	CL-ML, SC, SC-SM, CL	A-4	0	0	100	100	60-95	30-75	20-31	4-10
	12-50	Sandy clay loam, clay loam, loam, sandy loam	CL, SC	A-7-6, A-6	0	0	100	100	60-100	30-80	27-44	12-25
	50-62	Sandy clay loam, clay loam, loam, sandy loam	CL, SC	A-6, A-7-6	0	0	100	100	60-100	30-80	27-44	12-25

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
49B:												
Wickham---------	0-12	Fine sandy loam, sandy loam, loam	SC-SM, CL, CL-ML, SC	A-4	0	0	100	100	60-95	30-75	20-31	4-10
	12-50	Sandy clay loam, clay loam, loam, sandy loam	SC, CL	A-6, A-7-6	0	0	100	100	60-100	30-80	27-44	12-25
	50-62	Sandy clay loam, clay loam, loam, sandy loam	SC, CL	A-6, A-7-6	0	0	100	100	60-100	30-80	27-44	12-25
50B3:												
Wickham---------	0-4	Sandy clay loam, clay loam	SC, CL, SC-SM	A-7-6, A-6	0	0	100	100	80-100	35-80	28-45	12-25
	4-50	Sandy clay loam, clay loam, loam, sandy loam	CL, SC	A-7-6, A-6	0	0	100	100	60-100	30-80	27-44	12-25
	50-62	Sandy clay loam, clay loam, loam, sandy loam	CL, SC	A-7-6, A-6	0	0	100	100	60-100	30-80	27-44	12-25
51A:												
Yeopim----------	0-10	Silt loam, loam, fine sandy loam	ML, CL-ML	A-4	0	0	100	100	70-100	40-90	16-31	1-10
	10-64	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	100	100	85-100	60-95	29-44	13-25
	64-72	Loam, silt loam, silty clay loam	CL	A-6, A-7, A-4	0	0	100	100	85-100	60-95	24-44	9-25

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
51B:												
Yeopim----------	0-10	Silt loam, loam, fine sandy loam	ML, CL-ML	A-4	0	0	100	100	70-100	40-90	16-31	1-10
	10-64	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	100	100	85-100	60-95	29-44	13-25
	64-72	Loam, silt loam, silty clay loam	CL	A-4, A-7, A-6	0	0	100	100	85-100	60-95	24-44	9-25

Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
1A:														
Altavista------------	0-11	25-80	10-45	10-24	1.30-1.50	14.00-42.00	0.12-0.20	0.0-2.9	0.5-3.0	.24	.24	5	3	86
	11-62	20-80	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.20	0.0-2.9	0.0-0.5	.24	.24			
	62-74	50-95	2-25	5-20	1.40-1.70	4.00-142.00	0.05-0.15	0.0-2.9	0.0-0.5	.24	.24			
2A:														
Augusta--------------	0-13	25-80	10-45	5-20	1.40-1.70	14.00-42.00	0.10-0.15	0.0-2.9	0.5-2.0	.20	.20	4	3	86
	13-27	20-75	10-45	20-35	1.35-1.60	4.00-14.00	0.12-0.18	0.0-2.9	0.0-0.5	.24	.24			
	27-72	25-85	5-45	5-30	1.40-1.70	4.00-14.00	0.05-0.15	0.0-2.9	0.0-0.5	.05	.10			
3A:														
Bethera--------------	0-12	15-80	5-75	10-20	1.20-1.40	4.00-14.00	0.11-0.16	0.0-2.9	1.0-6.0	.28	.28	5	5	56
	12-72	5-60	5-65	35-50	1.30-1.50	0.42-4.00	0.14-0.18	3.0-5.9	0.5-1.0	.32	.32			
4A:														
Bibb-----------------	0-9	10-80	5-75	5-18	1.50-1.70	4.00-14.00	0.12-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	9-41	10-80	5-75	8-22	1.45-1.75	4.00-14.00	0.10-0.20	0.0-2.9	0.5-1.0	.37	.37			
	41-65	10-97	3-75	2-18	1.40-1.75	4.00-141.00	0.02-0.15	0.0-2.9	0.5-1.0	.37	.37			
5A, 5B:														
Bojac----------------	0-10	50-88	5-45	3-8	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.5-1.0	.17	.17	3	2	134
	10-35	25-80	5-45	11-28	1.35-1.55	14.00-42.00	0.08-0.16	0.0-2.9	0.0-0.5	.17	.17			
	35-70	75-98	2-25	1-8	1.30-1.50	42.00-141.00	0.02-0.07	0.0-2.9	0.0-0.5	.17	.17			
6B:														
Caroline-------------	0-5	10-80	5-75	15-25	1.35-1.45	4.00-14.00	0.14-0.20	0.0-2.9	0.5-2.0	.43	.43	5	5	56
	5-70	5-75	5-60	30-55	1.40-1.50	0.42-4.00	0.14-0.22	3.0-5.9	0.0-0.5	.32	.32			
7B, 7C:														
Caroline-------------	0-5	10-80	5-75	15-25	1.35-1.45	4.00-14.00	0.14-0.20	0.0-2.9	0.5-2.0	.43	.43	5	5	56
	5-70	5-75	5-60	30-55	1.40-1.50	0.42-4.00	0.14-0.22	3.0-5.9	0.0-0.5	.32	.32			
Emporia--------------	0-11	30-80	5-45	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	11-31	25-80	5-45	15-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.28			
	31-60	25-80	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-72	25-80	5-35	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			
8B:														
Catpoint-------------	0-8	75-98	2-25	0-10	1.30-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.5-1.0	.10	.10	5	2	134
	8-24	75-98	2-25	0-10	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.10			
	24-41	55-98	2-40	2-15	1.45-1.65	42.00-141.00	0.05-0.14	0.0-2.9	0.0-0.5	.10	.10			
	41-66	55-98	2-40	2-15	1.45-1.65	42.00-141.00	0.02-0.14	0.0-2.9	0.0-0.5	.10	.10			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
9A:														
Chickahominy---------	0-5	10-75	10-75	10-25	1.20-1.30	4.00-14.00	0.10-0.17	0.0-2.9	0.5-2.0	.37	.37	4	3	86
	5-64	5-40	30-60	35-60	1.30-1.50	0.01-0.42	0.10-0.19	6.0-8.9	0.0-0.5	.24	.24			
10A:														
Chickahominy---------	0-5	10-75	10-75	10-25	1.20-1.30	4.00-14.00	0.10-0.17	0.0-2.9	0.5-2.0	.37	.37	5	8	0
	8-72	5-40	30-60	35-60	1.30-1.50	0.01-0.42	0.10-0.19	6.0-8.9	0.0-0.5	.24	.24			
11B:														
Conetoe--------------	0-22	75-98	2-25	2-10	1.60-1.75	42.00-141.00	0.05-0.10	0.0-2.9	0.5-2.0	.15	.15	5	2	134
	22-42	50-80	5-45	10-25	1.40-1.60	14.00-42.00	0.10-0.15	0.0-2.9	0.0-0.5	.15	.15			
	42-72	50-99	0-45	2-25	1.60-1.70	42.00-141.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.10			
12B:														
Craven---------------	0-10	10-80	5-75	7-27	1.30-1.45	1.40-14.00	0.12-0.15	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	10-45	5-40	20-60	35-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	45-70	5-75	5-60	25-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
13C3:														
Craven---------------	0-6	25-75	10-45	27-40	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.5-2.0	.37	.37	5	6	48
	6-20	5-40	20-60	35-60	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	20-64	50-85	3-40	5-35	1.35-1.60	1.40-42.00	0.08-0.14	0.0-2.9	0.0-0.5	.32	.32			
14B:														
Craven---------------	0-10	10-80	5-75	7-27	1.30-1.45	1.40-14.00	0.12-0.15	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	10-45	5-40	20-60	35-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	45-70	5-75	5-60	25-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
Caroline-------------	0-5	10-80	5-75	15-25	1.35-1.45	4.00-14.00	0.14-0.20	0.0-2.9	0.5-2.0	.43	.43	5	5	56
	5-70	5-75	5-60	30-55	1.40-1.50	0.42-4.00	0.14-0.22	3.0-5.9	0.0-0.5	.32	.32			
15C3:														
Craven---------------	0-6	25-75	10-45	27-40	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.5-2.0	.37	.37	5	6	48
	6-20	5-40	20-60	35-60	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	20-64	50-85	3-40	5-35	1.35-1.60	1.40-42.00	0.08-0.14	0.0-2.9	0.0-0.5	.32	.32			
Caroline-------------	0-5	25-75	10-45	30-40	1.35-1.45	4.00-14.00	0.16-0.22	3.0-5.9	0.5-1.0	.43	.43	4	6	48
	5-70	5-75	5-60	30-55	1.40-1.50	0.42-4.00	0.14-0.22	3.0-5.9	0.0-0.5	.32	.32			
16C:														
Craven---------------	0-10	10-80	5-75	7-27	1.30-1.45	1.40-14.00	0.12-0.15	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	10-45	5-40	20-60	35-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	45-70	5-75	5-60	25-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
Remlik---------------	0-29	75-100	0-25	0-5	1.20-1.50	42.00-141.00	0.04-0.08	0.0-2.9	0.5-1.0	.10	.10	5	1	250
	29-50	50-88	5-45	4-25	1.20-1.35	4.00-142.00	0.05-0.17	0.0-2.9	0.0-0.5	.20	.20			
	50-72	50-98	2-45	2-18	1.20-1.35	42.00-141.00	0.05-0.10	0.0-2.9	0.0-0.5	.20	.20			
17C:														
Craven---------------	0-10	10-80	5-75	7-27	1.30-1.45	1.40-14.00	0.12-0.15	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	10-45	5-40	20-60	35-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
	45-70	5-75	5-60	25-55	1.30-1.45	0.42-1.40	0.12-0.15	3.0-5.9	0.0-0.5	.32	.32			
Uchee----------------	0-4	75-99	1-25	3-10	1.30-1.70	42.00-141.00	0.05-0.10	0.0-2.9	0.2-3.0	.10	.10	5	2	134
	4-26	75-99	1-25	3-10	1.30-1.70	42.00-141.00	0.05-0.10	0.0-2.9	0.2-3.0	.10	.10			
	26-50	25-85	5-45	4-40	1.40-1.60	4.00-141.00	0.05-0.15	0.0-2.9	0.0-0.5	.24	.24			
	50-72	25-80	5-45	15-50	1.40-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28			
18A, 18B, 18C:														
Dogue----------------	0-12	10-80	5-75	5-15	1.30-1.45	4.00-14.00	0.14-0.20	0.0-2.9	0.5-1.0	.37	.37	5	5	56
	12-52	20-75	5-40	30-50	1.45-1.60	1.40-4.00	0.12-0.19	3.0-5.9	0.0-0.5	.28	.28			
	52-72	25-80	5-45	10-50	1.45-1.60	1.40-9.00	0.10-0.19	3.0-5.9	0.0-0.5	.28	.28			
19A:														
Dragston-------------	0-4	30-88	3-45	4-12	1.20-1.50	14.00-42.00	0.08-0.15	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	4-25	30-88	3-45	3-18	1.25-1.45	14.00-42.00	0.08-0.16	0.0-2.9	0.0-0.5	.17	.17			
	25-75	50-99	1-45	2-12	1.35-1.55	42.00-141.00	0.04-0.10	0.0-2.9	0.0-0.5	.17	.17			
20B:														
Emporia--------------	0-11	30-80	5-45	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	11-31	25-80	5-45	15-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.28			
	31-60	25-80	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-72	25-80	5-30	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			
21B:														
Emporia--------------	0-8	50-75	5-35	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	8-23	25-75	5-25	18-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.32			
	23-60	15-75	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-70	10-75	5-35	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			
22B:														
Emporia--------------	0-4	30-75	5-45	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	4-22	25-75	5-45	15-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.28			
	22-60	25-75	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-72	10-75	5-35	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
23B:														
Emporia---------------	0-11	30-80	5-45	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	11-31	25-80	5-45	15-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.28			
	31-60	25-80	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-72	25-80	5-35	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			
Kempsville-----------	0-8	65-88	2-30	5-12	1.30-1.50	14.00-42.00	0.06-0.10	0.0-2.9	0.5-2.0	.17	.17	4	2	134
	8-40	45-80	5-30	12-24	1.30-1.45	14.00-42.00	0.12-0.18	0.0-2.9	0.5-1.0	.24	.24			
	40-64	45-80	5-30	18-35	1.35-1.65	4.00-14.00	0.12-0.18	0.0-2.9	0.0-0.5	.24	.24			
	64-72	45-88	2-30	5-30	1.30-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0-0.5	.24	.24			
24B:														
Izagora---------------	0-10	15-80	10-75	10-20	1.40-1.60	14.00-42.00	0.16-0.22	0.0-2.9	0.5-2.0	.37	.37	5	5	56
	10-35	10-45	30-75	18-35	1.40-1.60	4.00-14.00	0.12-0.20	0.0-2.9	0.0-0.5	.32	.32			
	35-72	5-40	25-55	35-55	1.30-1.60	0.42-1.40	0.16-0.20	3.0-5.9	0.0-0.5	.32	.32			
25B:														
Kempsville-----------	0-8	65-88	2-30	5-12	1.30-1.50	14.00-42.00	0.06-0.10	0.0-2.9	0.5-2.0	.17	.17	4	2	134
	8-40	45-80	5-30	12-24	1.30-1.45	14.00-42.00	0.12-0.18	0.0-2.9	0.5-1.0	.24	.24			
	40-64	45-80	5-30	18-35	1.35-1.65	4.00-14.00	0.12-0.18	0.0-2.9	0.0-0.5	.24	.24			
	64-72	45-88	2-30	5-30	1.30-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0-0.5	.24	.24			
26A:														
Lawnes----------------	0-13	15-80	5-75	5-20	0.20-1.20	4.00-14.00	0.15-0.26	0.0-2.9	20-60	.24	.24	5	8	0
	13-55	5-98	2-75	5-30	1.15-1.40	4.00-14.00	0.05-0.22	0.0-2.9	0.5-8.0	.28	.28			
	55-62	5-99	1-75	2-30	1.15-1.40	4.00-14.00	0.05-0.22	0.0-2.9	0.5-15	.28	.28			
27B:														
Masada----------------	0-10	35-80	5-40	10-30	1.20-1.50	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.32	.32	4	3	86
	10-58	25-60	5-40	27-55	1.30-1.60	4.00-14.00	0.10-0.17	3.0-5.9	0.0-0.5	.24	.24			
	58-70	25-80	5-45	15-40	1.30-1.60	4.00-14.00	0.10-0.17	3.0-5.9	0.0-0.5	.24	.24			
28B3:														
Masada----------------	0-6	50-75	5-30	20-35	1.20-1.50	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.32	.32	4	6	48
	6-54	25-60	5-40	27-55	1.30-1.60	4.00-14.00	0.10-0.17	3.0-5.9	0.0-0.5	.24	.24			
	54-64	25-80	5-45	15-40	1.30-1.60	4.00-14.00	0.10-0.17	3.0-5.9	0.0-0.5	.24	.24			
29A:														
Mattan----------------	0-12	5-75	5-75	12-35	1.10-1.25	4.00-14.00	0.10-0.40	0.0-2.9	12-20	.32	.32	--	8	0
	12-39	---	---	5-20	0.20-0.80	4.00-14.00	0.22-0.26	0.0-2.9	20-60	---	---			
	39-70	5-88	2-75	8-35	1.20-1.50	4.00-14.00	0.08-0.18	0.0-2.9	1.0-10	.17	.17			
	4-15	25-75	5-50	10-35	1.30-1.60	1.40-14.00	0.12-0.18	0.0-2.9	0.0-0.5	.20	.20			
	15-65	25-75	5-50	18-35	1.30-1.50	4.00-14.00	0.12-0.18	0.0-2.9	0.5-1.0	.20	.20			
	65-75	25-99	1-45	2-50	1.30-1.70	1.40-14.00	0.05-0.15	0.0-2.9	0.0-0.5	.10	.10			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
30A:														
Munden---------------	0-6	40-88	2-40	3-10	1.20-1.35	14.00-42.00	0.06-0.10	0.0-2.9	0.5-1.0	.17	.17	4	2	134
	6-38	40-80	5-40	8-18	1.20-1.35	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.17	.17			
	38-74	55-99	1-35	2-12	1.35-1.55	14.00-141.00	0.04-0.08	0.0-2.9	0.0-0.5	.17	.17			
31A:														
Nahunta--------------	0-4	5-40	40-75	6-18	1.30-1.50	14.00-42.00	0.15-0.20	0.0-2.9	1.0-4.0	.43	.43	5	3	86
	4-72	3-30	35-75	18-35	1.30-1.40	4.00-14.00	0.15-0.20	0.0-2.9	0.0-0.5	.43	.43			
32B:														
Nansemond------------	0-19	60-88	2-30	4-10	1.20-1.45	14.00-141.00	0.05-0.10	0.0-2.9	0.5-1.0	.15	.15	3	2	134
	19-43	55-75	5-30	10-18	1.25-1.45	14.00-42.00	0.10-0.16	0.0-2.9	0.0-0.5	.17	.20			
	43-60	60-99	1-25	4-12	1.30-1.55	14.00-42.00	0.06-0.11	0.0-2.9	0.0-0.2	.15	.17			
	60-70	60-99	1-30	2-18	1.30-1.55	14.00-42.00	0.06-0.11	0.0-2.9	0.0-0.2	.15	.17			
33A, 34A:														
Nawney---------------	0-14	10-75	5-75	5-27	1.20-1.35	4.00-14.00	0.14-0.22	0.0-2.9	1.0-6.0	.32	.32	5	8	0
	14-72	5-98	2-75	2-45	1.25-1.50	4.00-14.00	0.10-0.22	3.0-5.9	0.5-3.0	.28	.28			
35D, 35E, 35F:														
Nevarc---------------	0-11	10-80	5-75	8-18	1.30-1.50	14.00-42.00	0.08-0.12	0.0-2.9	0.5-2.0	.32	.32	4	3	86
	11-54	5-70	5-60	34-55	1.30-1.50	0.42-1.40	0.10-0.17	3.0-5.9	0.0-0.5	.24	.24			
	54-72	20-99	1-45	5-45	1.30-1.50	4.00-42.00	0.06-0.12	0.0-2.9	0.0-0.5	.20	.24			
Remlik---------------	0-29	75-100	0-25	0-5	1.20-1.50	42.00-141.00	0.04-0.08	0.0-2.9	0.5-1.0	.10	.10	5	1	250
	29-50	50-88	5-45	4-25	1.20-1.35	4.00-142.00	0.05-0.17	0.0-2.9	0.0-0.5	.20	.20			
36A:														
Newflat--------------	0-6	10-65	10-75	10-25	1.20-1.30	4.00-14.00	0.10-0.17	0.0-2.9	0.5-3.0	.37	.37	4	3	86
	6-55	2-35	20-65	35-60	1.30-1.50	0.01-0.42	0.10-0.19	6.0-8.9	0.0-0.5	.24	.24			
	55-64	2-45	15-65	30-60	1.30-1.50	0.01-2.00	0.10-0.19	6.0-8.9	0.0-0.5	.24	.24			
37A:														
Nimmo----------------	0-14	55-88	3-40	4-14	1.20-1.35	14.00-42.00	0.08-0.16	0.0-2.9	1.0-3.0	.20	.20	4	4	86
	14-32	35-75	5-45	8-18	1.20-1.35	4.00-14.00	0.08-0.18	0.0-2.9	0.0-0.5	.17	.17			
	32-64	80-100	0-20	1-8	1.35-1.55	14.00-141.00	0.04-0.08	0.0-2.9	0.0-0.5	.17	.17			
38A, 38B, 38C:														
Pamunkey-------------	0-10	10-80	5-75	5-15	1.25-1.55	4.00-14.00	0.14-0.20	0.0-2.9	0.5-2.0	.28	.28	4	5	56
	10-16	5-80	5-65	18-35	1.35-1.65	4.00-14.00	0.13-0.19	0.0-2.9	0.0-0.5	.28	.28			
	16-72	5-80	5-65	18-35	1.35-1.65	4.00-14.00	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
39A, 39B:														
Peawick	0-5	5-45	40-75	10-25	1.20-1.30	4.00-14.00	0.10-0.17	0.0-2.9	0.5-2.0	.37	.37	4	3	86
	5-36	2-40	25-60	35-60	1.30-1.50	0.01-0.42	0.10-0.17	6.0-8.9	0.0-0.5	.24	.24			
	36-64	2-40	25-60	35-60	1.30-1.50	0.01-0.42	0.10-0.17	6.0-8.9	0.0-0.5	.24	.24			
40A:														
Roanoke	0-5	10-75	5-75	10-27	1.20-1.50	4.00-14.00	0.14-0.20	0.0-2.9	0.5-3.0	.37	.37	4	5	56
	5-55	5-65	5-65	30-60	1.35-1.65	0.42-1.40	0.10-0.19	3.0-5.9	0.0-0.5	.24	.24			
	55-75	15-99	1-45	5-50	1.20-1.50	0.42-141.00	0.04-0.14	3.0-5.9	0.0-0.5	.24	.28			
41A:														
Seabrook	0-9	70-98	2-20	2-12	1.30-1.60	42.00-141.00	0.05-0.11	0.0-2.9	0.5-2.0	.10	.10	5	2	134
	9-60	75-99	1-25	2-12	1.30-1.60	42.00-141.00	0.02-0.09	0.0-2.9	0.0-0.5	.10	.10			
	60-80	75-100	0-25	2-12	1.30-1.60	42.00-141.00	0.02-0.09	0.0-2.9	0.0-0.5	.10	.10			
42B:														
Slagle	0-10	35-80	5-40	8-18	1.30-1.45	14.00-42.00	0.10-0.14	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	10-44	25-80	5-45	18-40	1.35-1.60	0.42-4.00	0.12-0.18	3.0-5.9	0.0-0.5	.24	.24			
	44-63	25-80	5-45	18-40	1.35-1.60	0.42-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.24			
43B:														
Slagle	0-10	35-80	5-40	8-18	1.30-1.45	14.00-42.00	0.10-0.14	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	10-44	25-80	5-45	18-40	1.35-1.60	0.42-4.00	0.12-0.18	3.0-5.9	0.0-0.5	.24	.24			
	44-63	25-80	5-45	18-40	1.35-1.60	0.42-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.24			
Emporia	0-11	30-80	5-45	7-18	1.30-1.40	14.00-42.00	0.10-0.17	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	11-31	25-80	5-45	15-35	1.35-1.45	1.40-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.28	.28			
	31-60	25-80	5-45	15-50	1.45-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.20	.20			
	60-72	25-80	5-35	5-40	1.45-1.60	1.40-14.00	0.08-0.18	3.0-5.9	0.0-0.5	.20	.24			
44A:														
Tomotley	0-4	55-88	3-40	5-20	1.30-1.60	14.00-42.00	0.10-0.15	0.0-2.9	1.0-6.0	.20	.20	5	3	86
	50-72	50-98	2-45	2-18	1.20-1.35	42.00-141.00	0.05-0.10	0.0-2.9	0.0-0.5	.20	.20			
45B:														
Turbeville	0-8	30-80	5-50	15-25	1.30-1.50	14.00-42.00	0.14-0.18	0.0-2.9	0.5-2.0	.37	.37	5	4	86
	8-72	15-60	5-45	30-60	1.35-1.50	4.00-14.00	0.13-0.16	3.0-5.9	0.0-0.5	.24	.28			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
46B:														
Uchee----------------	0-4	75-99	1-25	3-10	1.30-1.70	42.00-141.00	0.05-0.10	0.0-2.9	0.2-3.0	.10	.10	5	2	134
	4-26	75-99	1-25	3-10	1.30-1.70	42.00-141.00	0.05-0.10	0.0-2.9	0.2-3.0	.10	.10			
	26-50	25-85	5-45	4-40	1.40-1.60	4.00-141.00	0.05-0.15	0.0-2.9	0.0-0.5	.24	.24			
	50-72	25-80	5-45	15-50	1.40-1.60	1.40-4.00	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28			
47B, 48B:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
49A, 49B:														
Wickham--------------	0-12	30-80	5-45	8-15	1.45-1.65	14.00-42.00	0.11-0.16	0.0-2.9	0.5-2.0	.24	.24	5	3	86
	12-50	25-80	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.17	0.0-2.9	0.0-0.5	.24	.24			
	50-62	25-80	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.17	0.0-2.9	0.0-0.5	.24	.24			
50B3:														
Wickham--------------	0-4	25-70	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.17	0.0-2.9	0.5-1.0	.24	.24	4	5	56
	4-50	25-80	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.17	0.0-2.9	0.0-0.5	.24	.24			
	50-62	25-80	5-45	18-35	1.30-1.50	4.00-14.00	0.12-0.17	0.0-2.9	0.0-0.5	.24	.24			
51A, 51B:														
Yeopim---------------	0-10	10-80	5-75	4-15	1.20-1.40	14.00-42.00	0.15-0.20	0.0-2.9	0.5-2.0	.37	.37	5	5	56
	10-64	5-45	30-75	20-35	1.40-1.60	1.40-4.00	0.15-0.20	0.0-2.9	0.0-0.5	.37	.37			
	64-72	5-45	30-75	15-35	1.40-1.60	1.40-9.00	0.12-0.20	0.0-2.9	0.0-0.5	.24	.24			

Chemical Soil Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
1A:								
Altavista	0-11	4.6-15	3.5-11	4.0-6.5	0	0	0	0
	11-62	6.3-13	4.7-10	4.0-6.0	0	0	0	0
	62-74	1.8-8.1	1.3-6.1	4.0-6.0	0	0	0	0
2A:								
Augusta	0-13	2.9-12	2.2-8.6	4.5-6.0	0	0	0	0
	13-27	7.0-13	5.2-10	4.5-6.0	0	0	0	0
	27-72	1.8-8.6	1.3-6.5	4.5-6.0	0	0	0	0
3A:								
Bethera	0-12	5.8-20	4.3-15	4.0-6.0	0	0	0	0
	12-72	13-20	10-15	4.0-6.0	0	0	0	0
4A:								
Bibb	0-9	2.8-11	2.1-8.4	4.0-5.5	0	0	0	0
	9-41	1.6-6.8	1.2-5.1	4.0-5.5	0	0	0	0
	41-65	1.0-6.0	1.2-4.7	4.0-5.5	0	0	0	0
5A, 5B:								
Bojac	0-10	2.2-5.0	1.6-3.8	4.0-6.5	0	0	0	0
	10-35	3.9-8.1	2.9-6.3	4.0-6.5	0	0	0	0
	35-70	0.3-3.9	0.3-2.9	4.0-6.5	0	0	0	0
6B:								
Caroline	0-5	4.9-11	3.7-8.1	4.0-7.0	0	0	0	0
	5-70	7.5-15	5.6-11	4.0-5.5	0	0	0	0
7B, 7C:								
Caroline	0-5	4.9-11	3.7-8.1	4.0-7.0	0	0	0	0
	5-70	7.5-15	5.6-11	4.0-5.5	0	0	0	0
Emporia	0-11	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	11-31	3.8-9.9	2.8-7.4	4.5-6.0	0	0	0	0
	31-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-72	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0
8B:								
Catpoint	0-8	1.1-4.8	0.8-3.6	4.5-6.5	0	0	0	0
	8-24	0.0-3.6	0.0-2.7	4.5-6.5	0	0	0	0
	24-41	0.0-3.6	0.0-2.7	4.5-6.5	0	0	0	0
	41-66	0.0-3.6	0.0-2.7	4.5-6.5	0	0	0	0
9A, 10A:								
Chickahominy	0-5	4.6-13	3.5-9.9	4.0-5.5	0	0	0	0
	5-64	12-22	9.2-17	4.0-5.5	0	0	0	0
11B:								
Conetoe	0-22	1.8-8.0	3.7-6.0	4.5-6.5	0	0	0	0
	22-42	3.5-8.8	4.6-6.6	4.5-6.5	0	0	0	0
	42-72	0.7-7.4	2.0-5.5	4.5-6.5	0	0	0	0
12B:								
Craven	0-10	2.9-11	2.2-8.4	4.0-6.5	0	0	0	0
	10-45	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	45-70	6.2-15	4.7-11	4.0-5.5	0	0	0	0

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
13C3:								
Craven---------------	0-6	7.9-14	5.9-11	4.0-5.5	0	0	0	0
	6-20	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	20-64	1.2-9.9	0.9-7.4	4.0-5.5	0	0	0	0
14B:								
Craven---------------	0-10	2.9-11	2.2-8.4	4.0-6.5	0	0	0	0
	10-45	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	45-70	6.2-15	4.7-11	4.0-5.5	0	0	0	0
Caroline-------------	0-5	4.9-11	3.7-8.1	4.0-7.0	0	0	0	0
	5-70	7.5-15	5.6-11	4.0-5.5	0	0	0	0
15C3:								
Craven---------------	0-6	7.9-14	5.9-11	4.0-5.5	0	0	0	0
	6-20	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	20-64	1.2-9.9	0.9-7.4	4.0-5.5	0	0	0	0
Caroline-------------	0-5	8.6-12	6.5-9.2	4.0-5.5	0	0	0	0
	5-70	7.5-15	5.6-11	4.0-5.5	0	0	0	0
16C:								
Craven---------------	0-10	2.9-11	2.2-8.4	4.0-6.5	0	0	0	0
	10-45	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	45-70	6.2-15	4.7-11	4.0-5.5	0	0	0	0
Remlik---------------	0-29	1.1-3.5	0.8-8.4	4.0-6.0	0	0	0	0
	29-50	1.5-7.7	1.0-12	4.0-6.0	0	0	0	0
	50-72	0.5-6.1	0.4-4.6	4.0-6.0	0	0	0	0
17C:								
Craven---------------	0-10	2.9-11	2.2-8.4	4.0-6.5	0	0	0	0
	10-45	8.8-16	6.6-12	4.0-5.5	0	0	0	0
	45-70	6.2-15	4.7-11	4.0-5.5	0	0	0	0
Uchee----------------	0-4	1.2-9.2	0.9-6.9	4.5-5.5	0	0	0	0
	4-26	1.2-9.2	0.9-6.9	4.5-5.5	0	0	0	0
	26-50	1.0-5.6	0.5-6.5	4.5-5.5	0	0	0	0
	50-72	6.2-14	4.7-10	4.5-5.5	0	0	0	0
18A, 18B, 18C:								
Dogue----------------	0-12	2.9-7.5	2.2-5.6	4.0-6.5	0	0	0	0
	12-52	10-19	7.9-14	4.0-5.5	0	0	0	0
	52-72	2.5-14	1.9-10	4.0-5.5	0	0	0	0
19A:								
Dragston-------------	0-4	3.6-8.7	2.7-6.5	4.5-5.5	0	0	0	0
	4-25	3.5-7.4	2.6-5.6	4.5-5.5	0	0	0	0
	25-75	0.7-5.3	0.5-4.0	4.5-6.5	0	0	0	0
20B:								
Emporia--------------	0-11	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	11-31	3.8-9.9	2.8-7.4	4.5-6.0	0	0	0	0
	31-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-72	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0
21B:								
Emporia--------------	0-8	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	8-23	4.5-9.9	3.4-7.4	4.5-6.0	0	0	0	0
	23-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-70	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
22B:								
Emporia---------------	0-4	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	4-22	3.8-9.9	2.8-7.4	4.5-6.0	0	0	0	0
	22-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-72	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0
23B:								
Emporia---------------	0-11	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	11-31	3.8-9.9	2.8-7.4	4.5-6.0	0	0	0	0
	31-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-72	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0
Kempsville------------	0-8	2.4-7.5	2.0-25	4.5-6.0	0	0	0	0
	8-40	4.1-8.2	2.0-20	4.5-6.0	0	0	0	0
	40-64	4.5-9.9	2.0-20	4.5-6.0	0	0	0	0
	64-72	1.2-8.6	2.0-20	4.5-6.0	0	0	0	0
24B:								
Izagora---------------	0-10	3.6-9.5	2.7-7.1	4.0-6.5	0	0	0	0
	10-35	4.5-8.6	3.4-6.5	4.0-6.0	0	0	0	0
	35-72	8.8-15	6.6-11	4.0-6.0	0	0	0	0
25B:								
Kempsville------------	0-8	2.4-7.5	2.0-25	4.5-6.0	0	0	0	0
	8-40	4.1-8.2	2.0-20	4.5-6.0	0	0	0	0
	40-64	4.5-9.9	2.0-20	4.5-6.0	0	0	0	0
	64-72	1.2-8.6	2.0-20	4.5-6.0	0	0	0	0
26A:								
Lawnes----------------	0-13	20-50	15-38	5.1-7.3	0	0	1.0-8.0	2-13
	13-55	2.9-24	2.2-18	5.1-7.3	0	0	1.0-8.0	2-13
	55-62	2.9-40	2.2-30	5.1-7.3	0	0	1.0-8.0	2-13
27B:								
Masada----------------	0-10	3.6-12	2.7-9.0	4.5-5.5	0	0	0	0
	10-58	6.8-15	5.1-11	4.5-5.5	0	0	0	0
	58-70	3.8-11	2.8-8.3	4.5-5.5	0	0	0	0
28B3:								
Masada----------------	0-6	3.6-12	2.7-9.0	4.5-5.5	0	0	0	0
	6-54	6.8-15	5.1-11	4.5-5.5	0	0	0	0
	54-64	3.8-11	2.8-8.3	4.5-5.5	0	0	0	0
29A:								
Mattan----------------	0-12	31-57	23-43	4.0-6.0	0	0	2.0-4.0	0
	12-39	47-142	35-106	4.0-6.0	0	0	0.0-2.0	0
	39-70	6.0-24	5.0-18	4.0-6.0	0	0	0.0-2.0	0
30A:								
Munden----------------	0-6	2.2-5.8	1.6-4.3	4.5-6.0	0	0	0	0
	6-38	2.8-7.4	2.1-5.6	4.5-6.0	0	0	0	0
	38-74	0.7-5.3	0.5-4.0	4.5-6.0	0	0	0	0
31A:								
Nahunta---------------	0-4	3.8-14	2.8-10	4.0-5.5	0	0	0	0
	4-72	4.5-9.9	3.4-7.4	4.0-5.5	0	0	0	0
32B:								
Nansemond-------------	0-19	2.1-4.8	1.6-3.6	4.0-6.0	0	0	0	0
	19-43	2.5-5.6	1.9-4.2	4.0-6.0	0	0	0	0
	43-60	1.0-4.1	0.8-3.1	4.0-6.0	0	0	0	0
	60-70	1.0-4.1	0.8-3.1	4.0-6.0	0	0	0	0

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
33A, 34A:								
Nawney----------------	0-14	4.0-23	3.0-17	4.0-5.5	0	0	0	0
	14-72	1.8-22	1.4-17	4.0-6.5	0	0	0	0
35D, 35E, 35F:								
Nevarc----------------	0-11	3.1-9.0	2.3-6.8	4.0-6.0	0	0	0	0
	11-54	8.8-15	6.6-11	4.0-6.0	0	0	0	0
	54-72	1.2-12	0.9-9.3	4.0-6.0	0	0	0	0
Remlik----------------	0-29	1.1-3.5	0.8-8.4	4.0-6.0	0	0	0	0
	29-50	1.5-7.7	1.0-12	4.0-6.0	0	0	0	0
	50-72	0.5-6.1	0.4-4.6	4.0-6.0	0	0	0	0
36A:								
Newflat---------------	0-6	4.6-16	3.5-12	4.0-5.5	0	0	0	0
	6-55	12-22	9.2-17	4.0-5.5	0	0	0	0
	55-64	12-22	9.2-17	4.0-5.5	0	0	0	0
37A:								
Nimmo-----------------	0-14	3.6-12	2.7-8.7	4.0-5.5	0	0	0	0
	14-32	2.8-7.4	2.1-5.6	4.0-5.5	0	0	0	0
	32-64	0.3-3.9	0.3-2.9	4.0-5.5	0	0	0	0
38A, 38B, 38C:								
Pamunkey--------------	0-10	2.4-8.2	1.8-6.2	5.1-6.5	0	0	0	0
	10-16	4.5-9.9	3.4-7.4	5.1-6.5	0	0	0	0
	16-72	4.5-9.9	3.4-7.4	5.1-6.5	0	0	0	0
39A, 39B:								
Peawick---------------	0-5	4.6-13	3.5-9.9	4.0-5.5	0	0	0	0
	5-36	12-22	9.2-17	4.0-5.5	0	0	0	0
	36-64	12-22	9.2-17	4.0-5.5	0	0	0	0
40A:								
Roanoke---------------	0-5	4.6-16	3.5-12	4.0-5.5	0	0	0	0
	5-55	12-22	9.2-17	4.0-5.5	0	0	0	0
	55-75	1.8-19	1.3-14	4.0-6.5	0	0	0	0
41A:								
Seabrook--------------	0-9	1.6-7.5	1.2-5.6	4.0-6.5	0	0	0	0
	9-60	0.5-4.1	0.4-3.1	4.0-6.5	0	0	0	0
	60-80	0.5-4.1	0.4-3.1	4.0-6.5	0	0	0	0
42B:								
Slagle----------------	0-10	3.1-9.0	2.3-6.8	4.0-5.5	0	0	0	0
	10-44	4.5-11	3.4-8.3	4.0-5.5	0	0	0	0
	44-63	4.5-11	3.4-7.5	4.0-5.5	0	0	0	0
43B:								
Slagle----------------	0-10	3.1-9.0	2.3-6.8	4.0-5.5	0	0	0	0
	10-44	4.5-11	3.4-8.3	4.0-5.5	0	0	0	0
	44-63	4.5-11	3.4-7.5	4.0-5.5	0	0	0	0
Emporia---------------	0-11	2.9-9.0	2.2-6.8	4.5-6.0	0	0	0	0
	11-31	3.8-9.9	2.8-7.4	4.5-6.0	0	0	0	0
	31-60	3.8-14	2.8-10	4.5-6.0	0	0	0	0
	60-72	1.2-11	0.9-8.3	4.5-6.0	0	0	0	0

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
44A:								
Tomotley-------------	0-4	4.0-20	3.0-15	4.0-5.5	0	0	0	0
	4-15	3.5-15	2.6-121	4.0-6.0	0	0	0	0
	15-65	7.4-14	5.6-11	4.0-5.5	0	0	0	0
	65-75	1.8-19	1.3-14	4.0-6.0	0	0	0	0
45B:								
Turbeville-----------	0-8	2.6-7.0	2.0-5.2	4.5-5.5	0	0	0	0
	8-72	3.0-7.1	2.2-5.3	4.5-5.5	0	0	0	0
46B:								
Uchee----------------	0-4	1.2-9.2	0.9-6.9	4.5-5.5	0	0	0	0
	4-26	1.2-9.2	0.9-6.9	4.5-5.5	0	0	0	0
	26-50	1.0-5.6	0.5-6.5	4.5-5.5	0	0	0	0
	50-72	6.2-14	4.7-10	4.5-5.5	0	0	0	0
47B, 48B:								
Udorthents-----------	---	---	---	---	---	---	---	---
49A:								
Wickham--------------	0-12	3.9-9.8	2.9-7.3	5.1-6.0	0	0	0	0
	12-50	6.3-13	4.7-10	5.1-6.0	0	0	0	0
	50-62	6.3-13	4.7-10	5.1-6.0	0	0	0	0
49B:								
Wickham--------------	0-12	3.9-9.8	2.9-7.3	5.1-6.0	0	0	0	0
	12-50	6.3-13	4.7-10	5.1-6.0	0	0	0	0
	50-62	6.3-13	4.7-10	5.1-6.0	0	0	0	0
50B3:								
Wickham--------------	0-4	3.9-9.8	2.9-7.3	4.5-6.0	0	0	0	0
	4-50	6.3-13	4.7-10	5.1-6.0	0	0	0	0
	50-62	6.3-13	4.7-10	5.1-6.0	0	0	0	0
51A, 51B:								
Yeopim---------------	0-10	2.5-9.8	1.9-7.3	4.0-6.0	0	0	0	0
	10-64	7.0-13	5.2-10	4.0-6.0	0	0	0	0
	64-72	5.2-13	3.9-10	4.0-6.0	0	0	0	0

Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1A:										
Altavista------------------	C	Low	Dec-Apr	1.5-2.5	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
2A:										
Augusta--------------------	C	Very high	Dec-May	1.0-2.0	>6.0	---	---	None	---	None
			Jun-Nov	---	---	---	---	None	---	None
3A:										
Bethera--------------------	D	Negligible	Dec-Apr	0.0	>6.0	0.0-1.0	Long	Occasional	---	None
			May-Nov	---	---	---	---	None	---	None
4A:										
Bibb-----------------------	D	Very high	Nov-May	0.5-1.0	>6.0	---	---	None	Long	Frequent
			Jun-Oct	---	---	---	---	None	---	None
5A, 5B:										
Bojac----------------------	B	Very low	Dec-Apr	4.0-6.6	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
6B:										
Caroline------------------	C	Low	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
7B:										
Caroline------------------	C	Low	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Emporia-------------------	C	Low	Nov-Apr	3.0-4.5	4.0-6.6	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
7C:										
Caroline------------------	C	Medium	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Emporia-------------------	C	Medium	Nov-Apr	3.0-4.5	4.0-6.6	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
8B:										
Catpoint------------------	A	Very low	Dec-Apr	4.0-6.6	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
9A:										
Chickahominy	D	Very high	Nov-Apr	0.0-0.5	>6.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
10A:										
Chickahominy	D	Very high	Nov-Apr	0.0-0.5	>6.0	0.0-1.0	Long	Occasional	---	None
			May-Oct	---	---	---	---	None	---	None
11B:										
Conetoe	A	Very low	Jan-Dec	---	---	---	---	None	---	None
12B:										
Craven	C	Low	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
13C3:										
Craven	C	Medium	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
14B:										
Craven	C	Low	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Caroline	C	Low	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
15C3:										
Craven	C	Medium	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Caroline	C	Medium	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
16C:										
Craven	C	Medium	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Remlik	A	Low	Dec-Apr	4.0-6.6	5.0-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
17C:										
Craven	C	Medium	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
Uchee	A	Medium	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
18A, 18B:										
Dogue	C	Low	Jan-Mar	1.5-3.0	>6.0	---	---	None	---	None
			Apr-Dec	---	---	---	---	None	---	None
18C:										
Dogue	C	Medium	Jan-Mar	1.5-3.0	>6.0	---	---	None	---	None
			Apr-Dec	---	---	---	---	None	---	None
19A:										
Dragston	C	Very low	Dec-Apr	1.0-2.5	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
20B, 21B, 22B:										
Emporia	C	Low	Nov-Apr	3.0-4.5	4.0-6.6	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
23B:										
Emporia	C	Low	Nov-Apr	3.0-4.5	4.0-6.6	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
Kempsville	B	Very low	Jan-Dec	---	---	---	---	None	---	None
24B:										
Izagora	C	Low	Dec-Apr	2.0-3.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
25B:										
Kempsville	B	Very low	Jan-Dec	---	---	---	---	None	---	None
26A:										
Lawnes	D	Negligible	Jan-Dec	0.0	>6.0	0.0-3.0	Long	Frequent	Very long	Very frequent
27B, 28B3:										
Masada	C	Low	Jan-Dec	---	---	---	---	None	---	None
29A:										
Mattan	D	Negligible	Jan-Dec	0.0	>6.0	0.0-2.0	Long	Frequent	Very long	Very frequent

Water Features—Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
30A:										
Munden	B	Very low	Dec-Apr	1.5-2.5	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
31A:										
Nahunta	C	Very high	Dec-May	1.0-1.5	>6.0	---	---	None	---	None
			Jun-Nov	---	---	---	---	None	---	None
32B:										
Nansemond	C	Very low	Dec-Apr	1.5-2.5	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
33A:										
Nawney	D	Very high	Jan-Dec	0.0	>6.0	---	---	None	Very long	Frequent
34A:										
Nawney	D	Negligible	Jan-Dec	0.0	>6.0	0.0-2.0	Long	Frequent	Very long	Frequent
35D:										
Nevarc	C	Medium	Dec-Apr	1.5-3.0	2.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Remlik	A	Low	Dec-Apr	4.0-6.6	5.0-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
35E, 35F:										
Nevarc	C	High	Dec-Apr	1.5-3.0	2.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
Remlik	A	Medium	Dec-Apr	4.0-6.6	5.0-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
36A:										
Newflat	D	Very high	Nov-Apr	0.5-1.5	>6.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
37A:										
Nimmo	D	Very high	Dec-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
38A, 38B:										
Pamunkey	B	Low	Jan-Dec	---	---	---	---	None	---	None
38C:										
Pamunkey	B	Medium	Jan-Dec	---	---	---	---	None	---	None

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
39A, 39B:										
Peawick	D	Medium	Nov-Apr	1.5-3.0	2.5-4.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
40A:										
Roanoke	D	Very high	Nov-May	0.0-1.0	>6.0	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
41A:										
Seabrook	C	Very low	Dec-Mar	2.0-3.5	>6.0	---	---	None	---	None
			Apr-Nov	---	---	---	---	None	---	None
42B:										
Slagle	C	Low	Nov-Apr	1.5-3.0	>6.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
43B:										
Slagle	C	Low	Nov-Apr	1.5-3.0	>6.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
Emporia	C	Low	Nov-Apr	3.0-4.5	4.0-6.6	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
44A:										
Tomotley	B/D	Very high	Dec-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
45B:										
Turbeville	C	Low	Jan-Dec	---	---	---	---	None	---	None
46B:										
Uchee	A	Low	Dec-Apr	3.5-5.0	4.5-6.6	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
47B, 48B:										
Udorthents	---	---	Jan-Dec	---	---	---	---	None	---	---
49A, 49B, 50B3:										
Wickham	B	Low	Jan-Dec	---	---	---	---	None	---	None
51A, 51B:										
Yeopim	B	Low	Nov-Apr	1.5-3.0	>6.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None

Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Subsidence		Potential for frost action	Risk of corrosion	
	Initial	Total		Uncoated steel	Concrete
1A:					
Altavista			Low	Moderate	Moderate
2A:					
Augusta			Low	High	Moderate
3A:					
Bethera			Low	High	High
4A:					
Bibb			Low	High	Moderate
5A, 5B:					
Bojac			Low	Low	High
6B:					
Caroline			Low	High	High
7B, 7C:					
Caroline			Low	High	High
Emporia			Low	Moderate	High
8B:					
Catpoint			Low	Low	Moderate
9A, 10A:					
Chickahominy			Low	High	High
11B:					
Conetoe			Low	Low	High
12B, 13C3:					
Craven			Low	High	High
14B, 15C3:					
Craven			Low	High	High
Caroline			Low	High	High
16C:					
Craven			Low	High	High
Remlik			Low	Low	Moderate
17C:					
Craven			Low	High	High
Uchee			Low	Low	High
18A, 18B, 18C:					
Dogue			Low	High	High
19A:					
Dragston			Low	Low	High
20B, 21B, 22B:					
Emporia			Low	Moderate	High

Soil Features—Continued

Map symbol and soil name	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
23B:					
Emporia			Low	Moderate	High
Kempsville			Low	Low	Moderate
24B:					
Izagora			Low	Moderate	High
25B:					
Kempsville			Low	Low	Moderate
26A:					
Lawnes	0-4	2-8	Low	High	High
27B, 28B3:					
Masada			Low	High	High
29A:					
Mattan			Low	High	High
30A:					
Munden			Low	Low	High
31A:					
Nahunta			Low	High	High
32B:					
Nansemond			Low	Moderate	High
33A, 34A:					
Nawney			Low	High	High
35D, 35E, 35F:					
Nevarc			Low	High	High
Remlik			Low	Low	Moderate
36A:					
Newflat			Low	High	High
37A:					
Nimmo			Low	Low	High
38A, 38B, 38C:					
Pamunkey			Low	Moderate	Moderate
39A, 39B:					
Peawick			Low	High	High
40A:					
Roanoke			Low	High	High
41A:					
Seabrook			Low	Low	Moderate
42B:					
Slagle			Low	Moderate	High
43B:					
Slagle			Low	Moderate	High
Emporia			Low	Moderate	High

Soil Features—Continued

Map symbol and soil name	Subsidence		Potential for frost action	Risk of corrosion	
	Initial	Total		Uncoated steel	Concrete
44A:					
Tomotley			Low	High	High
45B:					
Turbeville			Low	High	High
46B:					
Uchee			Low	Low	High
47B, 48B:					
Udorthents			Low	---	---
49A, 49B, 50B3:					
Wickham			Low	Moderate	High
51A, 51B:					
Yeopim			Low	Moderate	High

Taxonomic Classification of the Soils

Soil name	Family or higher taxonomic class
Altavista	Fine-loamy, mixed, semiactive, thermic Aquic Hapludults
Augusta	Fine-loamy, mixed, semiactive, thermic Aeric Endoaquults
Bethera	Fine, mixed, semiactive, thermic Typic Paleaquults
Bibb	Coarse-loamy, siliceous, active, acid, thermic Typic Fluvaquents
Bojac	Coarse-loamy, mixed, semiactive, thermic Typic Hapludults
Caroline	Fine, mixed, subactive, thermic Typic Paleudults
Catpoint	Thermic, coated Lamellic Quartzipsamments
Chickahominy	Fine, mixed, active, thermic Typic Endoaquults
Conetoe	Loamy, mixed, semiactive, thermic Arenic Hapludults
Craven	Fine, mixed, subactive, thermic Aquic Hapludults
Dogue	Fine, mixed, semiactive, thermic Aquic Hapludults
Dragston	Coarse-loamy, mixed, semiactive, thermic Aeric Endoaquults
Emporia	Fine-loamy, siliceous, subactive, thermic Typic Hapludults
Izagora	Fine-loamy, siliceous, semiactive, thermic Aquic Paleudults
Kempsville	Fine-loamy, siliceous, subactive, thermic Typic Hapludults
Lawnes	Coarse-loamy, mixed, superactive, nonacid, thermic Typic Sulfaquents
Masada	Fine, mixed, semiactive, thermic Typic Hapludults
Mattan	Loamy, mixed, euic, thermic Terric Haplosaprists
Munden	Coarse-loamy, mixed, semiactive, thermic Aquic Hapludults
Nahunta	Fine-silty, siliceous, subactive, thermic Aeric Paleaquults
Nansemond	Coarse-loamy, siliceous, subactive, thermic Aquic Hapludults
Nawney	Fine-loamy, mixed, active, acid, thermic Typic Fluvaquents
Nevarc	Fine, mixed, subactive, thermic Aquic Hapludults
Newflat	Fine, mixed, active, thermic Aeric Endoaquults
Nimmo	Coarse-loamy, mixed, semiactive, thermic Typic Endoaquults
Pamunkey	Fine-loamy, mixed, semiactive, thermic Ultic Hapludalfs
Peawick	Fine, mixed, active, thermic Aquic Hapludults
Remlik	Loamy, siliceous, subactive, thermic Arenic Hapludults
Roanoke	Fine, mixed, semiactive, thermic Typic Endoaquults
Seabrook	Mixed, thermic Aquic Udipsamments
Slagle	Fine-loamy, siliceous, subactive, thermic Aquic Hapludults
Tomotley	Fine-loamy, mixed, semiactive, thermic Typic Endoaquults
Turbeville	Fine, kaolinitic, thermic Typic Kandiudults
Uchee	Loamy, kaolinitic, thermic Arenic Kanhapludults
Udorthents	Udorthents
Wickham	Fine-loamy, mixed, semiactive, thermic Typic Hapludults
Yeopim	Fine-silty, mixed, semiactive, thermic Aquic Hapludults

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