United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of Agriculture, Forest Service; North Carolina Department of Environment and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; Burke Soil and Water Conservation District; and Burke County Board of Commissioners

Soil Survey of Burke County, North Carolina

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

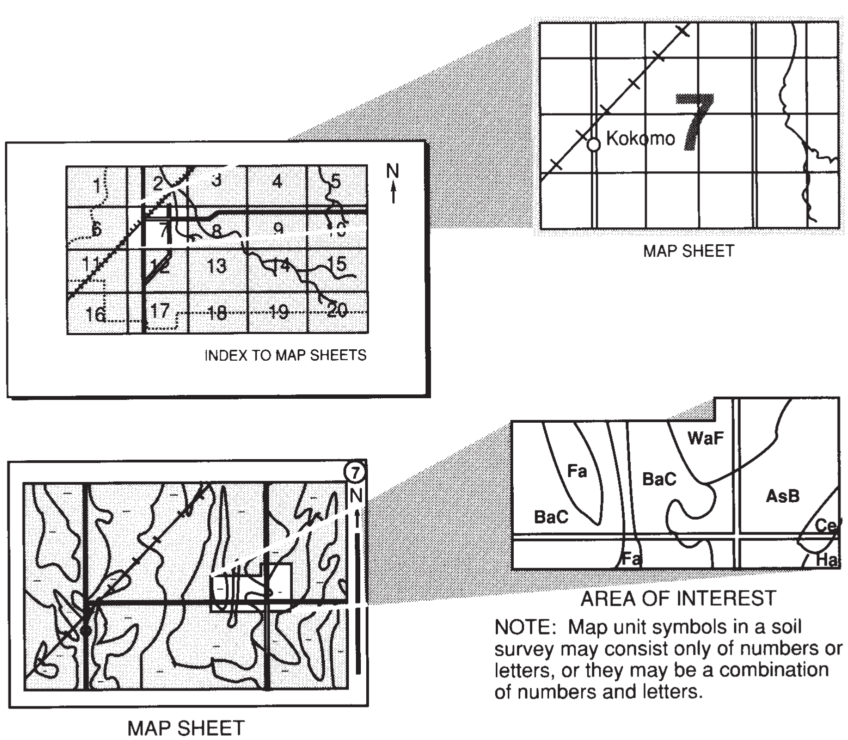
Detailed Soil Maps

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; the United States Department of Agriculture, Forest Service; the North Carolina Department of Environment and Natural Resources; the North Carolina Agricultural Research Service; the North Carolina Cooperative Extension Service; the Burke Soil and Water Conservation District; and the Burke County Board of Commissioners. The survey is part of the technical assistance furnished to the Burke Soil and Water Conservation District. The Burke County Board of Commissioners provided financial assistance for the survey.

Major fieldwork for this soil survey was completed in 1999. Soil names and descriptions were approved in 2000. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2000. The most current official data are available on the Internet.

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.

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Cover: Table Rock Mountain, elevation 3,909 feet, is a prominent county landmark along the eastern rim of the Linville Gorge Wilderness Area. As the main attraction of Table Rock State Park, this mountain provides magnificent vistas of the gorge and other surrounding areas, as well as many recreational activities, including hiking, picnicking, and rock climbing.

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

This soil survey contains information that affects land use planning in Burke County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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 shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

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

Mary K. Combs
State Conservationist
Natural Resources Conservation Service

Soil Survey of Burke County, North Carolina

By David T. Knight, North Carolina Department of Environment and Natural Resources

Soils surveyed by David T. Knight, North Carolina Department of Environment and Natural Resources, and Timothy P. Harlan, Constance M. Adams, L. Lee Mallard III, and J. Craig Harris, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
United States Department of Agriculture, Forest Service; North Carolina Department of Environment and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; Burke Soil and Water Conservation District; and Burke County Board of Commissioners

BURKE COUNTY is in the west-central part of North Carolina (fig. 1), in the Piedmont and Blue Ridge physiographic provinces. The county has a total area of 329,696 acres, or about 515 square miles. In 2000, the county had a population of 89,148, and Morganton, the county seat, had a population of 17,310 (Burke County Chamber of Commerce, 2000).

The first soil survey of Burke County was published in 1926 by the United States Department of Agriculture. This survey updates the first survey, provides more detailed soil maps on aerial photographs, and contains more current interpretive information (Lee and Bacon, 1926).

General Nature of the Survey Area

This section gives general information about Burke County. It describes the history and development; economic development; physiography, relief, and drainage; water resources; geology; and climate.

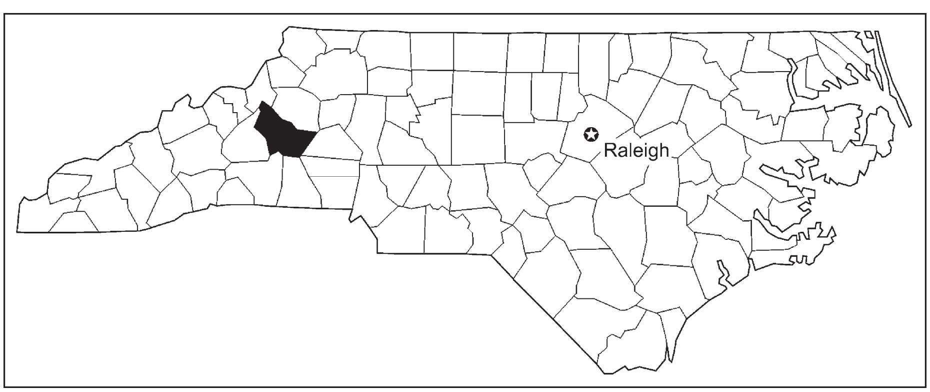

Figure 1.—Location of Burke County in North Carolina.

History and Development

Burke County was created from part of Rowan County on June 1, 1777. The county was named in honor of Dr. Thomas Burke, who at that time was serving in the Continental Congress. Dr. Burke went on to become a significant figure in the Revolutionary War as well as the third Governor of North Carolina. Burke County was quite large at first and included all or part of 16 present North Carolina counties. It took the North Carolina General Assembly 108 years to carve Burke County down to its present boundaries (Phifer, 1982).

Because of the threat of attack from the native Americans, mainly the Cherokees and Catawbas, relatively few settlers ventured into the present Burke County area until after the end of the French and Indian War in 1763. After the Revolutionary War, settlers, mostly of Scotch-Irish, German, English, and Welch descent, migrated more freely to the area. They came from eastern settlements in North Carolina, from northern States along the Great Wagon Road from Philadelphia, and from the south by way of the wagon road from Charleston. The present town of Morganton was laid out in 1784 as the center of the Morgan Judicial District and the site for the courthouse and the county seat.

Economic Development

Early settlement and development in Burke County depended on the self-sustaining enterprise of farming. Even the largest plantations grew very little surplus crops for local markets. Corn, oats, wheat, soybeans, rye, cotton, and tobacco were some of the chief crops grown in the mid 1800s. Cattle, hogs, sheep, chickens, horses, and mules were common farm animals. Peaches, apples, and grapes were the most common fruits grown, and a variety of other fruits and vegetables were grown as well (Phifer, 1982).

Early industries in Burke County were related to agriculture. Grist mills, tanneries, blacksmiths, carriage and wagon makers, and sawmills were some of the early businesses that helped to sustain the agrarian way of life. Agriculture was the most common source of employment in Burke County until well into the 1900s. Local manufacturing enterprises began to grow, however, when power sources that were independent from local water sources were introduced in the late 1800s and early 1900s. As this industrialization progressed, there was a shift away from full-time farming to part-time farming because many people went to work full-time in factories and in other town enterprises.

Today, over 38,000 people are employed in Burke County. Furniture and textiles are the leading industries in the county, but the addition of new industries in the county within the last few years has diversified manufacturing. Retail sales in Burke County were over 704 million dollars in the 1999-2000 fiscal year (N.C. Department of Commerce, 2000).

Agriculture still plays an important economic role in the county, but the production of traditional farm crops has decreased and given way to the production of nursery crops, such as ornamental trees and shrubs. According to the North Carolina Cooperative Extension Service, the total farm income in 2000 was estimated at about 31.7 million dollars. Nursery and greenhouse income was the largest single income category, representing over half of the total amount (N.C. Cooperative Extension Service, Burke Center, *Farm Income*, 2001).

Physiography, Relief, and Drainage

Burke County is in a part of the State where the rolling hills and broader valleys in the east merge with the Blue Ridge foothills and mountains in the west. In the southwest and south-central parts of the county are the South Mountains, a separate range of mountains extending from the Blue Ridge mountains.

About 60 percent of the county is in the Piedmont Plateau region around the Catawba River Valley. This area, which is in the central and eastern parts of the county, has elevations ranging from 931 feet, where the Catawba River exits the county, to about 1,300 feet, where the Piedmont meets the Blue Ridge foothills. The uplands primarily are made up of moderately broad ridges where the soils have moderately deep or deep, clayey subsoils. The soils on the strongly sloping to steep side slopes generally have loamy subsoils. The uplands are typically used for woodland, home sites, urban buildup, hay, and pasture. Most of the soils on flood plains have loamy subsoils and are used for woodland, cropland, or nursery crops.

The foothills are in a transitional area between the Blue Ridge mountains and the Piedmont. This area has diverse relief and includes discontinuous mountains and ridges that extend and sometimes intermingle down into the Piedmont. The terrain can be very rugged and is dissected by numerous streams. Elevations generally range from 1,200 to 2,800 feet. Foothill ridges can be narrow and have steep or very steep side slopes, like the landscapes of the higher mountains. Some areas have broad ridges and smooth side slopes, like the landscapes in the upper Piedmont. The soils generally have loamy subsoils and are similar to the mountain soils. In the lower foothills, however, the soils can be similar to the soils in the upper Piedmont.

Mountain landscapes vary considerably. Some areas have broad ridges and moderately deep or deep soils that have loamy subsoils. Soils on narrow ridges and knobs and on the adjoining side slopes are commonly shallow or moderately deep and have loamy subsoils. The amount of rock fragments in the soil and on the surface varies. The fragments are common in mountain areas. Coves are generally narrow-bottomed and loamy and have relatively little colluvial accumulations in most places.

In the Blue Ridge mountains, the general landscape elevations range from about 2,800 to 3,800 feet; several mountain peaks are over 4,000 feet. Prominent mountain peaks, which are along the Jonas Ridge on the eastern rim of the Linville Gorge Wilderness Area, include Shortoff Mountain; Table Rock Mountain; Hawksbill Mountain; and the highest peak in the county, Long Arm Mountain.

The South Mountains are not as high as those in the Blue Ridge, but they are still quite rugged. South Mountain landscapes range from about 1,400 to 2,800 feet in elevation. Several peaks are over 2,900 feet; these include Buzzard Roost, Hickory Knob, and Icy Knob.

Most of Burke County is drained by the Catawba River and its tributaries. The Catawba River enters the county in the west through Lake James, flows from west to east through Lake Rhodhiss in the central part of the county, and then exits the county in the east through Lake Hickory. The Catawba River's major tributaries in Burke County include Drowning Creek, McGalliard Creek, Henry Fork, Jacob Fork, Lower Creek, Johns River, Hunting Creek, Warrior Fork (which drains Upper Creek, Simpson Creek, Rose Creek, Irish Creek, and Russell Creek), Canoe Creek, Silver Creek, Paddy Creek, and the Linville River. Surface water in a small portion of the southwest corner of the county drains south into the Broad River watershed in Rutherford County.

Water Resources

Burke County has an abundant supply of water from rivers, streams, lakes, and ground water sources. The major rivers and creeks named in the previous section all drain into the Catawba River. Three relatively large lakes on the Catawba River have waters within the boundaries of the county. The largest of these lakes is Lake James, in the west-central part of the county. This lake has a total surface area of about 6,800 acres and 150 miles of shoreline. Over half of the lake is in Burke County, and the remaining part is in McDowell County to the west. Lake Rhodhiss, which is about

3,000 acres in size and has about 90 miles of shoreline, is in the central part of the county. Most of this lake is in Burke County, but the northeastern end is in Caldwell County. On the eastern part of the Catawba River, Lake Hickory impounds water to the base of Rhodhiss Dam and covers less than 200 acres in the county (Duke Power, 1999).

Most of the county's residents and all of its major industries get their water from city or community water supply systems. The Catawba River supplies water to all of these systems through intake plants on Lake Rhodhiss, Lake Hickory, and the river itself. Homes in outlying areas of the county get their domestic water from drilled or bored wells.

Geology

Burke County is located in the Blue Ridge and Piedmont physiographic provinces. The rolling slopes of the Piedmont can generally be distinguished from the steep, rugged terrain of the Blue Ridge mountains and foothills by the elevation and landscape differences between the two provinces. The Blue Ridge escarpment lies between the two provinces. The escarpment ranges in elevation from just over 4,000 feet in the west to about 1,200 feet at its eastern edge. This area can be quite rugged because of the many streams that have cut and dissected the landscape coming off the steep escarpment.

The soils of Burke County formed from two primary geologic rock systems. These systems are the Blue Ridge Belt and the Inner Piedmont Belt. These lithotectonic belts differ in geologic character, and they greatly influenced the genesis and development of soils in their respective areas (Goldsmith and others, 1988).

The Blue Ridge Belt is in the northwest part of Burke County. It makes up about 20 percent of the county. The older rocks in this area, such as those in the Elk Park Pluton, date back to about 1 billion years ago. The sedimentary Chilhowee Group may date back to about 530 million years ago. Rocks in the Blue Ridge Belt originated from metamorphic, intrusive igneous, and sedimentary sources. Igneous and metamorphic rocks in the area include granite, granite gneiss, gneiss, and schist. During the upthrust of the Appalachian Mountain system, all of these rocks underwent metamorphism. Metasedimentary rocks now include arkose, conglomerate, metagraywacke, quartzite, and phyllite.

The boundary separating the two geologic rock systems is along the Brevard Fault Zone. This zone extends across the county, roughly northeast to southwest, from the McDowell County line near Longtown to just northeast of Brown Mountain Beach Road on the Caldwell County line. This fault zone, which is about a mile or more wide, is where adjoining parts of the earth's crust moved against each other eons ago and caused shearing, deformation of rocks, and recrystallization and realignment of minerals. Rocks produced by the shearing forces in the zone are characterized by the crushed and linear alignment of minerals and layers from adjacent parent rocks. This fault zone in Burke County also lies along the approximate boundary of the traditional mountain-piedmont physiographic break.

The Inner Piedmont Belt is southeast of the Brevard Fault Zone. It makes up about 80 percent of the county. This area has two basic groups of rock formations. Originally, the upper formation was mostly sedimentary and was underlain by the lower formation that was, most likely, volcanic material. During the time of uplift and folding of the Appalachian Mountains, lateral stresses also caused folding and uplift in the Piedmont, but to a lesser extent. The South Mountains were probably uplifted at this time from the same material that makes up the Piedmont area. This uplifting and folding, which occurred about 410 to 430 million years ago, caused the Inner Piedmont rocks to undergo metamorphism. The metavolcanic rocks are now mostly biotite gneiss, amphibolite, layered mica schist, and granitoid gneiss. The metasedimentary rocks are mainly sillimanite-mica schist, biotite gneiss, and quartz schist. Small masses of granite and granodiorite intrusions, as well as other minor rock types, randomly appear across the area as well.

Climate

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

The table “Temperature and Precipitation” gives data on temperature and precipitation for the survey area as recorded at Morganton, North Carolina, in the period 1961 to 1990. 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 about 40 degrees F and the average daily minimum temperature is about 28 degrees. The lowest temperature on record, which occurred at Morganton on January 21, 1985, was -9 degrees. In summer, the average temperature is about 75 degrees and the average daily maximum temperature is about 87 degrees. The highest temperature, which occurred at Morganton on July 29, 1952, was 106 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 total average annual precipitation is about 50 inches. Of this, about 30 inches, or 60 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 7.39 inches at Morganton on June 14, 1947. Thunderstorms occur on about 41 days each year, and most occur between May and August.

The average seasonal snowfall is about 9 inches. The greatest snow depth at any one time was 17 inches, recorded on March 2, 1942. On the average, 7 days of the year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall was 17 inches, recorded on March 2, 1942.

The average relative humidity in midafternoon is about 54 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The prevailing wind is from the southwest for much of the year, except during September and October when it is from the northeast. Average windspeed is highest, about 9 miles per hour, in March and April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in Burke County. 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 material in which the soil formed.

The soils and miscellaneous areas in the survey area occur 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.

Survey Procedures

The general procedures followed in making this survey are described in the "National Soil Survey Handbook" of the Natural Resources Conservation Service and in the "Soil Survey Manual" (USDA, Natural Resources Conservation Service, 2002b; Soil Survey Division Staff, 1993).

Before fieldwork began, preliminary boundaries of slopes and landforms were plotted stereoscopically on aerial photographs taken in 1984 at a scale of 1:24,000. United States Geological Survey geologic and topographic maps at a scale of 1:24,000 were also used. Map units were then designed according to the pattern of soils interpreted from photographs, maps, and field observations.

After completion of the soil mapping on aerial photographs, map unit delineations were transferred by hand to orthophotographs at a scale of 1:24,000. Surface drainage and cultural features were transferred from 7.5-minute topographic maps of the United States Geological Survey.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of two or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

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

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

1. Fairview-Rhodhiss

Very deep, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; on gently sloping to very steep Piedmont uplands

Setting

Location in the survey area: Central part of the county
Landform: Piedmont uplands (fig. 2)
Landscape position: Ridges
Slope range: 2 to 60 percent

Map Unit Composition

Extent of the map unit in the survey area: 50 percent
Extent of the components in the map unit:
Fairview soils—69 percent
Rhodhiss soils—22 percent
Minor components—9 percent (including Meadowfield, Colvard, and Arkaqua soils; Udorthents; Urban land; and Toast and Biltmore soils)

Soil Characteristics

Fairview
Surface layer: Yellowish red sandy clay loam
Subsurface layer: Yellowish red clay loam that has red mottles
Subsoil: Upper part—red clay that has yellowish red mottles; lower part—red clay loam
Underlying material: Multicolored saprolite that has a loam texture
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 2 to 25 percent

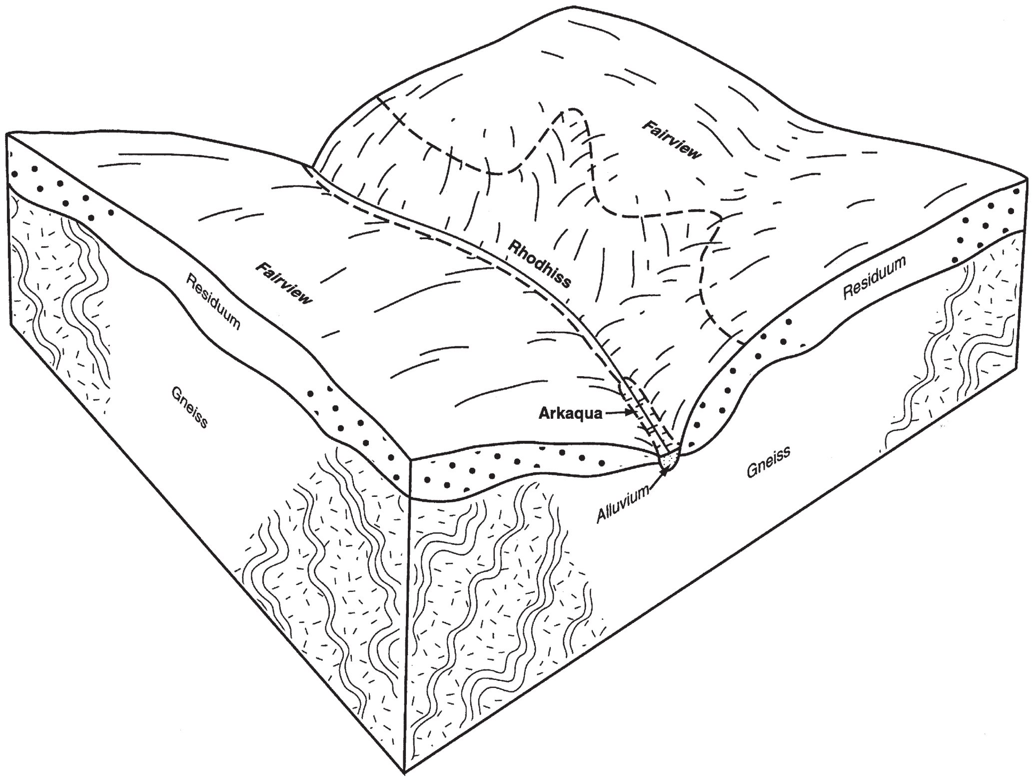

Figure 2.—Typical relationship between soils, landform, and parent material in the Fairview-Rhodhiss general soil map unit in the Piedmont.

Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Rhodhiss

Surface layer: Dark grayish brown sandy loam
Subsurface layer: Dark yellowish brown sandy loam
Subsoil: Upper part—strong brown sandy clay loam; middle part—yellowish red sandy clay loam; lower part—strong brown sandy clay loam
Underlying material: Upper part—yellow, strong brown, and olive saprolite that has a sandy loam texture; lower part—reddish yellow, dark gray, and olive gray saprolite that has a sandy loam texture
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 15 to 60 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Minor components

- Meadowfield soils, which have hard bedrock at a depth of 20 to 40 inches and are intermingled with areas of the major soils on steep side slopes
- Colvard, Arkaqua, and Biltmore soils, which formed in alluvial materials and are on flood plains
- Udorthents, which are areas where the natural soils have been disturbed by cutting and filling and are intermingled with areas of the major soils

- Urban land, which is an area of urban buildup around towns, shopping centers, and manufacturing plants
- Isolated areas of Toast soils, which have a yellow, clayey subsoil

Land Use

Major uses: Pasture, hayland, home sites, and cropland in the less sloping areas

Agricultural Development

Cropland
Management concerns: Erodibility, tilth, and equipment limitations

Pasture and hayland
Management concerns: Fairview—erodibility, tilth, and root penetration; Rhodhiss—erodibility, equipment limitations, and root diseases

Orchards and ornamental crops
Management concerns: Fairview—erodibility, equipment limitations, root diseases, and herbicide retention; Rhodhiss—erodibility, equipment limitations, and root diseases

Woodland
Management concerns: Fairview—erodibility, equipment limitations, and seedling survival; Rhodhiss—erodibility and equipment limitations

Urban Development

Management concerns: Fairview—restricted permeability, seepage, steepness of slope, high clay content, and low strength; Rhodhiss—steepness of slope and seepage

Recreational Development

Management concerns: Steepness of slope

2. Woolwine-Fairview

Moderately deep to very deep, well drained soils that have a loamy surface layer and a clayey subsoil; on gently sloping to moderately steep Piedmont uplands

Setting

Location in the survey area: Mostly in the eastern part of the county
Landform: Piedmont uplands (fig. 3)
Landscape position: Ridges
Slope range: 2 to 25 percent

Map Unit Composition

Extent of the map unit in the survey area: 11 percent
Extent of the components in the map unit:
Woolwine soils—33 percent
Fairview soils—31 percent
Minor components—36 percent (including Meadowfield, Rhodhiss, Colvard, and Arkaqua soils; Udorthents; Urban land; and Biltmore and Unison soils)

Soil Characteristics

Woolwine
Surface layer: Upper part—dark brown gravelly loam; lower part—yellowish brown gravelly loam
Subsurface layer: Yellowish brown clay loam

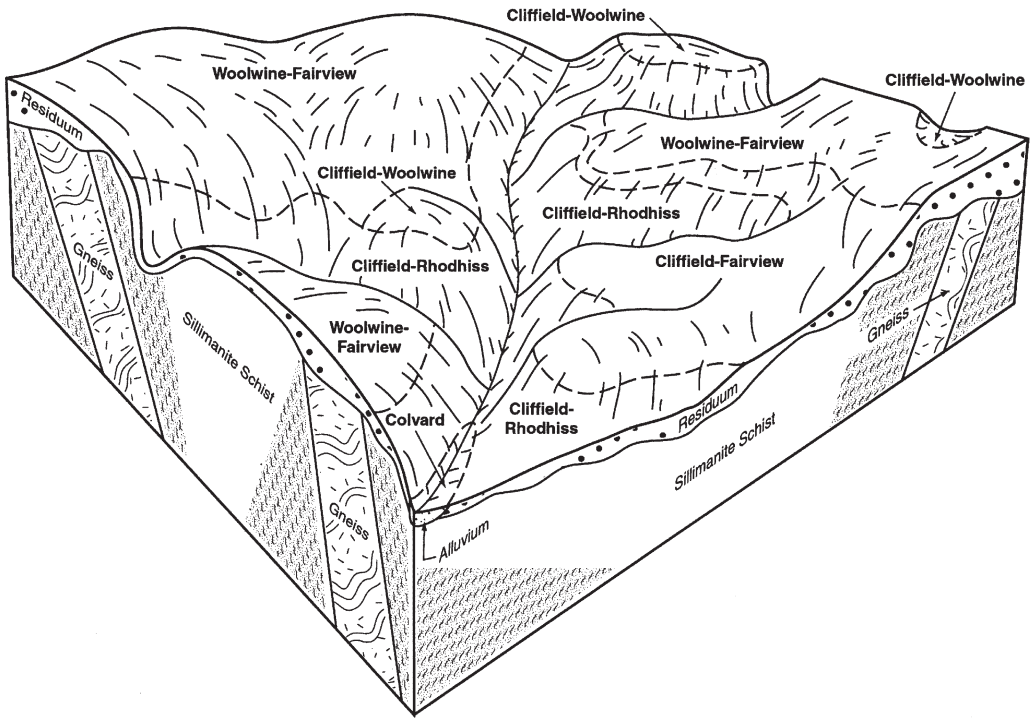

Figure 3.—Typical relationship between soils, landform, and parent material in the Woolwine-Fairview general soil map unit in the Piedmont.

Subsoil: Upper part—yellowish red clay loam; lower part—red clay that has yellowish red mottles
Underlying material: Multicolored, weathered sillimanite schist
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from felsic high-grade metamorphic rock

Fairview

Surface layer: Yellowish red sandy clay loam
Subsurface layer: Yellowish red clay loam that has red mottles
Subsoil: Upper part—red clay that has yellowish red mottles; lower part—red clay loam
Underlying material: Multicolored saprolite that has a loam texture
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Minor components

- Meadowfield soils, which have less clay in the subsoil, have more rock fragments throughout, and are in steeper areas than the major soils
- Rhodhiss soils, which have less clay in the subsoil and are in steeper areas than the major soils
- Colvard, Arkaqua, and Biltmore soils, which formed in alluvial materials and are on flood plains

- Udorthents, which are areas where the natural soils have been disturbed by cutting and filling
- Urban land, which is an area of urban buildup around towns, shopping centers, and manufacturing plants
- Unison soils, which formed in old alluvium and are on high stream terraces

Land Use

Major uses: Pasture, hayland, home sites, urban development, and woodland

Agricultural Development

Cropland
Management concerns: Woolwine—droughtiness, rooting depth, and equipment limitations; Fairview—erodibility and tilth

Pasture and hayland
Management concerns: Woolwine—droughtiness, erodibility, and equipment limitations; Fairview—erodibility

Orchards and ornamental crops
Management concerns: Erodibility and equipment limitations; Woolwine—droughtiness and rooting depth; Fairview—root diseases and herbicide retention

Woodland
Management concerns: Woolwine—equipment limitations, seedling survival, and hazard of windthrow; Fairview—erodibility, seedling survival, and equipment limitations

Urban Development

Management concerns: Woolwine—depth to bedrock, low strength, high clay content, and steepness of slope; Fairview—restricted permeability, seepage, high clay content, low strength, and steepness of slope

Recreational Development

Management concerns: Woolwine—content of rock fragments and steepness of slope; Fairview—steepness of slope, restricted permeability, seepage, high clay content, and low strength

3. Cecil-Pacolet

Very deep, well drained soils that have a loamy surface layer and a clayey subsoil; on gently sloping to moderately steep Piedmont uplands

Setting

Location in the survey area: Southeastern corner of the county, joining Catawba, Lincoln, and Cleveland Counties
Landform: Piedmont uplands (fig. 4)
Landscape position: Ridges
Slope range: 2 to 25 percent

Map Unit Composition

Extent of the map unit in the survey area: Less than 1 percent
Extent of the components in the map unit:
Cecil soils—15 percent
Pacolet soils—67 percent
Minor soils—18 percent (including Rion and Meadowfield soils)

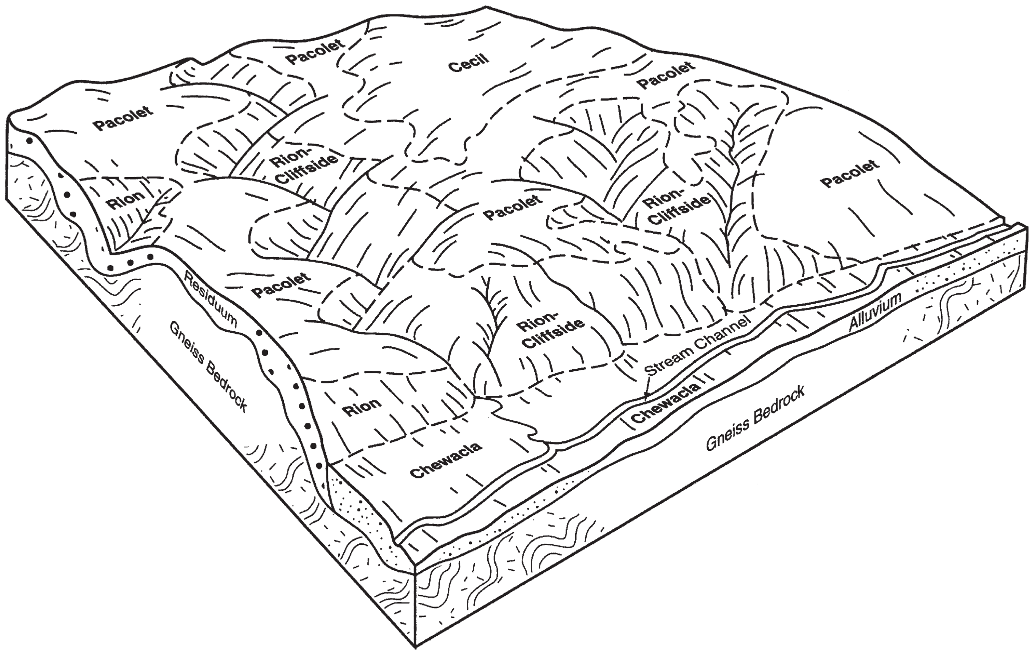

Figure 4.—Typical relationship between soils, landform, and parent material in the Cecil-Pacolet general soil map unit in the Piedmont.

Note: The majority of this map unit is in areas of Catawba, Lincoln, and Cleveland Counties where the predominance of each of the major soils differs from that in Burke County and dictates the order of soils named in this unit.

Soil Characteristics

Cecil

Surface layer: Yellowish red sandy clay loam
Subsoil: Upper part—red clay that has reddish yellow mottles; lower part—red sandy clay loam that has reddish yellow mottles
Underlying material: Red sandy loam that has reddish yellow and reddish brown mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 2 to 8 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Pacolet

Surface layer: Yellowish red sandy clay loam
Subsoil: Upper part—red clay that has reddish yellow mottles; lower part—red clay loam that has reddish yellow and pink mottles
Underlying material: Upper part—yellowish red sandy loam saprolite that has reddish yellow and dark reddish brown mottles; lower part—yellowish red sandy loam saprolite that has reddish yellow and dark reddish brown mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 25 percent

Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Minor components
- Rion soils, which have less clay in the subsoil and are in steeper areas than the major soils
- Meadowfield soils, which have less clay in the subsoil, have more rock fragments throughout, and are in steeper areas than the major soils

Land Use

Major uses: Cropland, hayland, pasture, woodland, and home sites

Agricultural Development

Cropland
Management concerns: Cecil—erodibility, tilth, and soil fertility; Pacolet—erodibility, tilth, soil fertility, and equipment limitations

Pasture and hayland
Management concerns: Cecil—soil fertility; Pacolet—erodibility, equipment limitations, and soil fertility

Orchards and ornamental crops
Management concerns: Cecil—rooting depth and ball and burlap harvesting; Pacolet—erodibility, root diseases, ball and burlap harvesting, and equipment limitations

Woodland
Management concerns: Cecil—equipment limitations and seedling survival; Pacolet—erodibility, equipment limitations, and seedling survival

Urban Development

Management concerns: Cecil—restricted permeability, seepage, high clay content, and low strength; Pacolet—high clay content, restricted permeability, steepness of slope, and low strength

Recreational Development

Management concerns: Cecil—no significant limitations; Pacolet—steepness of slope

4. Colvard-Unison

Very deep, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; on nearly level Piedmont flood plains and on gently sloping to moderately steep Piedmont stream terraces

Setting

Location in the survey area: Central part of the county
Landform: Piedmont river valley (fig. 5)
Landscape position: Colvard—flood plains; Unison—high stream terraces
Slope range: 0 to 25 percent

Map Unit Composition

Extent of the map unit in the survey area: 3 percent
Extent of the components in the map unit:
Colvard soils—39 percent
Unison soils—38 percent

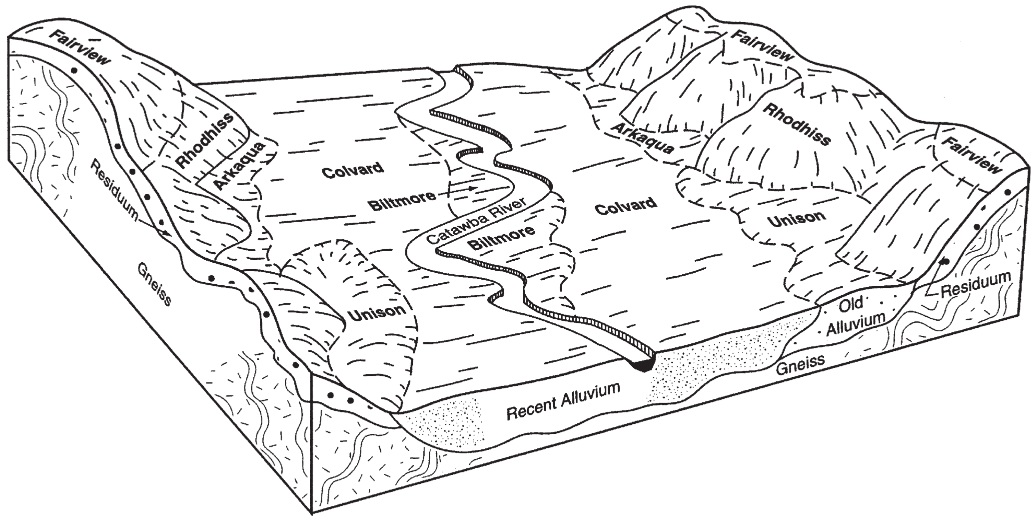

Figure 5.—Typical relationship between soils, landform, and parent material in the Colvard-Unison and Fairview-Rhodhiss general soil map units.

Minor soils—23 percent (including Arkaqua soils, Tate and similar soils, and Biltmore, Dillard, Banister, and Hatboro soils)

Soil Characteristics

Colvard

Surface layer: Dark yellowish brown sandy loam
Underlying material: Upper part—yellowish brown sandy loam that has yellowish red and brownish yellow masses of oxidized iron; middle part—light yellowish brown sandy loam that has yellowish red, dark yellowish brown, and brownish yellow masses of oxidized iron; lower part—light yellowish brown sandy loam that has pale brown iron depletions and brownish yellow masses of oxidized iron
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: 4 to 6 feet
Slope range: 0 to 3 percent
Parent material: Recent alluvium

Unison

Surface layer: Brown fine sandy loam
Subsurface layer: Strong brown clay loam
Subsoil: Upper part—strong brown clay loam that has yellowish red mottles; lower part—reddish yellow clay loam that has yellowish red mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 2 to 25 percent
Parent material: Old alluvium

Minor components

- Arkaqua soils, which are somewhat poorly drained and are in low areas on flood plains
- Tate and similar soils, which have more clay in the subsoil and are on lower terrace treads than the major soils

- Biltmore soils, which have less clay in the underlying material than the major soils and generally are adjacent to stream channels
- Banister and Dillard soils, which are moderately well drained and are on low terraces
- Hatboro soils, which are poorly drained and are in depressions on flood plains

Land Use

Major uses: Woodland, ornamental crops, cropland, and pasture

Agricultural Development

Cropland
Management concerns: Colvard—occasional flooding; Unison—erodibility and equipment limitations

Pasture and hayland
Management concerns: Colvard—occasional flooding; Unison—erodibility and equipment limitations

Orchards and ornamental crops
Management concerns: Colvard—flooding and ball and burlap harvesting; Unison—erodibility and equipment limitations

Woodland
Management concerns: Colvard—no significant limitations; Unison—erodibility and equipment limitations

Urban Development

Management concerns: Colvard—occasional flooding, cutbanks caving, seepage, and seasonal wetness; Unison—high clay content, moderate shrink-swell potential, low strength in the subsoil, and steepness of slope

Recreational Development

Management concerns: Colvard—flooding and wetness; Unison—small stones and steepness of slope

5. Evard-Cowee

Very deep to moderately deep, well drained soils that have a loamy surface layer and a loamy subsoil; on strongly sloping to very steep mountain uplands

Setting

Location in the survey area: Mostly in the northwestern and southern parts of the county
Landform: Blue Ridge mountains and foothills (fig. 6); South Mountains
Landscape position: Mountains, spurs, and ridges
Slope range: 8 to 85 percent

Map Unit Composition

Extent of the map unit in the survey area: 13 percent
Extent of the components in the map unit:
Evard soils—49 percent
Cowee soils—27 percent
Minor soils—24 percent (including Edneytown, Pigeonroost, Cliffield, Ashe, Chestnut, Braddock, Fairview, Tate, Greenlee, and Buladean soils)

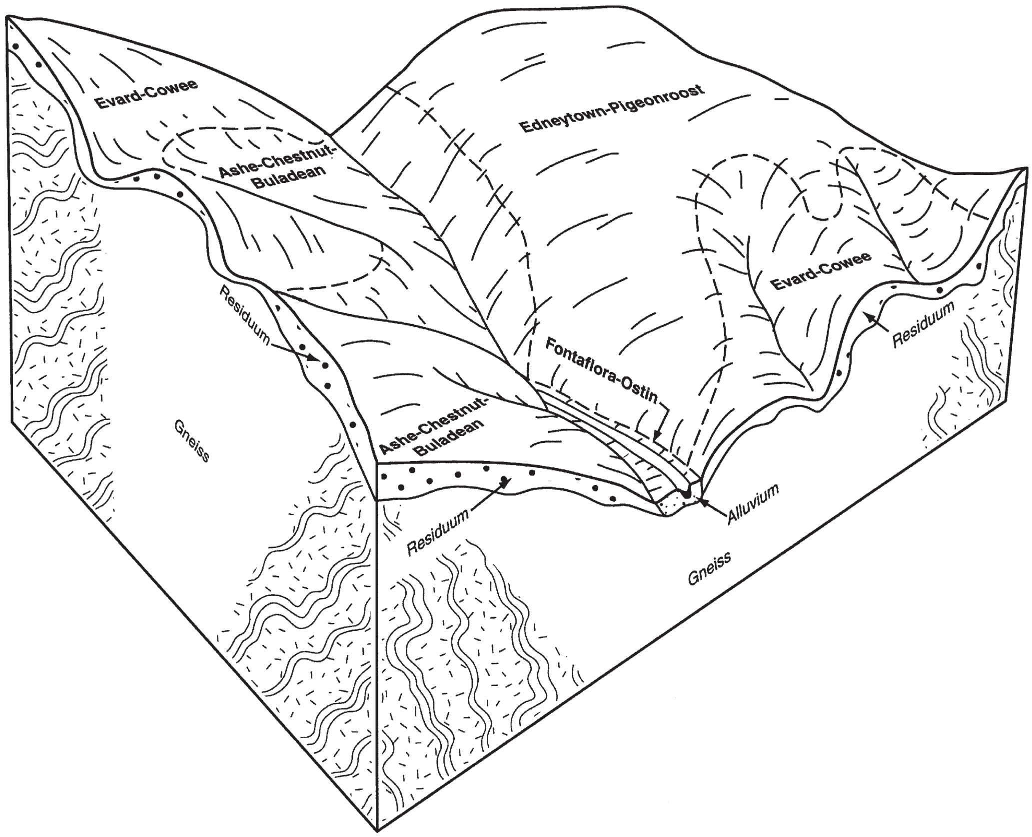

Figure 6.—Typical relationship between soils, landform, and parent material in the Evard-Cowee general soil map unit in the Blue Ridge mountains.

Soil Characteristics

Evard

Surface layer: Upper part—dark brown fine sandy loam; lower part—brown fine sandy loam
Subsoil: Upper part—red clay loam; lower part—red loam
Underlying material: Yellowish red saprolite that has a sandy loam texture
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 85 percent
Parent material: Residuum weathered from felsic high-grade metamorphic rock

Cowee soils

Surface layer: Dark yellowish brown gravelly loam
Subsurface layer: Strong brown gravelly loam
Subsoil: Upper part—yellowish red gravelly loam; lower part—red gravelly sandy clay loam
Underlying material: Multicolored, slightly fractured, weathered sillimanite schist
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 85 percent
Parent material: Residuum weathered from felsic high-grade metamorphic rock

Minor components

- Edneytown and Pigeonroost soils, which are not as red in the subsoil as the major soils and are intermingled with areas of the major soils
- Cliffield soils, which have more rock fragments throughout than the major soils and are intermingled with areas of the major soils in the South Mountains
- Ashe, Chestnut, and Buladean soils, which have less clay in the subsoil than the major soils and are intermingled with areas of the major soils
- Braddock, Tate, and Greenlee soils, which formed in colluvial and alluvial materials and are in drainageways, in coves, and on stream terraces
- Fairview soils, which are clayey and are intermingled with areas of the major soils in the Piedmont along the edges of the unit

Land Use

Major uses: Woodland

Agricultural Development

Cropland
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth

Pasture and hayland
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth

Orchards and ornamental crops
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth

Woodland
Management concerns: Erodibility and equipment limitations; Cowee—hazard of windthrow

Urban Development

Management concerns: Steepness of slope; Cowee—depth to bedrock

Recreational Development

Management concerns: Steepness of slope and large stones

6. Ashe-Chestnut-Buladean

Moderately deep and deep, somewhat excessively drained and well drained soils that have a loamy surface layer and a loamy subsoil; on strongly sloping to very steep mountain uplands

Setting

Location in the survey area: Northwestern part of the county
Landform: Blue Ridge mountains and foothills (fig. 7)
Landscape position: Ridges, spurs, and mountains
Slope range: 8 to 95 percent

Map Unit Composition

Extent of the map unit in the survey area: 8 percent
Extent of the components in the map unit:
Ashe soils—30 percent
Chestnut soils—25 percent
Buladean soils—13 percent
Minor components—32 percent (including Cleveland, Greenlee, Tate, Fontaflora,

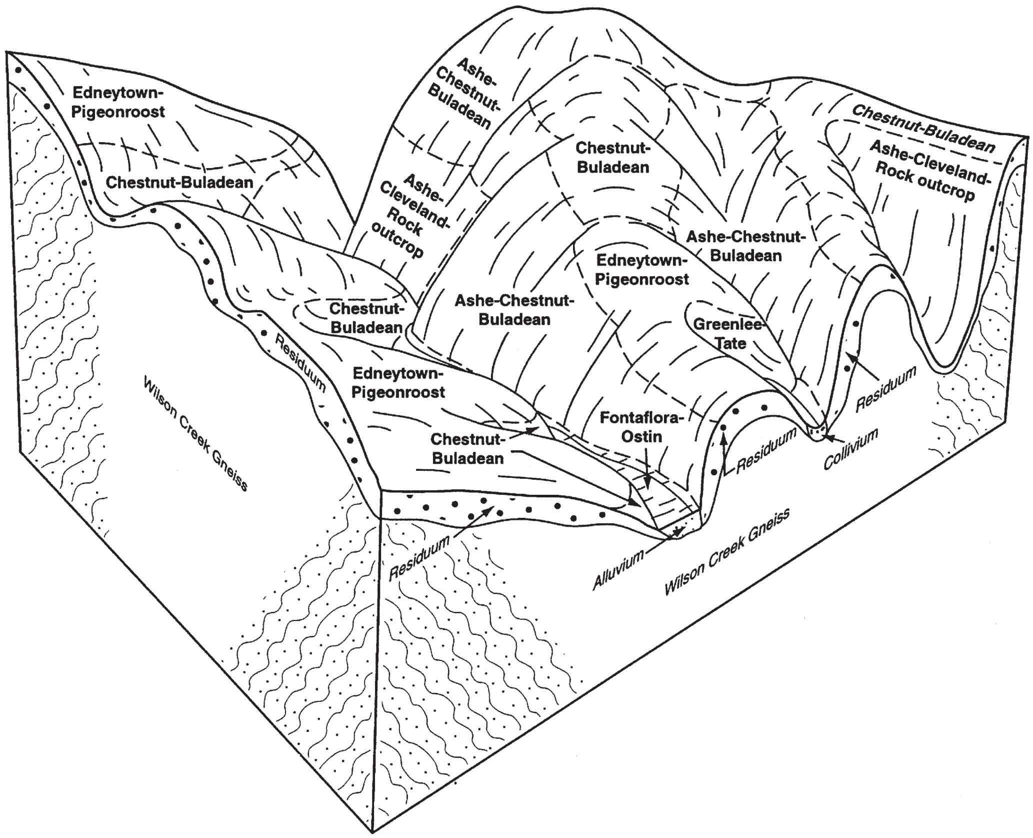

Figure 7.—Typical relationship between soils, landform, and parent material in the Ashe-Chestnut-Buladean general soil map unit in the Blue Ridge mountains.

Edneytown, Evard, Pigeonroost, Ostin, Cowee, and Northcove soils and areas of rock outcrop)

Soil Characteristics

Ashe

Surface layer: Dark brown gravelly sandy loam
Subsoil: Yellowish brown gravelly sandy loam
Underlying material: Multicolored, weathered granite
Bedrock layer: Unweathered granite
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Depth to high water table: Greater than 6 feet
Slope range: 15 to 95 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Chestnut

Surface layer: Dark brown fine sandy loam
Subsurface layer: Olive brown fine sandy loam
Subsoil: Upper part—olive yellow sandy loam; lower part—brownish yellow gravelly sandy loam
Underlying material: Multicolored, weathered granite gneiss

Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 95 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Buladean
Surface layer: Brown fine sandy loam
Subsoil: Upper part—yellowish brown loam; lower part—yellowish brown gravelly loam
Underlying material: Multicolored, weathered granite gneiss
Depth class: Deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 95 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Minor components
- Cleveland soils, which have hard bedrock at a depth of 10 to 20 inches and are on shoulders and nose slopes
- Greenlee, Tate, and Northcove soils, which formed in colluvial or alluvial material and are in drainageways, on benches, and in coves
- Fontaflora and Ostin soils, which formed in alluvial materials and are on flood plains
- Evard, Cowee, Pigeonroost, and Edneytown soils, which have more clay in the subsoil than the major soils and are intermingled with areas of the major soils
- Areas of rock outcrop, which are intermingled with areas of the major soils on shoulders, nose slopes, and mountain slopes

Land Use

Major uses: Woodland

Agricultural Development

Cropland
Management concerns: Erodibility, equipment limitations, and rooting depth

Pasture and hayland
Management concerns: Erodibility, equipment limitations, and rooting depth

Orchards and ornamental crops
Management concerns: Erodibility, equipment limitations, rooting depth, tilth, and ball and burlap harvesting

Woodland
Management concerns: Erodibility, equipment limitations, seedling survival, and hazard of windthrow

Urban Development

Management concerns: Steepness of slope, depth to bedrock, large stones and boulders, and seepage

Recreational Development

Management concerns: Steepness of slope, large stones and boulders, and depth to bedrock

7. Cliffield-Pigeonroost

Moderately deep, well drained soils that have a loamy surface layer and a loamy-skeletal or loamy subsoil; on gently sloping to very steep mountain uplands

Setting

Location in the survey area: Southern and central parts of the county
Landform: South Mountains (fig. 8)
Landscape position: Mountains, ridges, and spurs
Slope range: 8 to 80 percent

Map Unit Composition

Extent of the map unit in the survey area: 8 percent
Extent of the components in the map unit:
Cliffield soils—53 percent
Pigeonroost soils—34 percent
Minor soils—13 percent (including Evard, Tate, Colvard, Ashe, Fontaflora, Ostin, Greenlee, and Chestnut soils)

Soil Characteristics

Cliffield
Surface layer: Very dark grayish brown gravelly sandy loam
Subsurface layer: Dark yellowish brown very cobbly loam
Subsoil: Dark yellowish brown very cobbly clay loam
Bedrock layer: Unweathered, slightly fractured sillimanite schist
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 80 percent
Parent material: Residuum weathered from felsic high-grade metamorphic rock

Pigeonroost
Surface layer: Upper part—very dark grayish brown fine sandy loam; lower part—brown fine sandy loam
Subsoil: Upper part—brownish yellow loam; lower part—reddish yellow loam
Underlying material: Multicolored, weathered gneiss
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 80 percent
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Minor components
- Evard soils, which have redder colors in the subsoil than the major soils and are intermingled with the major soils on smooth ridges and side slopes
- Tate and Greenlee soils, which formed in alluvial and colluvial materials and are in drainageways, on benches, and in coves
- Colvard, Fontaflora, and Ostin soils, which formed in alluvial materials and are on flood plains
- Ashe and Chestnut soils, which are intermingled with areas of the major soils, have a lower content of rock fragments throughout than Cliffield soils, and have less clay in the subsoil than Pigeonroost soils

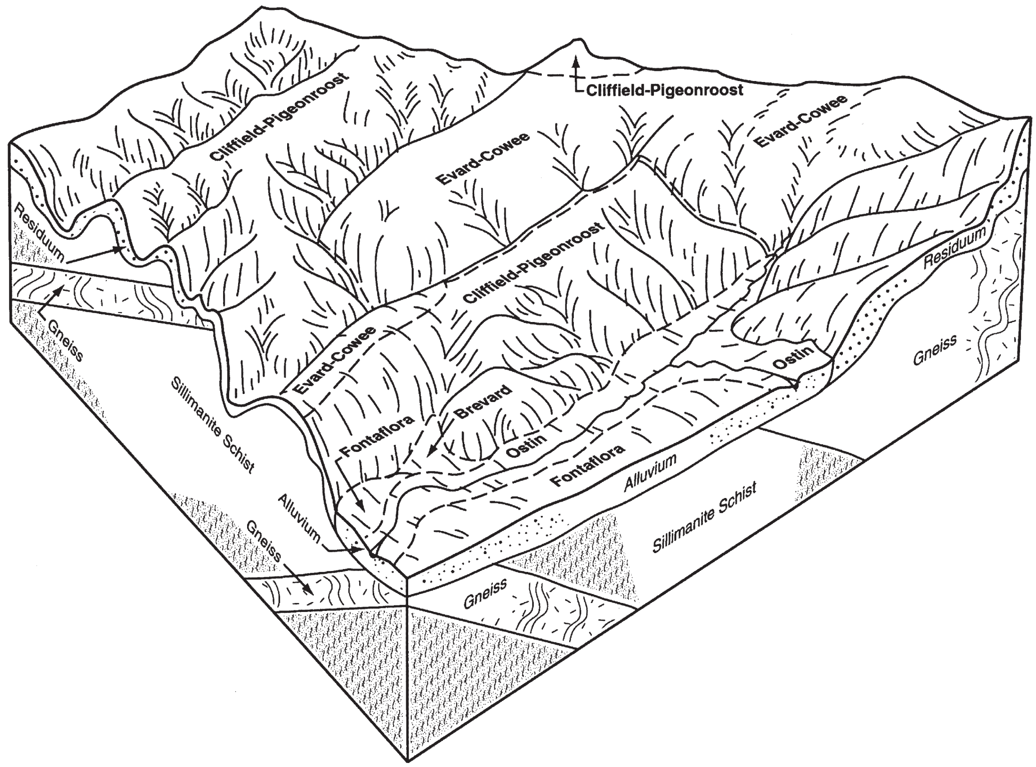

Figure 8.—Typical relationship between soils, landform, and parent material in the Cliffield-Pigeonroost general soil map unit in the South Mountains.

Land Use

Major uses: Woodland

Agricultural Development

Cropland
Management concerns: Erodibility, equipment limitations, and rooting depth

Pasture and hayland
Management concerns: Erodibility, equipment limitations, and rooting depth

Orchards and ornamental crops
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and rooting depth

Woodland
Management concerns: Erodibility, equipment limitations, seedling survival, and hazard of windthrow

Urban Development

Management concerns: Steepness of slope and depth to bedrock

Recreational Development

Management concerns: Steepness of slope and content of rock fragments

8. Soco-Ditney

Moderately deep, well drained soils that have a loamy surface layer and a loamy subsoil; on strongly sloping to very steep mountain uplands

Setting

Location in the survey area: Northwestern part of the county
Landform: Blue Ridge mountains and foothills
Landscape position: Mountains, spurs, and ridges (fig. 9)
Slope range: 8 to 95 percent

Map Unit Composition

Extent of the map unit in the survey area: 6 percent
Extent of the components in the map unit:
- Soco soils—39 percent
- Ditney soils—31 percent
- Minor components—30 percent (including Stecoah, Unicoi, Northcove, Maymead, Fontaflora, Ostin, and Nikwasi soils and areas of rock outcrop)

Soil Characteristics

Soco
Surface layer: Very dark grayish brown fine sandy loam
Subsurface layer: Dark yellowish brown fine sandy loam
Subsoil: Yellowish brown gravelly loam
Underlying material: Weathered quartzite

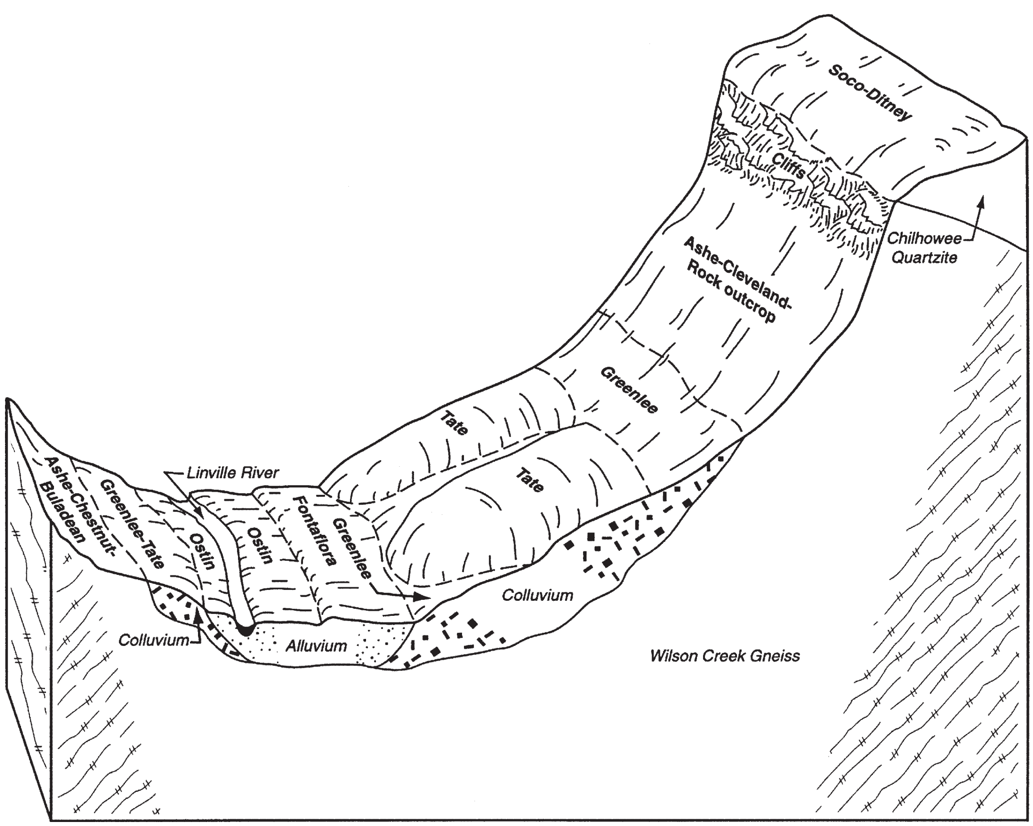

Figure 9.—Soil-landform relationships in the south end of the Linville Gorge.

Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 80 percent
Parent material: Residuum weathered from felsic low-grade metasedimentary rock

Ditney
Surface layer: Upper part—very dark gray fine sandy loam; lower part—olive brown fine sandy loam
Subsoil: Upper part—brown fine sandy loam; lower part—yellowish brown fine sandy loam
Underlying material: Pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles
Bedrock layer: Unweathered arkose
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 95 percent
Parent material: Residuum weathered from felsic low-grade metasedimentary rock

Minor components
- Stecoah soils, which are deep to weathered bedrock and are intermingled with areas of the major soils
- Unicoi soils, which are shallow to unweathered bedrock and are on shoulders, nose slopes, and side slopes
- Northcove and Maymead soils, which formed in colluvial materials and are in drainageways, in coves, and on low benches
- Fontaflora, Ostin, and Nikwasi soils, which formed in alluvial materials and are on flood plains
- Areas of rock outcrop, which are intermingled with areas of the major soils

Land Use

Major uses: Woodland

Agricultural Development

Cropland
Management concerns: Erodibility and equipment limitations

Pasture and hayland
Management concerns: Erodibility, equipment limitations, and rooting depth

Orchards and ornamental crops
Management concerns: Erodibility and equipment limitations

Woodland
Management concerns: Erodibility, equipment limitations, seedling survival, and hazard of windthrow

Urban Development

Management concerns: Depth to bedrock, steepness of slope, seepage, frost action, and surface stones

Recreational Development

Management concerns: Steepness of slope, acidity, and surface stones

9. Pineola-Crossnore-Jeffrey

Moderately deep, well drained soils that have a dark, loamy surface layer and a dark, loamy subsoil; on strongly sloping to very steep mountain uplands

Setting

Location in the survey area: Northwestern part of the county
Landform: Blue Ridge mountains
Landscape position: Mountains, slopes, and spurs
Slope range: 8 to 80 percent

Map Unit Composition

Extent of the map unit in the survey area: 1 percent
Extent of the components in the map unit:
Pineola soils—28 percent
Crossnore soils—26 percent
Jeffrey soils—23 percent
Minor soils—23 percent (including Whiteoak, Nikwasi, and Northcove soils)

Soil Characteristics

Pineola
Surface layer: Dark brown gravelly loam
Subsoil: Upper part—yellowish brown clay loam; lower part—brownish yellow loam
Underlying material: Upper part—brownish yellow and very pale brown gravelly loam saprolite; lower part—multicolored, weathered metasiltstone
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 30 percent
Parent material: Residuum affected by creep in the upper part, weathered from low-grade metasedimentary rock

Crossnore
Surface layer: Dark brown gravelly sandy loam
Subsoil: Upper part—yellowish brown gravelly sandy loam; lower part—brownish yellow gravelly sandy loam
Underlying material: Upper part—multicolored gravelly loamy sand saprolite in shades of brown, yellow, and white; lower part—weathered, partially consolidated metasandstone
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 30 to 80 percent
Parent material: Residuum affected by soil creep in the upper part, weathered from low-grade metasedimentary rock

Jeffrey
Surface layer: Upper part—black gravelly sandy loam; lower part—dark brown gravelly sandy loam
Subsoil: Yellowish brown gravelly loam
Underlying material: Yellowish brown gravelly sandy loam
Bedrock layer: Unweathered, feldspathic sandstone
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet

Slope range: 30 to 80 percent
Parent material: Residuum affected by soil creep in the upper part, weathered from low-grade metasedimentary rock

Minor components

- Whiteoak and Northcove soils, which formed in colluvial materials and are in coves, on fans, and in drainageways
- Nikwasi soils, which formed in alluvial materials and are on flood plains

Land Use

Major uses: Woodland and nursery stock production

Agricultural Development

Cropland
Management concerns: Erodibility, equipment limitations, and rooting depth

Pasture and hayland
Management concerns: Erodibility, equipment limitations, soil fertility, droughtiness, and rooting depth

Orchards and ornamental crops
Management concerns: Erodibility, equipment limitations, soil fertility, ball and burlap harvesting, frost action, and rooting depth

Woodland
Management concerns: Erodibility, equipment limitations, hazard of windthrow, and seedling survival

Urban Development

Management concerns: Steepness of slope, depth to bedrock, soil fertility, seepage, and large stones

Recreational Development

Management concerns: Steepness of slope, soil fertility, content of rock fragments, acidity, and small stones

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, Fairview sandy clay loam, 2 to 8 percent slopes, moderately eroded, is a phase of the Fairview series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. 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. Chestnut-Ashe complex, 15 to 30 percent slopes, very rocky, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, 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.

AaA—Arkaqua loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landscape: Piedmont river valleys
Landform: Flood plains
Elevation: 930 to 1,100 feet
Hillslope profile position: Toeslopes
Geomorphic component: Terrace risers and treads
Shape of areas: Mostly long and narrow
Size of areas: 4 to 100 acres or more

Composition

Arkaqua soil and similar soils: 70 percent
Dissimilar soils: 30 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 22 inches—yellowish brown clay loam that has strong brown masses of oxidized iron and brown iron depletions
22 to 36 inches—yellowish brown clay loam that has strong brown masses of oxidized iron and grayish brown iron depletions

Underlying material:
36 to 40 inches—gray clay loam that has strong brown and olive brown masses of oxidized iron
40 to 48 inches—gray loam that has olive brown masses of oxidized iron
48 to 53 inches—very dark gray loamy sand
53 to 60 inches—dark grayish brown sand that has light olive brown masses of oxidized iron

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained

Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: 1.5 to 2.0 feet from December through May
Flooding: Occasional for very brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid
Parent material: Alluvium
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Biltmore soils, which are excessively drained, have more sand throughout the profile than the Arkaqua soil, and are adjacent to stream channels
- Colvard soils, which are well drained, have less clay in the subsoil, and are in slightly higher positions than the Arkaqua soil
- Ostin soils, which are well drained, have less clay in the subsoil and average more rock fragments in the control section than the Arkaqua soil, and are on flood plains at the bases of mountains
- Well drained soils that are in slightly higher positions than the Arkaqua soil
- Soils that have more clay in the subsoil than the Arkaqua soil and are in depressions

Similar:
- Soils that are similar to the Arkaqua soil but have less clay in the subsoil
- Soils that are similar to the Arkaqua soil but are poorly drained
- Soils that are similar to the Arkaqua soil but have a thinner solum
- Other areas of Arkaqua soils that are rarely flooded, especially those along the Catawba River that are protected by the Lake James dams

Land Use

Dominant uses: Pasture, hayland, and cropland
Other use: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: Corn and soybeans
Management concerns: Wetness and flooding
Management measures and considerations:
- Artificial surface and subsurface drainage may be needed to improve productivity.
- Returning crop residue to the soil and planting winter cover crops increases organic matter content, which improves soil fertility, available water capacity, and soil tilth.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Wetness and flooding
Management measures and considerations:
- Artificial surface and subsurface drainage may be needed to improve productivity.
- Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture and soil in good condition.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Wetness and flooding
Management measures and considerations:
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.
- Installing an artificial drainage system reduces the limitations caused by wetness and improves productivity.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Wetness and flooding
Management measures and considerations:
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent the rutting and soil compaction that can occur when the soil is saturated.
- Maintaining drainageways and planting trees that are tolerant of wetness increase seedling survival rates.

Urban Development

Suitability: Unsuited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for urban development because of a seasonal high water table and flooding. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for recreational development because of a seasonal high water table and flooding. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 3w

AbE—Ashe-Chestnut-Buladean complex, 30 to 50 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains and South Mountains
Landform: Mountains, spurs, and ridges
Elevation: 1,400 to 3,600 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks
Shape of areas: Mostly long and narrow or irregular
Size of areas: 5 to 500 acres

Composition

Ashe soil and similar soils: 45 percent
Chestnut soil and similar soils: 30 percent

Buladean soil and similar soils: 10 percent
Dissimilar soils: 15 percent

Typical Profile

Ashe
Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 25 inches—yellowish brown gravelly sandy loam

Underlying material:
25 to 32 inches—multicolored, weathered granite

Bedrock:
32 inches—unweathered granite

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Ashe and Chestnut—moderately deep; Buladean—deep
Drainage class: Ashe—somewhat excessively drained; Chestnut and Buladean—well drained
Permeability: Moderately rapid
Available water capacity: Ashe and Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1 percent of the surface is covered with stones and cobbles that are an average of 12 inches in diameter and are about 20 feet apart.

Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Ashe—very strongly acid to moderately acid; Chestnut—extremely acid to moderately acid; Buladean—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Ashe—20 to 40 inches to hard bedrock; Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Random areas of Cleveland soils, which has hard bedrock at a depth of 10 to 20 inches
- Random areas of the Edneytown soil, which is very deep to bedrock
- Random areas of rock outcrops

Similar:
- Soils that are similar to the Ashe soil but average more rock fragments throughout the profile
- Soils that are similar to the Chestnut soil but have more clay in the subsoil
- Soils that are similar to the Buladean soil but have hard bedrock at a depth of 40 to 60 inches
- Soils that are similar to the major soils but have fewer stones on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the removal of livestock from pastures in time to allow forage plants to recover before winter dormancy help to keep the pasture in good condition and increase productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.

- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Ashe—moderate, based on chestnut oak as the indicator species; Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and hazard of windthrow
Management measures and considerations:
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Ashe and Chestnut soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, depth to bedrock, seepage, and acidity
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- This map unit is severely limited for urban uses because of the steepness of the slope and depth to bedrock. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- This map unit is severely limited for recreational uses because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Ashe—7s; Chestnut—7e; Buladean—7e

AcF—Ashe-Chestnut-Buladean complex, 50 to 95 percent slopes, extremely stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains
Elevation: 1,400 to 3,600 feet
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks and side slopes
Shape of areas: Long and broad or irregular
Size of areas: 30 to 1,000 acres

Composition

Ashe soil and similar soils: 50 percent
Chestnut soil and similar soils: 25 percent
Buladean soil and similar soils: 10 percent
Dissimilar soils: 15 percent

Typical Profile

Ashe
Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 25 inches—yellowish brown gravelly sandy loam

Underlying material:
25 to 32 inches—multicolored, weathered granite

Bedrock:
32 inches—unweathered granite

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Ashe and Chestnut—moderately deep; Buladean—deep
Drainage class: Ashe—somewhat excessively drained; Chestnut and Buladean—well drained
Permeability: Moderately rapid
Available water capacity: Ashe and Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Extremely stony; about 3.5 percent of the surface is covered with stones and cobbles that are an average of 12 inches across and are about 10 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Ashe and Buladean—very strongly acid to moderately acid; Chestnut—extremely acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Ashe—20 to 40 inches to hard bedrock; Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of 10 to 20 inches and generally are around areas of rock outcrop
- Edneytown and Evard soils, which have more clay in the subsoil than the major soils, are very deep to bedrock, and are in scattered areas on smooth side slopes
- Areas of rock outcrop, which generally occur on nose slopes and shoulders
- Greenlee soils, which are very deep to bedrock, have more rock fragments throughout the profile than the major soils, and are in concave positions on backslopes
- Random areas of soils that have soft bedrock at a depth of less than 20 inches

Similar:
- Soils that are similar to the Ashe soil but average more rock fragments throughout the profile
- Soils that have fewer stones on the surface than the major soils
- Soils that are similar to the Ashe soil but have a darker surface layer

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Ashe—moderate, based on chestnut oak as the indicator species; Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, hazard of windthrow, and seedling mortality
Management measures and considerations:
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods in areas where the slope exceeds 45 percent or where landslides are a hazard minimizes the need for road and trail construction.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Ashe and Chestnut soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Steepness of slope, depth to bedrock, and large stones
Management measures and considerations:
- This map unit is severely limited for urban development because of the steepness of the slope and depth to bedrock. The local Health Department should be contacted for additional guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones

Management measures and considerations:
- This map unit is severely limited for recreational uses because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Ashe—7s; Chestnut—7e; Buladean—7e

AsF—Ashe-Cleveland-Rock outcrop complex, 30 to 95 percent slopes, extremely bouldery

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains and spurs
Elevation: 1,400 to 3,600 feet
Hillslope profile position: Backslopes and shoulders
Geomorphic component: Mountain flanks and side slopes
Shape of areas: Broad and irregular
Size of areas: 50 to 1,000 acres

Composition

Ashe soil and similar soils: 40 percent
Cleveland soil and similar soils: 30 percent
Rock outcrop: 20 percent
Dissimilar soils: 10 percent

Typical Profile

Ashe
Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 25 inches—yellowish brown gravelly sandy loam

Underlying material:
25 to 32 inches—multicolored, weathered granite

Bedrock:
32 inches—unweathered granite

Cleveland
Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 16 inches—yellowish brown gravelly sandy loam

Bedrock:
16 inches—unweathered granite

Rock outcrop

This part of the map unit predominately consists of hard granite bedrock at or above the surface level of the surrounding soils.

Soil Properties and Qualities

Depth class: Ashe—moderately deep; Cleveland—shallow
Drainage class: Somewhat excessively drained

Permeability: Moderately rapid
Available water capacity: Ashe—low; Cleveland—very low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep or very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Extremely bouldery; about 4 percent of the surface is covered with stones and boulders that range from 30 inches to 10 feet across and are an average of 95 feet apart.
Extent of rock outcrops: About 22 percent of the surface is covered with rock outcrops that have exposed surfaces that average about 6 feet across and are an average of 400 feet or more apart.
Soil reaction: Very strongly acid to moderately acid
Parent material: Ashe and Chestnut—residuum weathered from felsic high-grade metamorphic or igneous rock; Rock outcrop—unweathered felsic high-grade metamorphic or igneous rock
Depth to bedrock: Ashe—20 to 40 inches to hard bedrock; Cleveland—10 to 20 inches to hard bedrock; Rock outcrop—hard bedrock at or above the surface of the surrounding soils

Minor Components

Dissimilar:
- Chestnut soils, which have soft bedrock at a depth of 20 to 40 inches, hard bedrock at a depth of more than 40 inches, and are in the less sloping areas than the major soils
- Buladean soils, which have soft bedrock at a depth of 40 to 60 inches, hard bedrock at a depth of more than 60 inches, and are in the less sloping areas than the major soils

Similar:
- Soils that are similar to the Cleveland soil but have a greater number of coarse fragments throughout the profile
- Soils that are similar to the Ashe soil but have darker surface colors

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope, depth to bedrock, and surface content of rock fragments. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations

Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope, depth to bedrock, and surface content of rock fragments. A site should be selected on better suited soils.

Woodland
Suitability: Areas of the map unit that have slopes less than 50 percent—suited; areas of the map unit that have slopes greater than 50 percent—poorly suited
Productivity class: Ashe—moderate, based on chestnut oak as the indicator species; Cleveland—low, based on chestnut oak as the indicator species
Management concerns: Equipment limitations, erodibility, hazard of windthrow, and seedling mortality
Management measures and considerations:
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome the limitations to road and trail construction caused by the slope and the large number of stones and boulders on the surface.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Steepness of slope, depth to bedrock, and large stones
Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and depth to bedrock
Management measures and considerations:
- This map unit has severe limitations for recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Ashe—7s; Cleveland—7e; Rock outcrop—8s

BaB—Banister loam, 1 to 6 percent slopes, rarely flooded

Setting

Landscape: Piedmont river valleys
Landform: Stream terraces
Elevation: 1,000 to 1,150 feet
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Treads
Shape of areas: Irregular
Size of areas: 5 to 30 acres

Composition

Banister soil and similar soils: 80 percent
Dissimilar soils: 20 percent

Typical Profile

Surface layer:
0 to 7 inches—brown loam

Subsurface layer:
7 to 10 inches—brownish yellow loam

Subsoil:
10 to 25 inches—brownish yellow clay
25 to 31 inches—yellowish brown clay that has light yellowish brown and strong brown masses of oxidized iron and light gray iron depletions
31 to 41 inches—light brownish gray clay loam that has strong brown masses of oxidized iron

Underlying material:
41 to 60 inches—light brownish gray sandy clay loam that has reddish yellow masses of oxidized iron

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Available water capacity: High
Depth to seasonal high water table: 1.5 to 3.0 feet from January through March
Flooding: Rare for very brief periods
Shrink-swell potential: Moderate
Slope class: Nearly level or gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to strongly acid, except where lime has been applied
Parent material: Alluvium
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Dillard soils, which have less clay in the subsoil and are on higher spots or in more convex areas than the Banister soil

- Hatboro soils, which have less clay in the subsoil than the Banister soil, are frequently flooded, and are in depressions
- Random areas of poorly drained soils that are in low spots or depressions
- Random areas of soils that have less clay in the subsoil than the Banister soil, are somewhat poorly drained, and are in low spots
- Random areas of soils that are poorly drained, have less clay in the subsoil than the Banister soil, and are in depressions

Similar:
- Soils that are similar to the Banister soil but are somewhat poorly drained

Land Use

Dominant uses: Pasture
Other uses: Woodland or ornamental crops

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn
Management concerns: Wetness and rare flooding
Management measures and considerations:
- Delaying spring planting because of wetness from the seasonal high water table helps to prevent clodding and rutting caused by equipment.
- Avoiding tillage when the soil is wet helps to prevent clodding and crusting.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Installing an artificial drainage system reduces the limitations caused by wetness and improves the productivity of this map unit.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue and clover
Management concerns: Wetness
Management measures and considerations:
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Installing an artificial drainage system reduces the limitations caused by wetness and improves productivity.
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Wetness, flooding, root diseases, and ball and burlap harvesting
Management measures and considerations:
- Installing an artificial drainage system reduces the limitations caused by wetness and improves productivity.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.

- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland

Suitability: Well suited
Productivity class: Very high, based on eastern white pine as the indicator species
Management concerns: Equipment limitations and competition from undesirable plants
Management measures and considerations:
- Avoiding logging operations during periods when the soil is saturated helps to prevent rutting and damage to tree roots as a result of compaction.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.
- Herbicides applied to the soil is retained because of herbicide-clay binding, which may damage tree seedlings when cropland is converted to woodland.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent the rutting and compaction that can occur when the soil is saturated.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone, seepage, cutbanks caving, flooding, and low strength
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Suited
Management concerns: Depth to a saturated zone, flooding, and restricted permeability
Management measures and considerations:
- Locating picnic areas, playgrounds, and camp sites on higher parts of the landscape and providing graveled pads for tents and other facilities help to keep sites drier during wet seasons and improve surface water runoff.
- Installing artificial drainage systems or diversions helps to remove excess surface water and minimize the limitations caused by the wetness of the soil.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- It may be necessary to restrict the use of this map unit after heavy rains when the danger of flooding is present.

Interpretive Group

Land capability classification: 2e

BoB—Biltmore loamy sand, 0 to 5 percent slopes, occasionally flooded

Setting

Landscape: Piedmont river valleys
Landform: Flood plains and levees
Elevation: 950 to 1,100 feet
Hillslope profile position: Toeslopes

Geomorphic component: Risers and treads
Shape of areas: Mostly long and narrow
Size of areas: 4 to 50 acres

Composition

Biltmore soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loamy sand

Underlying material:
10 to 60 inches—yellowish brown loamy sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Rapid
Available water capacity: Low
Depth to seasonal high water table: 3.5 to 6.0 feet from October through June
Flooding: Occasional for brief periods
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Strongly acid to slightly alkaline
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Colvard soils, which are less sandy throughout the profile than the Biltmore soil and are on flood plain steps further away from the stream channel
- Miscellaneous borrow areas where sandy material has been removed
- Random areas of other soils that have less sand than the Biltmore soil and are on flood plain steps further away from the stream channel

Similar:
- Areas of Biltmore soils that are protected from flooding

Land Use

Dominant uses: Woodland
Other uses: Nursery stock production or cultivation

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and small grain
Management concerns: Flooding, droughtiness, and nutrient leaching
Management measures and considerations:
- Returning crop residue to the soil and planting winter cover crops increases organic matter content, which improves soil fertility, available water capacity, and soil tilth.

- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase crop production.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Using split applications increases the effectiveness of fertilizer and herbicides.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Flooding, droughtiness, and nutrient leaching
Management measures and considerations:
- Planting drought-tolerant species increases productivity.
- Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture and soil in good condition.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase crop production.
- Using split applications increases the effectiveness of fertilizer and herbicides.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Flooding, droughtiness, nutrient leaching, and ball and burlap harvesting
Management measures and considerations:
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase productivity.
- Using split applications increases the effectiveness of fertilizer and herbicides.
- This soil is not suited to ball and burlap harvesting because the content of clay is too low; the high content of sand, however, allows the production of seedlings for bare-root transplanting.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Equipment limitations, seedling mortality, and competition from undesirable plants
Management measures and considerations:
- Reinforcement planting may reduce seedling mortality that is caused by the loamy sand texture of the surface layer.
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.
- Planting seedlings during wet, cool periods increases plant survival rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Flooding, seepage, poor filtering capacity, cutbanks caving, and droughtiness

Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Suited
Management concerns: Flooding
Management measures and considerations:
- Placing sites in the higher areas and using built-up, level pads help to overcome the flooding limitation for camp sites.
- It may be necessary to restrict the use of this map unit after heavy rains when the danger of flooding is present.
- Using diversions helps to remove excess surface water.

Interpretive Group

Land capability classification: 3s

BrD—Braddock fine sandy loam, 15 to 30 percent slopes

Setting

Landscape: Blue Ridge mountains, foothills, and river valleys
Landform: Ridges, drainageways, and stream terraces
Elevation: 1,200 to 2,300 feet
Hillslope profile position: Backslopes, footslopes, and toeslopes
Geomorphic component: Mountain flanks, mountain bases, base slopes, and terrace risers and treads
Shape of areas: Irregular
Size of areas: 4 to 40 acres

Composition

Braddock soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 2 inches—black mucky loam over brown fine sandy loam

Subsurface layer:
2 to 6 inches—dark yellowish brown and yellowish brown fine sandy loam

Subsoil:
6 to 21 inches—yellowish red clay
21 to 41 inches—red clay

Underlying material:
41 to 75 inches—reddish yellow loam that has light yellowish brown and yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Depth to seasonal high water table: Greater than 6.0 feet

Flooding: None
Shrink-swell potential: Moderate
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; less than 0.01 percent of the surface is covered with stones that are an average of 10 inches across.
Extent of rock outcrops: None
Soil reaction: Extremely acid to strongly acid, except where lime has been applied
Parent material: Colluvium and alluvium derived from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Greenlee soils, which have less clay in the subsoil and more coarse fragments throughout the profile than the Braddock soil and are in concave areas along drains
- Cowee soils, which have less clay in the subsoil than the Braddock soil, have soft bedrock at a depth of 20 to 40 inches, and are on nose slopes and shoulders
- Random areas of soils that have more coarse fragments in the subsoil than the Braddock soil

Similar:
- Soils that are similar to the Braddock soil but have less clay in the subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.

- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Suited
Productivity class: Very high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and competition from undesirable plants
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 4e

BvB—Brevard fine sandy loam, 1 to 6 percent slopes, rarely flooded

Setting

Landscape: Blue Ridge foothills and Piedmont river valleys
Landform: Hills and stream terraces
Elevation: 1,000 to 1,300 feet
Hillslope profile position: Footslopes and toeslopes

Geomorphic component: Risers and treads
Shape of areas: Generally elongated with irregular widths
Size of areas: 5 to 150 acres

Composition

Brevard soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 5 inches—strong brown fine sandy loam

Subsoil:
5 to 23 inches—yellowish red clay loam that has reddish brown ped faces
23 to 35 inches—yellowish brown fine sandy loam that has yellowish red and brownish yellow mottles and yellowish red ped faces

Underlying material:
35 to 60 inches—yellowish brown fine sandy loam that has strong brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: Rare for very brief periods
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Colluvium and alluvium derived mainly from felsic high-grade metamorphic and igneous rock
Depth to bedrock: More than 6 feet to soft or hard bedrock

Minor Components

Dissimilar:
- Banister soils, which are moderately well drained, have more clay in the subsoil than the Brevard soil, and are in slightly depressed areas
- Random areas of somewhat poorly drained soils that are in depressions or at the bases of upland slopes

Similar:
- Soils that are similar to the Brevard soil but have a browner subsoil
- Soils that are similar to the Brevard soil but have a higher silt content
- Soils that are similar to the Brevard soil but have more clay in the subsoil

Land Use

Dominant uses: Pasture and nursery stock
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn, soybeans, and small grain
Management concerns: No significant limitations
Management measures and considerations:
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: No significant limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of ornamental shrubs and shade trees
Management concerns: No significant limitations

Woodland
Suitability: Well suited
Productivity class: High, based on yellow-poplar as the indicator species
Management concerns: No significant limitations
Management measures and considerations:
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, and steepness of slope
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Using suitable subgrade or base material increases strength and reduces damage from frost action.

Recreational Development

Suitability: Well suited
Management concerns: Steepness of slope
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.

Interpretive Group

Land capability classification: 2e

CaB2—Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,100 to 1,340 feet
Hillslope profile position: Summits
Geomorphic component: Interfluves
Shape of areas: Irregular
Size of areas: 3 to 30 acres

Composition

Cecil soil and similar soils: 100 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish red sandy clay loam

Subsoil:
6 to 39 inches—red clay that has reddish yellow mottles
39 to 65 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
65 to 72 inches—red sandy loam that has reddish yellow and reddish brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 66 inches to soft or hard bedrock

Minor Components

Similar:
- Soils that are similar to the Cecil soil but have a yellow or brown subsoil and are on slightly lower or nearly level landscape positions
- Soils that are similar to the Cecil soil but have a thinner subsoil

Land Use

Dominant uses: Cropland, pasture, and hayland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn and small grain
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface helps to minimize clodding and crusting and maximize water infiltration.
- Tilling only during dry periods helps to prevent clodding and crusting and increases water infiltration.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue and clover
Management concerns: Soil fertility
Management measures and considerations:
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Rooting depth and ball and burlap harvesting
Management measures and considerations:
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on loblolly pine as the indicator species
Management concerns: Equipment limitations and seedling mortality
Management measures and considerations:
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.
- Special site preparation, such as harrowing and bedding, reduces seedling mortality, increases early seedling growth, and helps to establish seedlings.
- The use of improved varieties of loblolly pine increases productivity.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, steepness of slope, high clay content, and low strength

Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields and installing distribution lines on the contour improve performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Grading or shaping land prior to construction reduces damage from surface water and helps to control erosion.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.

Recreational Development

Suitability: Well suited
Management concerns: No significant limitations affect recreational development.
Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.

Interpretive Group

Land capability classification: 3e

CeD—Chestnut-Ashe complex, 15 to 30 percent slopes, very rocky

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,400 to 2,000 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes
Shape of areas: Long and narrow with irregular widths
Size of areas: 10 to 300 acres

Composition

Chestnut soil and similar soils: 60 percent
Ashe soil and similar soils: 20 percent
Dissimilar soils: 20 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Ashe

Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 25 inches—yellowish brown gravelly sandy loam

Underlying material:
25 to 32 inches—multicolored, weathered granite

Bedrock:
32 inches—unweathered granite

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Chestnut—well drained; Ashe—somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.8 percent of the surface is covered with stones and cobbles that are an average of 20 inches in diameter and are about 20 feet apart.
Extent of rock outcrops: Very rocky; about 3 percent of the surface is covered with rock outcrops that have exposed surfaces that average about 6 feet in length, 4 to 10 feet in width, and are an average of 75 feet or more apart.
Soil reaction: Chestnut—extremely acid to moderately acid; Ashe—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ashe—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Buladean soils, which have soft bedrock at a depth of more than 40 inches and are intermingled with areas of the Chestnut soil
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches, average more clay in the subsoil than the major soils, and are intermingled with the major soils on summits and upper backslopes
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are on nose slopes and shoulders
- Areas that have rock outcrop on the surface and are intermingled throughout areas of the major soils

Similar:
- Soils that are similar to the major soils but average more clay in the subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, tilth, and ball and burlap harvesting
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the surface content of stones and rock outcrops. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Ashe—moderate, based on chestnut oak as the indicator species
Management concerns: Erodibility, equipment limitations, hazard of windthrow, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- When constructing roads, extensive blasting, shaping, and grading help overcome the limitations caused by areas of rock outcrops.

- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock, steepness of slope, seepage, and large stones
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Drilling and blasting rock or using special earthmoving equipment increases the depth of these soils.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and small stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and small stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Chestnut—7s; Ashe—7s

CeE—Chestnut-Ashe complex, 30 to 50 percent slopes, very rocky

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, ridges, and slopes
Elevation: 1,200 to 2,600 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes
Shape of areas: Generally long and narrow with irregular widths
Size of areas: 10 to 300 acres

Composition

Chestnut soil and similar soils: 60 percent
Ashe soil and similar soils: 30 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Ashe
Surface layer:
0 to 3 inches—dark brown gravelly sandy loam

Subsoil:
3 to 25 inches—yellowish brown gravelly sandy loam

Underlying material:
25 to 32 inches—multicolored, weathered granite

Bedrock:
32 inches—unweathered granite

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Chestnut—well drained; Ashe—somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.1 percent of the surface is covered with stones and cobbles that are an average of 20 inches in diameter and are about 20 feet apart.
Extent of rock outcrops: Very rocky; about 3.5 percent of the surface is covered with rock outcrops on the soil surface that are from 4 to 10 feet in length, 4 to 6 feet in width, and are 75 feet or more apart.
Soil reaction: Chestnut—extremely acid to moderately acid; Ashe—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ashe—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Buladean soils, which have soft bedrock at a depth of more than 40 inches and are intermingled with areas of the Chestnut soil
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches, average more clay in the subsoil than the major soils, and are on summits and upper backslopes
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are on nose slopes and shoulders

Similar:
- Soils that are similar to the major soils but average more clay in the subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:

- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:

- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations
Management measures and considerations:

- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Ashe—moderate, based on chestnut oak as the indicator species
Management concerns: Erodibility, equipment limitations, hazard of windthrow, and seedling mortality
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- When constructing roads, extensive blasting, shaping, and grading help overcome the limitations caused by areas of rock outcrops.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock, steepness of slope, and surface stones
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Drilling and blasting rock or using special earthmoving equipment increases the depth of these soils.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Chestnut—7s; Ashe—7s

ChC—Chestnut-Buladean complex, 8 to 15 percent slopes, rocky

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Ridges and hills
Elevation: 1,200 to 2,800 feet
Hillslope profile position: Summits and shoulders
Geomorphic component: Mountaintops and side slopes
Shape of areas: Long and narrow
Size of areas: 10 to 200 acres

Composition

Chestnut soil and similar soils: 55 percent
Buladean soil and similar soils: 35 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Chestnut—moderately deep; Buladean—deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very bouldery; about 2 percent of the surface is covered with stones and boulders that are an average of 52 inches in diameter and are about 90 feet apart.
Extent of rock outcrops: Rocky; about 1.0 percent of the surface is covered with rock outcrops that have exposed surfaces that average about 8 feet in length, 4 feet in width, and are an average of 200 feet apart.
Soil reaction: Chestnut—extremely acid to moderately acid; Buladean—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches, average more clay in the subsoil than the major soils, and generally are on smooth ridges
- Other random areas of soils that have soft bedrock at a depth of 10 to 20 inches

Similar:
- Soils that are similar to the Chestnut soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland

Suitability: Chestnut—poorly suited; Buladean—suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:

- This map unit is difficult to manage for crop production because of rock outcrops on the surface. A site should be selected on better suited soils.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Chestnut soil.

Pasture and hayland

Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:

- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Rock outcrops make soils in areas of this map unit difficult to manage for pasture and hayland.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of Chestnut soil.

Orchard and ornamental crops

Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and rooting depth
Management measures and considerations:

- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Areas of rock outcrop make soils in this map unit difficult to manage for orchard and ornamental crops.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.
- The moderately deep rooting depth of the Chestnut soil makes it difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

Woodland

Suitability: Chestnut—suited; Buladean—well suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species
Management concerns: Equipment limitations; Chestnut—hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Roads and skid trails should be constructed on the contour and around rock outcrops where possible.
- Extensive blasting, shaping, and grading help in the construction of roads.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Chestnut soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Chestnut—steepness of slope, depth to bedrock, and large stones; Buladean—steepness of slope and large stones
Management measures and considerations:

- This map unit has severe limitations affecting sanitary facilities. The local Health Department should be contacted for additional guidance.
- The soft bedrock underlying the Chestnut soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Grading or filling in some areas may be helpful in overcoming the limitations caused by surface gravel and large stones.
- Soft bedrock should be crushed or removed from excavated material that is used for landscaping.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.
- Removing large stones and boulders and limiting equipment use to the larger open areas improve the suitability of these soils.

Interpretive Group

Land capability classification: Chestnut—6s; Buladean—4e

ChD—Chestnut-Buladean complex, 15 to 30 percent slopes, rocky

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,200 to 2,800 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes

Shape of areas: Long and narrow or irregular
Size of areas: 20 to 400 acres

Composition

Chestnut soil and similar soils: 65 percent
Buladean soil and similar soils: 25 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Chestnut—moderately deep; Buladean—deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very bouldery; about 4.6 percent of the surface is covered with stones and boulders that are an average of 48 inches in diameter and are about 69 feet apart.
Extent of rock outcrops: Rocky; about 1.0 percent of the surface is covered with rock outcrops that have exposed surfaces that average about 8 feet in length, about 4 feet in width, and are an average of 200 feet apart.
Soil reaction: Chestnut—extremely acid to moderately acid; Buladean—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are on shoulders and nose slopes
- Edneytown soils, which average more clay in the subsoil than the major soils, have soft bedrock at a depth of more than 60 inches, and are intermingled with areas of the major soils on smooth backslopes and summits
- Soils that have soft bedrock at a depth of more than 60 inches and are intermingled with areas of the major soils on smooth backslopes and summits

Similar:
- Soils that are similar to the Chestnut soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Areas of rock outcrop make soils in this map unit difficult to manage for pasture and hayland.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of Chestnut soil.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.

- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Areas of rock outcrop make soils in this map unit difficult to manage for orchard and ornamental crops.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.
- The moderately deep rooting depth of the Chestnut soil makes it difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

Woodland

Suitability: Suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- When constructing roads, extensive blasting, shaping, and grading help overcome the limitations caused by areas of rock outcrops.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Chestnut soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Chestnut—steepness of slope, depth to bedrock, and large stones and boulders; Buladean—steepness of slope and large stones and boulders
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Large stones and boulders may be encountered during excavation.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.

- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.
- Grading or filling some areas may help overcome the limitations caused by surface gravel and surface stones.

Interpretive Group

Land capability classification: Chestnut—7s; Buladean—6e

CkE—Chestnut-Buladean complex, 30 to 50 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,200 to 4,100 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes
Shape of areas: Broad and irregular
Size of areas: 30 to 200 acres

Composition

Chestnut soil and similar soils: 45 percent
Buladean soil and similar soils: 30 percent
Dissimilar soils: 25 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Chestnut—moderately deep; Buladean—deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with widely scattered areas of stones and cobbles that are an average of 12 inches in diameter and are about 30 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Chestnut—extremely acid to moderately acid; Buladean—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are in areas near rock outcrops and on nose slopes and shoulders.
- Edneytown soils, which have soft bedrock at a depth of more than 40 inches, have more clay in the subsoil than the major soils, and are intermingled with areas of the major soils on smooth backslopes
- Soils that have soft bedrock at a depth of more than 40 inches and are intermingled with areas of the major soils on smooth backslopes
- Small areas of colluvial soils that have more rock fragments throughout the profile than the major soils and are in concave areas on backslopes

Similar:
- Soils that are similar to the Chestnut soil but have more clay in the subsoil
- Soils that are similar to the Chestnut soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the major soils but were weathered from metasedimentary rocks
- Soils that are similar to the Buladean soil but have hard bedrock at a depth of 40 to 60 inches
- Soils that are similar to the major soils but are deeper than 60 inches to soft bedrock
- Soils that are similar to the major soils but have more stones and boulders on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.
- The moderately deep rooting depth of the Chestnut soil makes it difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

Woodland
Suitability: Suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.

- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Chestnut soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope and depth to bedrock
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Designing structures and roads on the contour to conform to the natural slope or building in the less sloping areas of the map unit improves performance of the soil.
- The soft bedrock underlying the Chestnut soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Chestnut—7s; Buladean—7e

CkF—Chestnut-Buladean complex, 50 to 95 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains and ridges
Elevation: 1,400 to 3,100 feet
Hillslope profile position: Summits and backslopes
Geomorphic component: Mountain flanks and side slopes

Shape of areas: Broad and irregular or long and narrow
Size of areas: 50 to 400 acres

Composition

Chestnut soil and similar soils: 40 percent
Buladean soil and similar soils: 30 percent
Dissimilar soils: 30 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—olive brown fine sandy loam

Subsoil:
6 to 26 inches—olive yellow sandy loam
26 to 32 inches—brownish yellow gravelly sandy loam

Underlying material:
32 to 60 inches—multicolored, weathered granite gneiss

Buladean
Surface layer:
0 to 2 inches—brown fine sandy loam

Subsoil:
2 to 39 inches—yellowish brown loam
39 to 51 inches—yellowish brown gravelly loam

Underlying material:
51 to 60 inches—multicolored, weathered granite gneiss

Soil Properties and Qualities

Depth class: Chestnut—moderately deep; Buladean—deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Chestnut—low; Buladean—high
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with widely scattered areas of stones and cobbles that are an average of 12 inches in diameter and are about 30 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Chestnut—extremely acid to moderately acid; Buladean—very strongly acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Chestnut—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Buladean—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are in areas near rock outcrops and on nose slopes and shoulders
- Edneytown soils, which have soft bedrock at a depth of more than 40 inches, have more clay in the subsoil than the major soils, and are intermingled with areas of the major soils on smooth backslopes
- Ostin and Nikwasi soils, which are subject to flooding and are in small flood plains at the bases of slopes
- Soils that have soft bedrock at a depth of more than 40 inches and are intermingled with areas of the major soils on smooth backslopes
- Small areas of colluvial soils that have more rock fragments throughout the profile than the major soils and are in concave areas on lower backslopes

Similar:
- Soils that are similar to the Chestnut soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the major soils but are deeper than 60 inches to soft bedrock
- Soils that are similar to the major soils but have more clay in the subsoil
- Soils that are similar to the major soils but have more stones and boulders on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of very steep slopes. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of very steep slopes. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations and erodibility
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of very steep slopes. A site should be selected on better suited soils.

Woodland
Suitability: Poorly suited
Productivity class: Chestnut—high, based on eastern white pine as the indicator species; Buladean—very high, based on eastern white pine as the indicator species

Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Chestnut soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Steepness of slope, seepage, and depth to bedrock
Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for recreational development because of very steep slopes. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Chestnut—7e; Buladean—7e

CmA—Chewacla loam, 0 to 2 percent slopes, frequently flooded

Setting

Landscape: Piedmont river valleys
Landform: Flood plains
Elevation: 1,120 to 1,160 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Irregular
Size of areas: 1 acre

Composition

Chewacla soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsoil:
6 to 16 inches—brown clay loam that has brown masses of oxidized iron
16 to 23 inches—strong brown clay loam that has reddish yellow masses of oxidized iron and gray iron depletions
23 to 41 inches—gray and light gray clay loam that has strong brown masses of oxidized iron

Underlying material:
41 to 53 inches—gray sandy clay loam that has yellowish brown and brown masses of oxidized iron
53 to 60 inches—gray sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: 0.5 to 2.0 feet from November through May
Flooding: Frequent for brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that are well drained, are in slightly higher areas, and are closer to stream channels than the Chewacla soil
- Soils that are excessively drained, have more sand than the Chewacla soil, and are adjacent to stream channels
- Soils that are moderately well drained and are on stream terraces
- Soils that are poorly drained, loamy, and in depressions

Similar:
- Soils that are similar to the Chewacla soil but have less clay in the subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: Corn, soybeans, and small grain
Management concerns: Wetness and flooding
Management measures and considerations:
- This map unit is severely limited for crop production because of wetness and flooding. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Fescue and clover
Management concerns: Wetness and flooding
Management measures and considerations:
- Although most flooding occurs during the winter, flooding may pose a hazard to livestock and hay crops at any time of the year.
- Installing a subsurface drainage system improves the productivity of moisture-sensitive crops such as alfalfa.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Wetness and flooding
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of wetness and flooding. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Wetness and flooding
Management measures and considerations:
- Avoiding logging operations during periods when the soil is saturated helps to prevent rutting and damage to tree roots as a result of compaction.
- Harvesting timber during the summer months reduces the risk of damage from flooding.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for urban development because of wetness and flooding. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit has severe limitations affecting recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 4w

CpD—Cliffield-Pigeonroost complex, 15 to 30 percent slopes, very stony

Setting

Landscape: South Mountains
Landform: Mountains
Elevation: 1,400 to 2,650 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks
Shape of areas: Generally long and narrow
Size of areas: 20 to 70 acres

Composition

Cliffield soil and similar soils: 45 percent
Pigeonroost soil and similar soils: 40 percent
Dissimilar soils: 15 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—dark yellowish brown very cobbly loam

Subsoil:
6 to 30 inches—dark yellowish brown very cobbly clay loam

Bedrock:
30 to 60 inches—unweathered, slightly fractured sillimanite schist

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Cliffield—low; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep

Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones and cobbles that are an average of 12 inches in diameter and are about 80 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Cliffield—extremely acid to strongly acid; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Cliffield—residuum weathered from felsic high-grade metamorphic rock; Pigeonroost—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Cliffield—20 to 40 inches to hard bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Evard soils, which have a redder subsoil than the major soils, have bedrock at a depth of more than 60 inches, and are intermingled with areas of the major soils on ridges and upper side slopes
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches and are intermingled with areas of the major soil on ridges and upper side slopes
- Areas of soils that are shallow to hard bedrock and are on shoulders and nose slopes
- Areas of soils that contain more mica than the major soils, have bedrock at a depth of more than 60 inches, and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Pigeonroost soil but have a redder subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Not normally used for pasture or hayland
Management concerns: Erodibility, equipment limitations, and rooting depth

Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Cliffield—suited; Pigeonroost—well suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the soils in this map unit makes them difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Soils in this map unit are severely limited for ball and burlap harvesting because of the high content of rock fragments in the root zone. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Cliffield—low, based on chestnut oak as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cliffield soil.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock and steepness of slope

Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:
- This map unit is severely limited for recreational development because of depth to bedrock and steepness of slope. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Cliffield—6s; Pigeonroost—6e

CpE—Cliffield-Pigeonroost complex, 30 to 50 percent slopes, very stony

Setting

Landscape: South Mountains
Landform: Mountains and spurs
Elevation: 1,200 to 2,900 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks
Shape of areas: Generally long with irregular widths
Size of areas: 20 to 200 acres

Composition

Cliffield soil and similar soils: 45 percent
Pigeonroost soil and similar soils: 40 percent
Dissimilar soils: 15 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—dark yellowish brown very cobbly loam

Subsoil:
6 to 30 inches—dark yellowish brown very cobbly clay loam

Bedrock:
30 to 60 inches—unweathered, slightly fractured sillimanite schist

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Cliffield—low; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones and cobbles that are an average of 12 inches across and are about 80 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Cliffield—extremely acid to strongly acid; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Cliffield—residuum weathered from felsic high-grade metamorphic rock; Pigeonroost—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Cliffield—20 to 40 inches to hard bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Evard soils, which have a redder subsoil than the major soils, have bedrock at a depth of more than 60 inches, and are intermingled with areas of the major soils on sloping summits and upper side slopes
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches and are intermingled with areas of the major soils on summits and upper side slopes

Similar:
- Soils that are similar to the Pigeonroost soil but have a redder subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.

- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, rooting depth, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of Cliffield soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- The content of rock fragments in the root zone makes ball and burlap harvesting difficult.

Woodland
Suitability: Suited
Productivity class: Cliffield—low, based on chestnut oak as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.

- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock and steepness of slope
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and rock fragments on the surface. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Cliffield—7s; Pigeonroost—7e

CpF—Cliffield-Pigeonroost complex, 50 to 80 percent slopes, very stony

Setting

Landscape: South Mountains
Landform: Mountains
Elevation: 1,200 to 2,900 feet
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks
Shape of areas: Irregular
Size of area: 20 to 200 acres

Composition

Cliffield soil and similar soils: 55 percent
Pigeonroost soil and similar soils: 30 percent
Dissimilar soils: 15 percent

Typical Profile

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

Subsurface layer:
2 to 6 inches—dark yellowish brown very cobbly loam

Subsoil:
6 to 30 inches—dark yellowish brown very cobbly clay loam

Bedrock:
30 to 60 inches—unweathered, slightly fractured sillimanite schist

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Cliffield—low; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones and cobbles that are an average of 12 inches across and are about 80 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Cliffield—extremely acid to strongly acid; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Cliffield—residuum weathered from felsic high-grade metamorphic rock; Pigeonroost—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Cliffield—20 to 40 inches to hard bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Edneytown soils, which have soft bedrock at a depth of more than 60 inches and are intermingled with areas of the major soils on side slopes
- Greenlee soils, which formed in colluvial material and are in concave areas or at the bases of slopes in narrow drains
- Random areas of rock outcrops
- Soils that are shallow to bedrock and are on shoulders and nose slopes

Similar:
- Soils that are similar to the Pigeonroost soil but have a redder subsoil

Land Use

Dominant uses: Woodland
Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth

Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: Cliffield—low, based on chestnut oak as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock and steepness of slope
Management measures and considerations:
- This map unit is severely limited for urban development because of depth to bedrock and steepness of slope. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Cliffield—7s; Pigeonroost—7e

CvA—Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded

Setting

Landscape: Piedmont river valleys
Landform: Flood plains
Elevation: 950 to 1,200 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Broad and irregular
Size of areas: 4 acres to more than 150 acres

Composition

Colvard soil and similar soils: 80 percent
Dissimilar soils: 20 percent

Typical Profile

Surface layer:
0 to 10 inches—dark yellowish brown sandy loam

Underlying material:
10 to 21 inches—yellowish brown sandy loam that has yellowish red and brownish yellow masses of oxidized iron
21 to 44 inches—light yellowish brown sandy loam that has yellowish red, dark yellowish brown, and brownish yellow masses of oxidized iron
44 to 60 inches—light yellowish brown sandy loam that has brownish yellow masses of oxidized iron and pale brown iron depletions

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: 4.0 to 6.0 feet from October through May
Flooding: Occasional for very brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Strongly acid to slightly alkaline
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Arkaqua soils, which are somewhat poorly drained and are in low areas on flood plains

- Biltmore soils, which have more sand in the subsurface layers than the major soils and generally are adjacent to stream channels

Similar soils:
- Soils that are similar to the Colvard soil but have more clay in the underlying material
- Other areas of Colvard soils that flood less often, especially those along the Catawba River that are protected by the Lake James dams

Land Use

Dominant uses: Cropland and ornamental crops
Other uses: Woodland, pasture, and hayland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and soybeans
Management concerns: Flooding
Management measures and considerations:
- Although most flooding occurs during the winter, crop loss is a risk during the growing season as well.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue and clover
Management concerns: Flooding
Management measures and considerations:
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.
- Although most flooding occurs during the winter, flooding may pose a hazard to livestock and hay crops at any time of the year.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Flooding and ball and burlap harvesting
Management measures and considerations:
- This map unit is severely limited for ornamental and orchard crops because of flooding. A site should be selected on better suited soils.
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content. The high content of sand, however, allows the production of seedlings for bare-root transplanting.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: No significant limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.
- Harvesting timber during the summer months reduces the risk of damage from flooding.

Urban Development

Suitability: Unsuited
Management concerns: Flooding, cutbanks caving, seepage, and seasonal wetness
Management measures and considerations:
- This map unit is severely limited for most urban uses because of flooding.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Using lime, fertilizer, mulch, and irrigation water helps to establish lawns and landscaping plants.
- The use of diversions helps remove excess surface water after inundation.
- Using supplemental irrigation and selecting varieties of grasses and plants adapted to droughty conditions increase the survival rates of grasses and landscaping plants.

Recreational Development

Suitability: Suited
Management concerns: Flooding and depth to a saturated zone
Management measures and considerations:
- Placing sites in the higher areas and using built-up, level pads help to overcome the flooding limitation for camp sites.
- Locating sites on higher parts of the landscape provides improved surface water runoff and helps to keep sites drier during wet seasons.

Interpretive Group

Land capability classification: 2w

CyE—Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains
Landform: Mountains and spurs
Elevation: 3,400 to 4,200 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Narrow mountaintops and mountain flanks
Shape of areas: Long and narrow or irregular
Size of areas: 5 to 300 acres

Composition

Crossnore soil and similar soils: 45 percent
Jeffrey soil and similar soils: 40 percent
Dissimilar soils: 15 percent

Typical Profile

Crossnore
Surface layer:
0 to 7 inches—dark brown gravelly sandy loam

Subsoil:
7 to 16 inches—yellowish brown gravelly sandy loam

16 to 22 inches—brownish yellow gravelly sandy loam

Underlying material:
22 to 30 inches—multicolored gravelly loamy sand saprolite in shades of brown, yellow, and white
30 to 61 inches—weathered, partially consolidated metasandstone

Jeffrey
Surface layer:
0 to 5 inches—very dark brown gravelly sandy loam
5 to 9 inches—dark brown gravelly sandy loam

Subsoil:
9 to 20 inches—yellowish brown gravelly loam

Underlying material:
20 to 31 inches—yellowish brown gravelly sandy loam

Bedrock:
31 to 36 inches—unweathered feldspathic sandstone

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Crossnore—moderately rapid; Jeffrey—moderate
Available water capacity: Crossnore—low; Jeffrey—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with widely scattered areas of stones and cobbles that range from 10 to 24 inches in diameter and are from 3 to 25 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Crossnore—extremely acid to moderately acid, except where lime has been applied; Jeffrey—very strongly acid or strongly acid, except where lime has been applied
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Depth to bedrock: Crossnore—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Jeffrey—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Whiteoak soils, which have more clay in the subsoil than the major soils, have bedrock at a depth of more than 60 inches, and are in concave areas at the heads of drains, in drains, and on foot slopes
- Soils that have a thicker dark surface layer and more rock fragments throughout the profile than the major soils, have bedrock at a depth of more than 60 inches, and are in narrow drains and on foot slopes
- Soils that have soft bedrock at a depth of more than 40 inches and are on smoother parts of the landscape than the major soils

- Soils that have hard bedrock at a depth of less than 20 inches and are on nose slopes and near rock outcrops
- Widely scattered areas of areas of rock outcrops

Similar:
- Crossnore and Jeffrey soils that have loam, fine sandy loam, and coarse sandy loam surface textures in the fine earth fraction
- Soils that are similar to the major soils but have more clay in the subsoil and have soft or hard bedrock at a depth of 20 to 40 inches
- Crossnore and Jeffrey soils that have a lighter-colored surface layer or that have a thinner dark surface layer
- Crossnore and Jeffrey soils that have extremely stony surface coverage

Land Use

Dominant uses: Woodland
Other uses: Pasture, building site development, ornamental crops, and Fraser fir production

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, droughtiness, and rooting depth
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and erodibility. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility, equipment limitations, soil fertility, rooting depth, and droughtiness
Management measures and considerations:
- The steepness of the slope makes this map unit difficult to manage for pasture and hayland.
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Suited to Fraser fir production; poorly suited to orchard and ornamental crops
Commonly grown crops: Fraser fir and rhododendron
Management concerns: Erodibility, equipment limitations, soil fertility, ball and burlap harvesting, frost action, plant shape, and rooting depth
Management measures and considerations:
- Slope limits the use of equipment in steeper areas of this map unit; extreme caution should be used when operating equipment in and around these areas. Constructing access roads on the contour is recommended to reduce the hazards caused by the steepness of the slope.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.

- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Because of the poor fertility of these soils, applying lime and fertilizer according to recommendations from soil tests increase the availability of plant nutrients and maximize productivity.
- Proper management of these soils is the key to maximizing productivity and minimizing plant stress and diseases such as phytophora root disease.
- Properly channeling water away from fields helps to control phytophora root disease.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.
- Maintaining plant cover or using mulch reduces damage to the roots caused by frost heave.
- The slope affects the shape of the plant on the uphill side of the slope.
- The moderately deep rooting depth of the soils in this map unit makes them difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

Woodland

Suitability: Suited

Productivity class: Crossnore—moderate, based on chestnut oak as the indicator species; Jeffrey—low, based on chestnut oak as the indicator species

Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow

Management measures and considerations:

- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Areas that show signs of windswept conditions should be avoided when harvesting trees because prevailing strong winds make reestablishment difficult.
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.
- Livestock should not be allowed to graze in areas managed for woodland.
- Productivity is limited in areas of these soils because of the limited rooting depth.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.
- Using improved varieties of eastern white pine increases productivity.
- Replanting may be necessary on warm, south- and west-facing slopes because of reduced soil moisture.
- Planting when the soil is moist for extended periods of time increases seedling survival rates.

Urban Development

Suitability: Poorly suited

Management concerns: Steepness of slope, erodibility, corrosivity, and depth to hard bedrock

Management measures and considerations:

- This map unit is severely limited for urban development. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.

- Drilling and blasting rock or using special earthmoving equipment increases the depth of these soils.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep eroding soil on site.
- Using corrosion-resistant materials for foundations and basements reduces the risk of damage to concrete.
- Installing permanent retaining walls improves soil stability.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Avoiding the diversion of water directly onto fill slopes and vegetating cut and fill slopes as soon as possible help to prevent slippage and excessive soil erosion.
- Blasting or the use of special grading equipment may help in the construction of roads in this map unit because of the limitations caused by the hard bedrock in the Jeffrey soil.
- The soft bedrock underlying the soils in this map unit does not require special equipment for excavation, but the soils are difficult to revegetate or pack if used in fill slopes.
- Permanently surfacing roads or using suitable subgrade or base material reduces damage caused by frost heave.
- This map unit is severely limited for lawns and landscaping because the steepness of the slope limits equipment use.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Removing large stones and boulders and limiting equipment use to the larger open areas improve the suitability of these soils.
- Using lime, fertilizer, mulch, irrigation water, and plant varieties adapted to droughty conditions helps to establish lawns and landscaping plants.
- Topsoil from disturbed areas should be stockpiled and then replaced before landscaping the area.
- Using mulch around newly established landscaping plants reduces damage caused by frost heave.
- Establishing and maintaining lawns and landscaping are difficult because of the moderately deep rooting depth on these soils, especially if the soils have been significantly disturbed during construction.
- Soft bedrock should be crushed or removed from excavated material that is used for landscaping.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, acidity, and content of rock fragments
Management measures and considerations:
- This map unit has severe limitations affecting recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Crossnore—7e; Jeffrey—7e

CyF—Crossnore-Jeffrey complex, 50 to 80 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains
Landform: Mountains

Elevation: 3,400 to 4,200 feet
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks
Shape of areas: Long and narrow or irregular
Size of areas: 5 to 30 acres

Composition

Crossnore soil and similar soils: 45 percent
Jeffrey soil and similar soils: 40 percent
Dissimilar soils: 15 percent

Typical Profile

Crossnore
Surface layer:
0 to 7 inches—dark brown gravelly sandy loam

Subsoil:
7 to 16 inches—yellowish brown gravelly sandy loam
16 to 22 inches—brownish yellow gravelly sandy loam

Underlying material:
22 to 30 inches—multicolored gravelly loamy sand saprolite in shades of brown, yellow, and white
30 to 61 inches—weathered, partially consolidated metasandstone

Jeffrey
Surface layer:
0 to 5 inches—very dark brown gravelly sandy loam
5 to 9 inches—dark brown gravelly sandy loam

Subsoil:
9 to 20 inches—yellowish brown gravelly loam

Underlying material:
20 to 31 inches—yellowish brown gravelly sandy loam

Bedrock:
31 to 36 inches—unweathered feldspathic sandstone

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Crossnore—moderately rapid; Jeffrey—moderate
Available water capacity: Crossnore—low; Jeffrey—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with widely scattered areas of stones and cobbles that range from 10 to 24 inches in diameter and are from 3 to 25 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.

Soil reaction: Crossnore—extremely acid to moderately acid, except where lime has been applied; Jeffrey—very strongly acid or strongly acid, except where lime has been applied
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Depth to bedrock: Crossnore—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Jeffrey—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Whiteoak soils, which have more clay in the subsoil than the major soils, have bedrock at a depth of more than 60 inches, and are in concave areas at the heads of drains, in drains, and on foot slopes
- Soils that have a thicker dark surface layer and have more rock fragments throughout the soil than the major soils, have bedrock at a depth of more than 60 inches, and are in narrow drains and on foot slopes
- Soils that have soft bedrock at a depth of more than 40 inches and are on smoother parts of the landscape
- Soils that have hard bedrock at a depth of less than 20 inches and are on nose slopes and near rock outcrops
- Widely scattered areas of areas of rock outcrops

Similar:
- Soils that are similar to the Crossnore and Jeffrey soils but have a loam, a fine sandy loam, or a coarse sandy loam surface texture in the fine earth fraction
- Soils that are similar to the major soils but have more clay in the subsoil and have soft or hard bedrock at a depth of 20 to 40 inches
- Crossnore and Jeffrey soils that have a lighter-colored surface layer or that have a thinner dark surface layer than is generally seen with these soils
- Crossnore and Jeffrey soils that have extremely stony surface coverage

Land Use

Dominant uses: Woodland
Other uses: Recreation

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, droughtiness, and rooting depth
Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, droughtiness, soil fertility, and rooting depth
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production. A site should be selected on better suited soils.

Orchard and ornamental crops

Suitability: Unsuited

Commonly grown crops: None

Management concerns: Erodibility, equipment limitations, droughtiness, and rooting depth

Management measures and considerations:

- This map unit is severely limited for orchard and ornamental crops. A site should be selected on better suited soils.

Woodland

Suitability: Poorly suited

Productivity class: Crossnore—moderate, based on chestnut oak as the indicator species; Jeffrey—low, based on chestnut oak as the indicator species

Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow

Management measures and considerations:

- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Constructing roads on the contour and installing water-control structures, such as broad-based dips, water bars, and culverts, and avoiding diversion of water directly onto fill slopes help to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Areas that show signs of windswept conditions should be avoided when harvesting trees because prevailing strong winds make reestablishment difficult.
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.
- Productivity is limited in areas of these soils because of the limited rooting depth.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.
- Using improved varieties of eastern white pine increases productivity.
- Replanting may be necessary on warm, south- and west-facing slopes because of reduced soil moisture.
- Planting when the soil is moist for extended periods of time increases seedling survival rates.

Urban Development

Suitability: Unsuited

Management concerns: Steepness of slope, depth to bedrock, and seepage; Crossnore—cutbanks caving and acidity

Management measures and considerations:

- This map unit is severely limited for urban development because of the steepness of the slope and depth to bedrock. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited

Management concerns: Steepness of slope, acidity, and content of rock fragments

Management measures and considerations:

- This map unit is severely limited for recreational development because of the steepness of the slope and the content of rock fragments. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Crossnore—7e; Jeffrey—7e

DaB—Dillard fine sandy loam, 2 to 8 percent slopes, rarely flooded

Setting

Landscape: Piedmont river valleys
Landform: Low stream terraces
Elevation: 1,000 to 1,260 feet
Hillslope profile position: Toeslopes
Geomorphic component: Treads
Shape of areas: Irregular
Size of areas: 4 to 30 acres

Composition

Dillard soil and similar soils: 60 percent
Dissimilar soils: 40 percent

Typical Profile

Surface layer:
0 to 9 inches—yellowish brown fine sandy loam

Subsoil:
9 to 16 inches—light olive brown sandy clay loam that has strong brown masses of oxidized iron
16 to 24 inches—yellowish brown sandy clay loam that has strong brown masses of oxidized iron and light yellowish brown iron depletions
24 to 42 inches—yellowish brown sandy clay loam that has strong brown and brownish yellow masses of oxidized iron, yellowish red iron or manganese concretions, and light brownish gray and light gray iron depletions

Underlying material:
42 to 46 inches—yellowish brown sandy loam that has yellowish red masses of oxidized iron
46 to 60 inches—yellowish brown clay loam that has yellowish red masses of oxidized iron and light gray iron depletions

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Available water capacity: Moderate
Depth to seasonal high water table: 2.0 to 3.0 feet from November through April
Flooding: Rare for brief periods
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Strongly acid to moderately acid in the A horizon, except where lime has been applied, and very strongly acid to moderately acid in the B and C horizons
Parent material: Alluvium, derived primarily from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Brevard soils, which are well drained and are on slightly higher parts of the terraces than the Dillard soil
- Soils that have more clay in the subsoil than the Dillard soil, are somewhat poorly drained or poorly drained, and are in depressions or at the bases of upland slopes
- Hatboro soils and other soils that are poorly drained or somewhat poorly drained and are in depressions
- Soils that average more silt in the control section than the Dillard soil, are well drained or somewhat poorly drained, and are intermingled with areas of the Dillard soil

Similar:
- Soils that are similar to the Dillard soil but average more silt in the control section

Land Use

Dominant uses: Pasture and nursery crops
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn and soybeans
Management concerns: Wetness and rare flooding
Management measures and considerations:
- Installing and maintaining an artificial drainage system reduce the limitations caused by wetness and improve the productivity of the soil.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue, orchardgrass, and ladino clover
Management concerns: Wetness and flooding
Management measures and considerations:
- Flooding may pose a hazard to livestock.
- Artificial drainage systems may need to be installed in some areas to help achieve maximum productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of trees and shrubs
Management concerns: Wetness and flooding
Management measures and considerations:
- Planting fast-growing or flood-tolerant species reduces the risk of plant loss caused by flooding.
- Installing an artificial drainage system reduces the limitations caused by wetness and improves productivity.

Woodland
Suitability: Well suited
Productivity class: High, based on loblolly pine as the indicator species
Management concerns: No significant limitations affect woodland management
Management measures and considerations:
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the water surface.

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone, flooding, restricted permeability, high clay content, and low strength
Management measures and considerations:
- This map unit is severely limited for most urban uses.
- This map unit has severe limitations affecting sanitary facilities. The local Health Department should be contacted for additional guidance.
- This map unit is difficult to manage for septic tank absorption fields because the dominant soils have a high water table at a depth of 2 to 3 feet.
- This map unit is severely limited for sewage lagoons because of wetness and flooding. A site should be selected on better suited soils.
- This map unit is severely limited for sanitary landfills because of wetness and a high clay content. A site should be selected on better suited soils.
- This map unit is severely limited for shallow excavations because of wetness. A site should be selected on better suited soils.
- This map unit is severely limited for dwellings because of wetness and flooding. A site should be selected on better suited soils.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Designing roads so that surface runoff can be safely removed improves performance of the soil.
- No significant limitations affect lawns and landscaping.

Recreational Development

Suitability: Suited
Management concerns: Flooding, depth to a saturated zone, steepness of slope, and restricted permeability
Management measures and considerations:
- Placing sites in the higher areas and using built-up, level pads help to overcome the flooding limitation for camp sites.
- No significant limitations affect picnic areas.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Using artificial drainage systems or diversions for playground areas helps to remove excess surface water and minimize the limitations caused by the wetness of the soil.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 2w

DrF—Ditney-Unicoi-Rock outcrop complex, 25 to 95 percent slopes

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains and ridges
Elevation: 1,500 to 4,200 feet
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks and side slopes

Shape of areas: Broad and irregular
Size of areas: 50 to 800 acres

Composition

Ditney soil and similar soils: 35 percent
Unicoi soil and similar soils: 30 percent
Rock outcrops: 20 percent
Dissimilar soils: 15 percent

Typical Profile

Ditney
Surface layer:
0 to 5 inches—very dark gray fine sandy loam
5 to 7 inches—olive brown fine sandy loam

Subsoil:
7 to 20 inches—brown fine sandy loam
20 to 27 inches—yellowish brown fine sandy loam

Underlying material:
27 to 34 inches—pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles

Bedrock:
34 to 60 inches—unweathered arkose

Unicoi
Surface layer:
0 to 4 inches—very dark grayish brown gravelly fine sandy loam that has brown mottles

Subsoil:
4 to 18 inches—yellowish brown very cobbly fine sandy loam

Bedrock:
18 to 60 inches—unweathered quartzite

Rock outcrop
This part of the map unit predominately consists of hard quartzite at or above the surface level of the surrounding soils.

Soil Properties and Qualities

Depth class: Ditney—moderately deep; Unicoi—shallow
Drainage class: Ditney—well drained; Unicoi—excessively drained
Permeability: Moderately rapid
Available water capacity: Ditney—low; Unicoi—very low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep or very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Extremely stony; about 2 percent of the surface is covered with stones that range from 10 to 18 inches in diameter and are about 25 feet apart.
Extent of rock outcrops: About 20 percent of the surface is covered with rock outcrops that have exposed surfaces that range from 4 to 300 feet in length and are from 200 to 300 feet apart.

Soil reaction: Ditney—extremely acid to strongly acid; Unicoi—extremely acid to strongly acid
Parent material: Ditney and Unicoi—residuum weathered from felsic low-grade metasedimentary rock; Rock outcrop—unweathered felsic low-grade metasedimentary rock or felsic high-grade metamorphic or igneous rock
Depth to bedrock: Ditney—20 to 40 inches to hard bedrock; Unicoi—7 to 20 inches to hard bedrock; Rock outcrop—hard bedrock at or above the surface level of the surrounding soils

Minor Components

Dissimilar:
- Soco soils, which have soft bedrock at a depth of 20 to 40 inches, have hard bedrock at a depth of 40 inches, and are on smooth side slopes
- Northcove soils, which have more rock fragments throughout the profile than the Ditney and Unicoi soils and are in narrow coves

Similar:
- Soils that are similar to the Unicoi soil but have fewer rock fragments throughout the profile

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope, rock outcrops, and depth to bedrock. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope, rock outcrops, and depth to bedrock. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops. A site should be selected on better suited soils.

Woodland
Suitability: Poorly suited
Productivity class: Ditney and Unicoi—low, based on chestnut oak as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, hazard of windthrow, and competition from undesirable plants

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods in areas where the slope exceeds 45 percent or where landslides are a hazard minimizes the need for road and trail construction.
- Using cable logging methods helps to overcome the limitations to road and trail construction caused by the large number of rock outcrops on the soil surface.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Planting seedlings during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Planting shallow-rooted trees, such as shortleaf pine or Virginia pine, increases plant survival rates.
- Productivity is limited because of the shallow to moderately deep rooting depth of these soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Areas of the map unit that have 25 to 50 percent slopes—poorly suited; areas of the map unit that have slopes greater than 50 percent—unsuited
Management concerns: Steepness of slope, depth to bedrock, seepage, and large stones
Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- This map unit has severe limitations affecting recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Ditney—7e; Unicoi—7s; Rock outcrop—8s

EdC—Edneytown-Pigeonroost complex, 8 to 15 percent slopes, stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains and ridges
Elevation: 1,300 to 3,500 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, interfluves, side slopes, and nose slopes
Shape of areas: Irregular
Size of areas: 10 to 30 acres

Composition

Edneytown soil and similar soils: 55 percent
Pigeonroost soil and similar soils: 35 percent
Dissimilar soils: 10 percent

Typical Profile

Edneytown
Surface layer:
0 to 3 inches—dark grayish brown loam

Subsurface layer:
3 to 13 inches—yellowish brown loam

Subsoil:
13 to 33 inches—strong brown clay loam
33 to 51 inches—strong brown loam
51 to 59 inches—strong brown sandy loam

Underlying material:
59 to 63 inches—strong brown sandy loam saprolite

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Edneytown—very deep; Pigeonroost—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Edneytown—high; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with widely scattered areas of stones and cobbles that range from 10 to 15 inches across and are about 50 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Edneytown—very strongly acid to moderately acid in the A and E horizons and very strongly acid or strongly acid in the B and C horizons; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Edneytown—more than 60 inches to soft bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of 20 inches and are on shoulders and nose slopes
- Chestnut soils, which have less clay in the subsoil than the major soils and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Edneytown and Pigeonroost soils but have a redder subsoil
- Soils that are similar to the Pigeonroost soil but have less clay in the subsoil
- Soils that are similar to the major soils but have more rock fragments on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Pigeonroost soil.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Although most flooding occurs during the winter, flooding may pose a hazard to livestock and hay crops at any time of the year.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Pigeonroost soil.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.

Woodland

Suitability: Well suited
Productivity class: Edneytown—very high, based on eastern white pine as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species
Management concerns: Pigeonroost—hazard of windthrow and plant competition
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Productivity is limited because of the moderately deep rooting depth of the Pigeonroost soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Large stones; Edneytown—steepness of slope, seepage, and cutbanks caving; Pigeonroost—steepness of slope and depth to bedrock
Management measures and considerations:

- The local Health Department should be contacted for guidance on sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.
- This map unit is severely limited for sewage lagoons. A site should be selected on better suited soils.
- This map unit is severely limited for sanitary landfills because of seepage in areas of the Edneytown soil and depth to bedrock in areas of the Pigeonroost soil. A site should be selected on better suited soils.
- This map unit is severely limited for shallow excavations because of the hazard of cutbanks caving in areas of the Edneytown soil and The steepness of the slope and depth to bedrock in areas of the Pigeonroost soil. A site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- The soft bedrock underlying the Pigeonroost soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Large stones and boulders may be encountered during excavation and construction.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Topsoil from disturbed areas should be stockpiled and then replaced before landscaping the area.
- Removing large stones and boulders and limiting the use of equipment to the larger open areas improve the suitability of these soils.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope

Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface improves the suitability of the soil for tents, picnic tables, and other facilities.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Edneytown—4e; Pigeonroost—4e

EdD—Edneytown-Pigeonroost complex, 15 to 30 percent slopes, stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Ridges and mountains
Elevation: 1,350 to 3,400 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, narrow interfluves, side slopes, and nose slopes
Shape of areas: Generally long and narrow
Size of areas: 10 to 60 acres

Composition

Edneytown soil and similar soils: 50 percent
Pigeonroost soil and similar soils: 40 percent
Dissimilar soils: 10 percent

Typical Profile

Edneytown
Surface layer:
0 to 3 inches—dark grayish brown loam

Subsurface layer:
3 to 13 inches—yellowish brown loam

Subsoil:
13 to 33 inches—strong brown clay loam
33 to 51 inches—strong brown loam
51 to 59 inches—strong brown sandy loam

Underlying material:
59 to 63 inches—strong brown sandy loam saprolite

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Edneytown—very deep; Pigeonroost—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Edneytown—high; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with widely scattered areas of stones and cobbles that range from 10 to 15 inches across and are about 50 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Edneytown—very strongly acid to moderately acid in the A and E horizons and very strongly acid or strongly acid in the B and C horizons; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Edneytown—more than 60 inches to soft bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of 20 inches and generally are on nose slopes and shoulders
- Buladean soils, which have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils on shoulders and backslopes
- Areas of soils that have less clay in the subsoil than the major soils, have soft bedrock at a depth of 40 to 60 inches, and are intermingled with areas of the major soils on shoulders and backslopes
- Stecoah soils, which have soft bedrock at a depth of 40 to 60 inches, are formed in metasedimentary rock, and are intermingled in areas where the geology is mixed
- Ashe soils, which have less clay in the subsoil than the major soils, have hard bedrock at a depth of 20 to 40 inches, and are on nose slopes, shoulders, and intermingled with areas of the major soils on backslopes
- Cliffside soils, which have a greater number of coarse fragments throughout the profile than the major soils, have hard bedrock at a depth of 20 to 40 inches, and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Edneytown and Pigeonroost soils but have a redder subsoil
- Soils that are similar to the Pigeonroost soil but have less clay in the subsoil
- Soils that are similar to the Pigeonroost soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the Edneytown soil but have bedrock at a depth of more than 60 inches

- Soils that are similar to the Edneytown soil but are formed in colluvium
- Soils that are similar to the major soils but have more rock fragments on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Pigeonroost soil.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Pigeonroost soil in this map unit makes areas of this map unit difficult to manage for ornamental and orchard crops because of the hazard of windthrow for large plants.

Woodland
Suitability: Suited
Productivity class: Edneytown—very high, based on eastern white pine as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species

Management concerns: Erodibility and equipment limitations; Pigeonroost—hazard of windthrow and plant competition

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Surface stones may limit the use of equipment in areas of this map unit.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Pigeonroost soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited

Management concerns: Steepness of slope, seepage, cutbanks caving, and depth to bedrock

Management measures and considerations:

- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

- This map unit is severely limited for most recreational development because of the steepness of the slope. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Edneytown—6e; Pigeonroost—6e

EdE—Edneytown-Pigeonroost complex, 30 to 50 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills

Landform: Ridges and mountains

Elevation: 1,350 to 3,400 feet

Hillslope profile position: Shoulders and backslopes

Geomorphic component: Mountain flanks and side slopes

Shape of areas: Generally long and narrow but sometimes broad and irregular

Size of areas: 20 to 200 acres

Composition

Edneytown soil and similar soils: 45 percent

Pigeonroost soil and similar soils: 40 percent

Dissimilar soils: 15 percent

Typical Profile

Edneytown
Surface layer:
0 to 3 inches—dark grayish brown loam

Subsurface layer:
3 to 13 inches—yellowish brown loam

Subsoil:
13 to 33 inches—strong brown clay loam
33 to 51 inches—strong brown loam
51 to 59 inches—strong brown sandy loam

Underlying material:
59 to 63 inches—strong brown sandy loam saprolite

Pigeonroost
Surface layer:
0 to 1 inch—very dark grayish brown fine sandy loam
1 to 4 inches—brown fine sandy loam

Subsoil:
4 to 13 inches—brownish yellow loam
13 to 27 inches—reddish yellow loam

Underlying material:
27 to 40 inches—multicolored, weathered gneiss

Soil Properties and Qualities

Depth class: Edneytown—very deep; Pigeonroost—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Edneytown—high; Pigeonroost—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with areas of widely scattered stones and cobbles that range from 10 to 15 inches across and are about 50 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Edneytown—very strongly acid to moderately acid in the A and E horizons and very strongly acid or strongly acid in the B and C horizons; Pigeonroost—very strongly acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Edneytown—more than 60 inches to soft bedrock; Pigeonroost—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cleveland soils, which have hard bedrock at a depth of 20 inches and are on shoulders and nose slopes

- Ashe soils, which have less clay in the subsoil than the major soils, have hard bedrock at a depth of 20 to 40 inches, are on nose slopes and shoulders, and are intermingled with areas of the major soils on backslopes
- Buladean soils, which have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils on shoulders and backslopes
- Stecoah soils, which have soft bedrock at a depth of 40 to 60 inches, are formed in metasedimentary rock, and are intermingled in areas where the geology is mixed
- Cliffside soils, which have a greater number of coarse fragments throughout the profile than the major soils, have hard bedrock at a depth of 20 to 40 inches, and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Edneytown and Pigeonroost soils but have a redder subsoil
- Soils that are similar to the Pigeonroost soil but have less clay in the subsoil
- Soils that are similar to the Pigeonroost soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the Edneytown soil but have bedrock at a depth of more than 60 inches
- Soils that are similar to the Edneytown soil but are formed in colluvium
- Soils that are similar to the major soils but have more rock fragments on the surface

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, rooting depth, and surface stones
Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.

- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The slope affects the shape of the plant on the uphill side of the slope.

Woodland

Suitability: Suited
Productivity class: Edneytown—very high, based on eastern white pine as the indicator species; Pigeonroost—high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality; Pigeonroost—hazard of windthrow and competition from undesirable plants
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Surface stones may limit the use of equipment in areas of this map unit.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Pigeonroost soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Edneytown—steepness of slope, seepage, and cutbanks caving; Pigeonroost—steepness of slope and depth to bedrock
Management measures and considerations:

- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:

- This map unit is severely limited for recreational development because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Edneytown—7e; Pigeonroost—7e

EuF—Evard-Cowee complex, 50 to 85 percent slopes, rocky

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains and ridges
Elevation: 1,350 to 2,800 feet
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Mountain flanks and side slopes
Shape of areas: Broad and irregular
Size of areas: 25 to 300 acres

Composition

Evard soil and similar soils: 45 percent
Cowee soil and similar soils: 45 percent
Dissimilar soils: 10 percent

Typical Profile

Evard
Surface layer:
0 to 2 inches—dark brown fine sandy loam
2 to 6 inches—brown fine sandy loam

Subsoil:
6 to 26 inches—red clay loam
26 to 32 inches—red loam

Underlying material:
32 to 60 inches—yellowish red saprolite that has a sandy loam texture

Cowee
Surface layer:
0 to 3 inches—dark yellowish brown gravelly loam

Subsurface layer:
3 to 7 inches—strong brown gravelly loam

Subsoil:
7 to 15 inches—yellowish red gravelly loam
15 to 23 inches—red gravelly sandy clay loam

Underlying material:
23 to 45 inches—multicolored, slightly fractured, weathered sillimanite schist

Soil Properties and Qualities

Depth class: Evard—very deep; Cowee—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Evard—moderate; Cowee—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep

Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 2.5 percent of the surface is covered with stones that are an average of 12 inches across and are about 70 feet apart.
Extent of rock outcrops: Rocky; about 1.0 percent of the surface is covered with rock outcrops that have exposed surfaces that average about 10 feet across and are an average of 500 feet apart.
Soil reaction: Evard—very strongly acid to moderately acid, except where lime has been applied; Cowee—extremely acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Evard—more than 60 inches to hard bedrock; Cowee—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cliffield soils, which have a greater number of coarse fragments throughout the profile than the major soils, have hard, fractured bedrock at a depth of 20 to 40 inches, are on nose slopes and shoulders, and are intermingled with areas of the major soils on side slopes
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are on nose slopes, head slopes, shoulders, and commonly near rock outcrops
- Buladean soils, which have less clay in the subsoil than the major soils, have soft bedrock at a depth of 40 to 60 inches, and are intermingled with areas of the major soils on smooth side slopes

Similar:
- Soils that are similar to the Evard soil but have less clay in the subsoil
- Soils that are similar to the Cowee soil but have less clay in the subsoil and have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the Cowee soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Woodland
Suitability: Poorly suited
Productivity class: Evard—very high, based on eastern white pine as the indicator species; Cowee—high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations; Cowee—hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Avoiding the diversion of water directly onto fill slopes helps to prevent roads and landings from being undercut because of the concentrated flow of water.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Extensive blasting, shaping, and grading help in the construction of roads.
- Using cable logging methods helps to overcome the limitations to road and trail construction caused by the large number of rock outcrops on the soil surface.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cowee soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Evard—steepness of slope; Cowee—steepness of slope and depth to bedrock
Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Evard—7e; Cowee—7e

EvC—Evard-Cowee complex, 8 to 15 percent slopes, stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,200 to 3,400 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, and side slopes
Shape of areas: Mostly long and narrow
Size of areas: 5 to 100 acres

Composition

Evard soil and similar soils: 60 percent
Cowee soil and similar soils: 30 percent
Dissimilar soils: 10 percent

Typical Profile

Evard
Surface layer:
0 to 2 inches—dark brown fine sandy loam
2 to 6 inches—brown fine sandy loam

Subsoil:
6 to 26 inches—red clay loam
26 to 32 inches—red loam

Underlying material:
32 to 60 inches—yellowish red saprolite that has a sandy loam texture

Cowee
Surface layer:
0 to 3 inches—dark yellowish brown gravelly loam

Subsurface layer:
3 to 7 inches—strong brown gravelly loam

Subsoil:
7 to 15 inches—yellowish red gravelly loam
15 to 23 inches—red gravelly sandy clay loam

Underlying material:
23 to 45 inches—multicolored, slightly fractured, weathered sillimanite schist

Soil Properties and Qualities

Depth class: Evard—very deep; Cowee—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Evard—moderate; Cowee—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.

Rock fragments on the surface: Stony; about 0.04 percent of the surface is covered with stones that range from 10 to 12 inches across and are about 200 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Evard—very strongly acid to moderately acid, except where lime has been applied; Cowee—extremely acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Evard—more than 60 inches to hard bedrock; Cowee—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Evard soil but have more clay in the subsoil
- Soils that are similar to the Evard and Cowee soils but have a yellower subsoil
- Soils that have either more or fewer coarse fragments throughout the profile

Land Use

Dominant uses: Woodland
Other uses: Pasture, hayland, and orchard crops

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn, small grain, and soybeans
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Cowee soil.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Cowee soil.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Cowee soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- The high content of rock fragments in the root zone of the Cowee soil makes ball and burlap harvesting difficult.

Woodland
Suitability: Well suited
Productivity class: Evard—very high, based on eastern white pine as the indicator species; Cowee—high, based on eastern white pine as the indicator species
Management concerns: Cowee—hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Surface stones may limit the use of equipment in areas of this map unit.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cowee soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Evard—steepness of slope; Cowee—steepness of slope and depth to bedrock
Management measures and considerations:
- This map unit is limited for septic tank absorption fields because of the steepness of the slope and depth to bedrock in the Cowee soil. The local Health Department should be contacted for additional guidance.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.
- Installing distribution lines on the contour improves performance of septic tank absorption fields.
- Large stones and boulders may be encountered during excavation and construction.
- This map unit is severely limited for sewage lagoons because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil.
- This map unit is limited for sanitary landfills because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil.

- This map unit is limited for shallow excavations because of the hazard of cutbanks caving in areas of the Evard soil and the depth to bedrock in areas of the Cowee soil.
- This map unit is limited for dwellings because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil.
- The soft bedrock underlying the Cowee soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- This map unit is limited for roads and streets because of the steepness of the slope and large stones.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Soft bedrock should be crushed or removed from excavated material that is used for landscaping.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface improves the suitability of the soil for tents, picnic tables, and other facilities.
- Removing or relocating large stones, as necessary, improves the performance of this map unit.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- This map unit is severely limited for playgrounds because of the steepness of the slope and large stones. A site should be selected on better suited soils.
- Cutting, filling, or grading only those areas requiring excavation improves soil stability and reduces equipment limitations caused by the slope.

Interpretive Group

Land capability classification: Evard—4e; Cowee—4e

EvD—Evard-Cowee complex, 15 to 30 percent slopes, stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, narrow spurs, and ridges
Elevation: 1,100 to 3,450 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, and side slopes
Shape of areas: Generally long and narrow
Size of areas: 10 to 300 acres

Composition

Evard soil and similar soils: 55 percent
Cowee soil and similar soils: 30 percent
Dissimilar soils: 15 percent

Typical Profile

Evard
Surface layer:
0 to 2 inches—dark brown fine sandy loam
2 to 6 inches—brown fine sandy loam

Subsoil:
6 to 26 inches—red clay loam
26 to 32 inches—red loam

Underlying material:
32 to 60 inches—yellowish red saprolite that has a sandy loam texture

Cowee
Surface layer:
0 to 3 inches—dark yellowish brown gravelly loam

Subsurface layer:
3 to 7 inches—strong brown gravelly loam

Subsoil:
7 to 15 inches—yellowish red gravelly loam
15 to 23 inches—red gravelly sandy clay loam

Underlying material:
23 to 45 inches—multicolored, slightly fractured, weathered sillimanite schist

Soil Properties and Qualities

Depth class: Evard—very deep; Cowee—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Evard—moderate; Cowee—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.04 percent of the surface is covered with stones that range from 10 to 12 inches across and are about 200 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Evard—very strongly acid to moderately acid, except where lime has been applied; Cowee—extremely acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Evard—more than 60 inches to hard bedrock; Cowee—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cliffield soils, which have a greater number of coarse fragments throughout the profile than the major soils, have hard bedrock at a depth of 20 to 40 inches, are on nose slopes and shoulders, and are intermingled with areas of the major soils on side slopes
- Cleveland soils, which have hard bedrock at a depth of less than 20 inches and are on nose slopes, head slopes, and shoulders

- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils on slopes
- Soils that have soft bedrock at a depth of less than 20 inches and are intermingled with areas of the major soils on slopes

Similar:
- Soils that are similar to the Evard soil but have more clay in the subsoil
- Soils that are similar to the Evard and Cowee soils but have a yellower subsoil
- Soils that are similar to the Cowee soil but have less clay in the subsoil and hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the major soils but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland
Other uses: Orchard crops and pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Resource management systems, such as terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and soil-conserving crop rotation reduce soil erosion and help control surface runoff and maximize rainfall infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Cowee soil.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Apples and a variety of shrubs and hardwoods
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.

- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Cowee soil in this map unit makes areas of this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- The slope affects the shape of the plant on the uphill side of the slope.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- The content of rock fragments in the root zone makes ball and burlap harvesting difficult.

Woodland

Suitability: Suited

Productivity class: Evard—very high, based on eastern white pine as the indicator species; Cowee—high, based on eastern white pine as the indicator species

Management concerns: Erodibility and equipment limitations; Cowee—hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cowee soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited

Management concerns: Evard—steepness of slope; Cowee—steepness of slope and depth to bedrock

Management measures and considerations:

- This map unit is severely limited for septic tank absorption fields because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil. The local Health Department should be contacted for additional guidance.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.
- Installing distribution lines on the contour improves the performance of septic tank absorption fields.
- This map unit is limited for sewage lagoons because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil. A site should be selected on better suited soils.
- This map unit is limited for sanitary landfills because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil. A site should be selected on better suited soils.
- This map unit is limited for shallow excavations because of the hazard of cutbanks caving and the steepness of the slope in areas of the Evard soil. A site should be selected on better suited soils.

- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- The soft bedrock underlying the Cowee soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Large stones and boulders may be encountered during excavation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep eroding soil on site.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface improves the suitability of this map unit for tents and other facilities.
- Constructing roads and trails on the contour and placing picnic facilities in the less sloping areas within the map unit help overcome the limitation of the slope.
- Removing or relocating large stones, as necessary, improves the performance of this map unit.
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- It may be necessary to determine the depth to bedrock prior to grading and the construction of playgrounds.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Evard—6e; Cowee—6e

EvE—Evard-Cowee complex, 30 to 50 percent slopes, stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, narrow spurs, and ridges
Elevation: 1,100 to 2,800 feet
Hillslope profile position: Summits, shoulders, and back slopes
Geomorphic component: Mountain flanks, interfluves, and side slopes
Shape of areas: Long and narrow or broad and irregular
Size of areas: 25 to 300 acres

Composition

Evard soil and similar soils: 60 percent
Cowee soil and similar soils: 30 percent
Dissimilar soils: 10 percent

Typical Profile

Evard
Surface layer:
0 to 2 inches—dark brown fine sandy loam
2 to 6 inches—brown fine sandy loam

Subsoil:
6 to 26 inches—red clay loam
26 to 32 inches—red loam

Underlying material:
32 to 60 inches—yellowish red saprolite that has a sandy loam texture

Cowee
Surface layer:
0 to 3 inches—dark yellowish brown gravelly loam

Subsurface layer:
3 to 7 inches—strong brown gravelly loam

Subsoil:
7 to 15 inches—yellowish red gravelly loam
15 to 23 inches—red gravelly sandy clay loam

Underlying material:
23 to 45 inches—multicolored, slightly fractured, weathered sillimanite schist

Soil Properties and Qualities

Depth class: Evard—very deep; Cowee—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Evard—moderate; Cowee—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.04 percent of the surface is covered with stones that range from 12 to 15 inches across and are about 100 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Evard—very strongly acid to moderately acid, except where lime has been applied; Cowee—extremely acid to moderately acid
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Evard—more than 60 inches to hard bedrock; Cowee—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Cliffield soils, which have a greater number of coarse fragments throughout the profile than the major soils, have hard bedrock at a depth of 20 to 40 inches, are on nose slopes and shoulders, and are intermingled with areas of the major soils on side slopes
- Buladean soils, which have less clay in the subsoil than the major soils, have soft bedrock at a depth of 40 to 60 inches, and are intermingled with areas of the major soils on smooth side slopes

- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils on side slopes
- Soils that have more clay in the subsoil than the major soils but have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the major soils in the less sloping areas

Similar:
- Soils that are similar to the Evard and Cowee soils but have a yellower subsoil
- Soils that are similar to the Evard soil but have less clay in the subsoil
- Soils that are similar to the Cowee soil but have less clay in the subsoil and have soft or hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility and equipment limitations; Cowee—rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Cowee soil in this map unit make areas of this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- The high content of rock fragments in the root zone of the Cowee soil makes ball and burlap harvesting difficult.

Woodland

Suitability: Suited

Productivity class: Evard—very high, based on eastern white pine as the indicator species; Cowee—high, based on eastern white pine as the indicator species

Management concerns: Erodibility and equipment limitations; Cowee—hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cowee soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited

Management concerns: Evard—steepness of slope; Cowee—steepness of slope and depth to bedrock

Management measures and considerations:

- The local Health Department should be contacted for guidance on sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.
- Installing distribution lines on the contour improves performance of septic tank absorption fields.
- Large stones and boulders may be encountered during excavation.
- This map unit is severely limited for sewage lagoons because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil. A site should be selected on better suited soils.
- This map unit is severely limited for sanitary landfills because of The steepness of the slope and the depth to bedrock in areas of the Cowee soil. A site should be selected on better suited soils.
- This map unit is severely limited for shallow excavations because of The steepness of the slope and the hazard of cutbanks caving in areas of the Evard soil. A site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep eroding soil on site.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Topsoil from disturbed areas should be stockpiled and then replaced before landscaping the area.
- Using lime, fertilizer, mulch, and irrigation water helps to establish lawns and landscaping plants.

- Removing large stones and boulders and limiting equipment use to the larger open areas improve the suitability of these soils.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Soft bedrock should be crushed or removed from excavated material that is used for landscaping.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- This map unit is limited for recreational development because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Evard—7e; Cowee—7e

FaB2—Fairview sandy clay loam, 2 to 8 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,000 to 1,300 feet
Hillslope profile position: Summits
Geomorphic component: Interfluves
Shape of areas: Irregular
Size of areas: 4 to 300 acres

Composition

Fairview soil and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None

Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the Fairview soil, especially in areas of or near sillimanite schist geology
- Areas of shallow soils that have hard bedrock at a depth of 10 to 20 inches and are on nose slopes

Similar:
- Soils that are similar to the Fairview soil but have a solum that is greater than 40 inches
- Soils that are similar to the Fairview soil but have a high mica content in the lower part of the soil profile
- Soils that are similar to the Fairview soil but have a yellower subsoil
- Fairview soils that are slightly eroded but have a sandy loam, loam, or fine sandy loam surface layer

Land Use

Dominant uses: Cropland, pasture, and hayland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and soybeans
Management concerns: Erodibility and tilth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion by helping to stabilize the soil, control surface runoff, and maximize water infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface helps to minimize clodding and crusting and maximize water infiltration.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Fescue and orchardgrass
Management concerns: Erodibility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- Special care should be taken to prevent further soil erosion when renovating pastures and establishing seedbeds.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Apples
Management concerns: Erodibility, root diseases, ball and burlap harvesting, and herbicide retention
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- The soil in this map unit retains soil-applied herbicides because of its high clay content. The concentration of herbicides may damage future crops.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on loblolly pine as the indicator species
Management concerns: Equipment limitations and seedling mortality
Management measures and considerations:
- No significant limitations affect woodland management.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, steepness of slope, high clay content, and low strength
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Proper compaction and the use of the proper liner material can prevent unwanted seepage from sewage lagoons.
- Proper design that adjusts for the slope improves the performance of sewage lagoons.
- No significant limitations affect sanitary landfills.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.

Recreational Development

Suitability: Well suited
Management concerns: Steepness of slope
Management measures and considerations:
- No significant limitations affect camp areas or picnic areas.

- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 3e

FaC2—Fairview sandy clay loam, 8 to 15 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 950 to 1,300 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, side slopes, nose slopes, and head slopes
Shape of areas: Irregular
Size of areas: 4 to 300 acres or more

Composition

Fairview soil and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the Fairview soil, especially in areas of or near sillimanite schist geology
- Soils that have soft bedrock at a depth of 40 and 60 inches and are intermingled with areas of the Fairview soil

Similar:
- Soils that are similar to the Fairview soil but have a solum that is greater than 40 inches
- Soils that are similar to the Fairview soil but have a high mica content in the lower part of the soil profile
- Soils that are similar to the Fairview soil but have a yellower subsoil
- Soils that are similar to the Fairview soil but have less clay in the subsoil
- Fairview soils that are slightly eroded and have a sandy loam, loam, or fine sandy loam surface layer

Land Use

Dominant uses: Cropland, pasture, and hayland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn, soybeans, and small grain
Management concerns: Erodibility and tilth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion by helping to stabilize the soil, control surface runoff, and maximize water infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface helps to minimize clodding and crusting and maximize water infiltration.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- Special care should be taken to prevent further soil erosion when renovating pastures and establishing seedbeds.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Using perennial grasses and legumes in crop rotations helps to penetrate and break up the clayey root zone.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Apples and a variety of shrubs and hardwoods
Management concerns: Erodibility, root disease, ball and burlap harvesting, and herbicide retention

Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- The soil in this map unit retains soil-applied herbicides because of its high clay content. The concentration of herbicides may damage future crops.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on loblolly pine as the indicator species
Management concerns: Equipment limitations and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, restricted permeability, high clay content, and low strength
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Proper design that adjusts for the slope improves performance of sewage lagoons and sanitary landfills.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface for picnic tables and other facilities improves the performance of the soil.

- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.

Interpretive Group

Land capability classification: 3e

FaD2—Fairview sandy clay loam, 15 to 25 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 950 to 1,200 feet
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Side slopes and nose slopes
Shape of areas: Long and narrow with irregular widths
Size of areas: 4 to 200 acres

Composition

Fairview soil and similar soils: 95 percent
Dissimilar soils: 5 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Dillard soils, which have less clay in the subsoil than the Fairview soil, are somewhat poorly drained, and are on toeslopes
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the Fairview soil, especially in areas of or near sillimanite schist geology
- Soils that have less clay in the subsoil than the Fairview soil, have soft bedrock at a depth of 20 to 40 inches, and are on nose slopes and shoulders

Similar:
- Soils that are similar to the Fairview soil but have a solum that is greater than 40 inches
- Soils that are similar to the Fairview soil but have a high mica content in the lower part of the soil profile
- Soils that are similar to the Fairview soil but have less clay in the subsoil
- Fairview soils that are slightly eroded and have a sandy loam, loam, or fine sandy loam surface layer

Land Use

Dominant uses: Woodland
Other uses: Pasture and orchard crops

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and tilth
Management measures and considerations:
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion by helping to stabilize the soil, control surface runoff, and maximize water infiltration.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- Special care should be taken to prevent further soil erosion when renovating pastures and establishing seedbeds.
- Proper stocking rates, pasture rotation, the timely deferment of grazing, and restricted use during wet weather help to keep pastures and the soil in good condition.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Apples

Management concerns: Erodibility, equipment limitations, root disease, ball and burlap harvesting, and herbicide retention
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- The soil in this map unit retains soil-applied herbicides because of its high clay content. The concentration of herbicides may damage future crops.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on loblolly pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Proper design that adjusts for the slope improves performance of sewage lagoons and sanitary landfills.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep eroding soil on site.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for camp areas, picnic areas, and playgrounds because of the steepness of the slope. A site should be selected on better suited soils.

• Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: 7e

FeB—Fairview-Urban land complex, 2 to 8 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,100 to 1,200
Hillslope profile position: Summits
Geomorphic component: Interfluves
Shape of areas: Broad and irregular
Size of areas: 5 to 75 acres

Composition

Fairview soil and similar soils: 60 percent
Urban land: 35 percent
Dissimilar soils: 5 percent

Typical Profile

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Urban land
Urban land consists of areas where more than 85 percent of the surface is covered with buildings, asphalt, concrete, or other impervious material.

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied

Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Properties and qualities for Urban land have been greatly altered from the original soils by cutting, filling, grading, and shaping. The original landscape, topography, infiltration, and drainage pattern of the soils generally have been changed as well.

Minor Components

Dissimilar:
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the major soils, especially in areas of or near sillimanite schist geology

Similar:
- Soils that are similar to the Fairview soil but have a solum that is greater than 40 inches
- Soils that are similar to the Fairview soil but have a high mica content in the lower part of the soil profile
- Soils that are similar to the Fairview soil but have a yellower subsoil
- Fairview soils that are slightly eroded and have a sandy loam, loam, or fine sandy loam surface layer

Land Use

Dominant uses: Urban development

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for pasture and hay crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Woodland
Suitability: Poorly suited
Productivity class: Fairview—moderately high, based on loblolly pine as the indicator species; Urban land—none assigned

Management concerns: Limited size of areas
Management measures and considerations:
- Timber production is rarely feasible because of the limited size of areas of the Fairview soil and the intermittent areas of urban land, but trees could be planted primarily for their esthetic value.

Urban Development

Suitability: Fairview—suited
Management concerns: Restricted permeability, seepage, steepness of slope, high clay content, and low strength
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities. Access to public sewage systems eliminates the need for onsite systems.
- This map unit is severely limited for sewage lagoons and sanitary landfills because of extensive urban development. A more suitable site should be selected.
- Onsite investigation is needed to determine the suitability and limitations of this map unit for dwellings and commercial buildings.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- These areas are not recommended for use as camp areas because of the close proximity to urban development.
- No significant limitations affect picnic areas.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Fairview—3e; Urban land—8s

FeC—Fairview-Urban land complex, 8 to 15 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,000 to 1,200
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, side slopes, and nose slopes
Shape of areas: Mostly broad and irregular
Size of areas: 5 to 75 acres

Composition

Fairview soil and similar soils: 55 percent
Urban land: 40 percent
Dissimilar soils: 5 percent

Typical Profile

Fairview

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Urban land

Urban land consists of areas where more than 85 percent of the surface is covered with buildings, asphalt, concrete, or other impervious material.

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Properties and qualities for Urban land have been greatly altered from the original soils by cutting, filling, grading, and shaping. The original landscape, topography, infiltration, and drainage pattern of the soils generally have been changed as well.

Minor Components

Dissimilar:
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the major soils, especially in areas of or near sillimanite schist geology
- Soils that have soft bedrock at a depth of 40 and 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Fairview soil but have a solum that is greater than 40 inches
- Soils that are similar to the Fairview soil but have a high mica content in the lower part of the soil profile
- Soils that are similar to the Fairview soil but have a yellower subsoil
- Fairview soils that are slightly eroded and have a sandy loam, loam, or fine sandy loam surface layer

Land Use

Dominant uses: Urban development

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility and limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for pasture and hay crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Woodland
Suitability: Poorly suited
Productivity class: Fairview—moderately high, based on loblolly pine as the indicator species; Urban land—none assigned
Management concerns: Equipment limitations and limited size of areas
Management measures and considerations:
- Timber production is rarely feasible because of the limited size of areas of the Fairview soil and the intermittent areas of urban land, but trees could be planted primarily for their esthetic value.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, restricted permeability, high clay content, low strength, and limited size of areas
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities. Access to public sewage systems eliminates the need for onsite systems.
- This map unit is severely limited for sewage lagoons and sanitary landfills because of extensive urban development. A more suitable site should be selected.
- Onsite investigation is needed to determine the suitability and limitations of this map unit for dwellings and commercial buildings.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.

- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope and limited size of areas
Management measures and considerations:
- These areas are not recommended for use as camp areas because of the close proximity to urban development.
- Providing a level pad that has a gravel surface for picnic tables and other facilities improves the performance of the soil.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Fairview—6e; Urban land—8s

FnA—Fluvaquents-Udifluvents complex, 0 to 3 percent slopes, mounded, occasionally flooded

Setting

Landscape: Foothills and Piedmont river valleys
Landform: Flood plains
Elevation: 1,150 to 1,400 feet
Hillslope profile position: Toeslopes
Geomorphic component: Base slopes, risers, and treads
Shape of areas: Generally long and narrow
Size of areas: 10 to 30 acres

Composition

Fluvaquents and similar soils: 60 percent
Udifluvents and similar soils: 35 percent
Dissimilar soils: 5 percent

Typical Profile

A typical pedon is not given for these soils because of their variability. Areas of these soils are along flood plains where the natural soils were altered by digging or by removing or shaping the original material. Some of the soil material is mounded because of activities involved with the mining of gold, gravel, or stone.

Fluvaquents generally are loamy in the upper part and have sand, or a mixture of sand, gravel and cobbles, in the lower part.

Udifluvents generally are sandy in the upper part and have sand, gravel, and cobbles in the lower part, or have sand, gravel and cobbles throughout the profile.

The mounds are commonly 3 to 8 feet tall and consist of material that is similar to that of the Fluvaquents and Udifluvents.

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Fluvaquents—somewhat poorly drained; Udifluvents—moderately well drained or well drained

General texture class: Fluvaquents—loamy; Udifluvents—sandy or sandy-skeletal
Permeability: Fluvaquents—very slow to moderately rapid; Udifluvents—moderately rapid or rapid
Available water capacity: Fluvaquents—moderate to high; Udifluvents—moderate to very low
Depth to seasonal high water table: Fluvaquents—1.0 to 2.0 feet from December through April; Udifluvents—3.5 to 6.0 feet
Flooding: Occasional for brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; less than 0.01 percent of the surface is covered with areas of scattered stones and cobbles.
Extent of rock outcrops: None
Soil reaction: Extremely acid to neutral
Parent material: Recent alluvium from mixed geologic material
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Randomly scattered areas of pits or trenches
- Poorly drained soils in depressions

Similar:
- Randomly intermingled spots of undisturbed soils
- Areas where mounds have been leveled

Land Use

Dominant uses: Woodland
Other uses: Some reclaimed areas that are used for pasture or hayland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Flooding, wetness, and highly disturbed soils
Management measures and considerations:
- Onsite investigation is recommended in order to determine the appropriate management measures needed because of the highly variable soil properties.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Flooding, wetness, and highly disturbed soils
Management measures and considerations:
- Before these soils can be considered for use, it is necessary to remove mounds and fill in low spots by shaping or grading the land.
- Onsite investigation is recommended in order to determine the appropriate management measures needed because of the highly variable soil properties.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Flooding and highly disturbed soils

Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of flooding.

Woodland
Suitability: Well suited
Productivity class: Fluvaquents—none assigned; Udifluvents—moderately high, based on yellow-poplar as the indicator species
Management concerns: Equipment limitations, high water table, and flooding
Management measures and considerations:
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent the rutting and compaction that can occur when the soils are saturated.
- Harvesting timber during the summer months reduces the risk of damage from flooding.

Urban Development

Suitability: Unsuited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for urban uses because of flooding and wetness. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for most recreational uses because of the potential for wetness and flooding. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Fluvaquents—5w; Udifluvents—3s

FoB—Fontaflora-Ostin complex, 0 to 5 percent slopes, flooded

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Flood plains
Elevation: 1,100 to 3,200 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Long and narrow with irregular widths
Size of areas: 30 to 200 acres

Composition

Fontaflora soil and similar soils: 55 percent
Ostin soil and similar soils: 40 percent
Dissimilar soils: 5 percent

Typical Profile

Fontaflora
Surface layer:
0 to 5 inches—dark yellowish brown sandy loam

Underlying material:
5 to 20 inches—brown sandy loam
20 to 36 inches—dark yellowish brown loamy sand
36 to 60 inches—dark yellowish brown extremely cobbly coarse sand

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

Underlying material:
6 to 35 inches—dark yellowish brown extremely cobbly coarse sand
35 to 44 inches—very dark gray sandy loam
44 to 50 inches—dark yellowish brown extremely cobbly coarse sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Fontaflora—well drained; Ostin—well drained or moderately well drained
Permeability: Fontaflora—moderately rapid or rapid; Ostin—very rapid
Available water capacity: Fontaflora—low; Ostin—very low
Depth to seasonal high water table: Fontaflora—3.0 to 5.0 feet from November through April; Ostin—2.0 to 3.5 feet from January through April
Flooding: Fontaflora—occasional for very brief periods; Ostin—frequent for very brief periods
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Fontaflora—stony; about 0.05 percent of the surface is covered with rounded stones that range from 10 to 15 inches across and are about 50 feet apart; Ostin—rubbly; about 20 percent of the surface is covered with rounded stones that range from 10 to 15 inches across and are about 15 inches apart and boulders that are an average of 30 inches across and are about 1.5 feet apart.
Extent of rock outcrops: None
Soil reaction: Fontaflora—very strongly acid to slightly acid, except where lime has been applied; Ostin—very strongly acid or strongly acid
Parent material: Alluvium derived from felsic high-grade metamorphic or igneous rock or low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Nikwasi soils, which are poorly drained and are in depressions
- Biltmore soils, which have fewer coarse fragments in the upper 40 inches than the Ostin soil and generally are along stream channels
- Random areas of soils that have finer material below the surface than the major soils

Similar:
- Soils that are similar to the Ostin soil but have more clay throughout the profile
- Soils that are similar to the major soils but have a dark surface layer that is more than 10 inches thick

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Fontaflora—well suited; Ostin—unsuited
Commonly grown crops: Soybeans and small grain
Management concerns: Flooding and equipment limitations
Management measures and considerations:
- The potential for flooding during the growing season makes soils in this map unit difficult to manage for cropland.
- Soils in this map unit have severe limitations for crop production because of surface stones and boulders. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Fontaflora—well suited to pasture and suited to hayland; Ostin—unsuited to pasture and hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Flooding and equipment limitations
Management measures and considerations:
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Surface stones and boulders may create unsafe conditions and limit the use of equipment in areas of this map unit.

Orchard and ornamental crops
Suitability: Fontaflora—poorly suited; Ostin—unsuited
Commonly grown crops: Ornamental shrubs and shade trees
Management concerns: Flooding, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of flooding and surface stones. A site should be selected on better suited soils.

Woodland
Suitability: Well suited
Productivity class: Fontaflora—moderately high, based on American sycamore as the indicator species; Ostin—moderately high, based on yellow-poplar as the indicator species
Management concerns: Ostin—seedling mortality
Management measures and considerations:
- Managing these soils for the natural regeneration of hardwoods is the best method for the reforestation of these soils.
- Harvesting timber during the summer months reduces the risk of damage from flooding.
- Surface stones may limit the use of equipment in areas of this map unit.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Flooding, large stones, low strength, and droughtiness

Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Flooding and large stones
Management measures and considerations:
- This map unit is severely limited for camp areas because of flooding and large stones. A site should be selected on better suited soils.
- Removing or relocating large stones, as necessary, improves the performance of this map unit for picnic areas.
- It may be necessary to restrict the use of this map unit after heavy rains when the danger of flooding is present.
- Using diversions helps to remove excess surface water.

Interpretive Group

Land capability classification: Fontaflora—2w; Ostin—6s

GcD—Greenlee very cobbly sandy loam, 15 to 30 percent slopes, extremely bouldery

Setting

Landscape: Blue Ridge mountains
Landform: Drainageways and coves
Elevation: 1,900 to 3,300 feet
Hillslope profile position: Backslopes, footslopes, and shoulders
Geomorphic component: Mountain flanks and mountain bases
Shape of areas: Generally long and narrow or irregular
Size of areas: 3 to 30 acres

Composition

Greenlee soil and similar soils: 70 percent
Dissimilar soils: 30 percent

Typical Profile

Surface layer:
0 to 2 inches—dark brown very cobbly sandy loam

Subsoil:
2 to 60 inches—dark yellowish brown very cobbly sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.

Rock fragments on the surface: Extremely bouldery; about 10 percent of the surface is covered with boulders that range from 24 to 36 inches in diameter and are from 4 to 5 feet apart.
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid
Parent material: Colluvium and alluvium derived from felsic to mafic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Tate soils, which have fewer coarse fragments throughout the profile than the Greenlee soil and generally occur on small benches
- Ostin soils, which flood frequently, have a sandy texture, and are adjacent to stream channels
- Random areas of somewhat poorly drained or poorly drained soils that are on flood plains

Similar:
- Soils that are similar to the Greenlee soil but have a thick, dark-colored surface layer

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Woodland

Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Surface stones may limit the use of equipment in areas of this map unit.
- Planting seedlings during wet, cool periods increases plant survival rates.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, seepage, large stones, cutbanks caving, and droughtiness
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, large stones, and content of rock fragments
Management measures and considerations:
- This map unit is severely limited for recreational development. A site should be selected on better suited soils.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: 7s

GrD—Greenlee-Tate complex, 15 to 30 percent slopes, extremely stony

Setting

Landscape: Blue Ridge mountains, South Mountains, Blue Ridge foothills, and Piedmont river valleys
Landform: Greenlee—drainageways and coves; Tate—coves and stream terraces
Elevation: 1,300 to 2,500 feet
Hillslope profile position: Greenlee—backslopes, footslopes, and shoulders; Tate—footslopes and toeslopes
Geomorphic component: Greenlee—mountain flanks, mountain bases, head slopes, side slopes, and base slopes; Tate—mountain bases, base slopes, risers, and treads

Shape of areas: Long and narrow or broad and irregular
Size of areas: 3 to 50 acres

Composition

Greenlee soil and similar soils: 50 percent
Tate soil and similar soils: 40 percent
Dissimilar soils: 10 percent

Typical Profile

Greenlee
Surface layer:
0 to 2 inches—dark brown very cobbly sandy loam

Subsoil:
2 to 60 inches—dark yellowish brown very cobbly sandy loam

Tate
Surface layer:
0 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 6 inches—dark yellowish brown fine sandy loam

Subsoil:
6 to 15 inches—yellowish brown loam
15 to 26 inches—strong brown clay loam
26 to 50 inches—strong brown gravelly sandy clay loam
50 to 60 inches—strong brown gravelly fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Greenlee—moderately rapid; Tate—moderate
Available water capacity: Greenlee—low; Tate—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Extremely stony; about 10 percent of the surface is covered with stones that are an average of 15 inches across and are about 2 to 5 feet apart.
Extent of rock outcrops: None
Soil reaction: Greenlee—extremely acid to moderately acid; Tate—very strongly acid to slightly acid, except where lime has been applied
Parent material: Greenlee—colluvium and alluvium derived from felsic to mafic high-grade metamorphic or igneous rock; Tate—alluvium and colluvium derived from felsic high-grade metamorphic rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Ostin soils, which flood frequently, are moderately well drained, have more sand than the Greenlee soil, and are adjacent to drainageways

- Nikwasi soils, which flood frequently, are poorly drained, and are in depressions on flood plains
- Soils that are poorly drained or somewhat poorly drained and are on flood plains

Similar:
- Soils that are similar to the Tate soil but have a red subsoil and less clay in the subsoil
- Soils that are similar to the Tate soil but are moderately well drained
- Soils that are similar to the Greenlee soil but have a thicker dark surface layer

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Greenlee—unsuited; Tate—poorly suited
Commonly grown crops: None
Management concerns: Equipment limitation; Greenlee—droughtiness, tilth, and limited size of areas; Tate—erodibility and limited size of areas
Management measures and considerations:
- Resource management systems, such as terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and soil conserving crops in rotation, reduce soil erosion and help control surface runoff and maximize rainfall infiltration.
- The high content of rock fragments on the soil surface makes these soils difficult to till. Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- This map unit is difficult to manage for crop production because of the small size of the map units.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Steepness of slope, large stones, and ball and burlap harvesting; Greenlee—droughtiness
Management measures and considerations:
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- The soils in this map unit are difficult to till or dig because of the rock fragments in the surface layer. Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.

- Soils in this map unit are severely limited for ball and burlap harvesting because of the high content of rock fragments in the root zone.

Woodland
Suitability: Suited
Productivity class: Greenlee and Tate—moderately high, based on yellow-poplar as the indicator species
Management concerns: Erodibility and equipment limitations; Greenlee—hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Planting seedlings during wet, cool periods increases plant survival rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, large stones, seepage, droughtiness, and cutbanks caving
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Large stones and boulders may be encountered during excavation.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Removing or relocating large stones, as necessary, improves the performance of this map unit.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.

Interpretive Group

Land capability classification: Greenlee—7s; Tate—6e

GrE—Greenlee-Tate complex, 30 to 50 percent slopes, extremely stony

Setting

Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Greenlee—drainageways and coves; Tate—coves and stream terraces
Elevation: 1,200 to 4,100 feet
Hillslope profile position: Greenlee—backslopes, shoulders, footslopes, and toeslopes; Tate—footslopes and toeslopes
Geomorphic component: Greenlee—mountain flanks, mountain bases, head slopes, side slopes, and base slopes; Tate—mountain bases, base slopes, risers, and treads
Shape of areas: Long and narrow or broad and irregular
Size of areas: 3 to 50 acres

Composition

Greenlee soil and similar soils: 55 percent
Tate soil and similar soils: 40 percent
Dissimilar soils: 5 percent

Typical Profile

Greenlee
Surface layer:
0 to 2 inches—dark brown very cobbly sandy loam

Subsoil:
2 to 60 inches—dark yellowish brown very cobbly sandy loam

Tate
Surface layer:
0 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 6 inches—dark yellowish brown fine sandy loam

Subsoil:
6 to 15 inches—yellowish brown loam
15 to 26 inches—strong brown clay loam
26 to 50 inches—strong brown gravelly sandy clay loam
50 to 60 inches—strong brown gravelly fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Greenlee—moderately rapid; Tate—moderate
Available water capacity: Greenlee—low; Tate—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Extremely stony; about 12 percent of the surface is covered with stones that are an average of 15 inches across and are from 2 to 5

feet apart and boulders that range from 2 to more than 6 feet across and are about 185 feet apart.

Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.

Soil reaction: Greenlee—extremely acid to moderately acid; Tate—very strongly acid to slightly acid, except where lime has been applied

Parent material: Greenlee—colluvium and alluvium derived from felsic to mafic high-grade metamorphic or igneous rock; Tate—alluvium and colluvium derived from felsic high-grade metamorphic rock

Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:

- Soils that are wetter than the Greenlee soil, are poorly drained or somewhat poorly drained, and are on flood plains

Similar:

- Soils that are similar to the Tate soil but have more clay in the subsoil
- Soils that are similar to the Tate soil but are redder

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland

Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:

- This map unit is severely limited for crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Pasture and hayland

Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Equipment limitations
Management measures and considerations:

- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Orchard and ornamental crops

Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations
Management measures and considerations:

- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Woodland

Suitability: Poorly suited
Productivity class: Greenlee and Tate—moderately high, based on yellow-poplar as the indicator species

Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Surface stones may limit the use of equipment in areas of this map unit.
- Planting seedlings during wet, cool periods increases plant survival rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, large stones, seepage, and droughtiness
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing roads and trails on the contour and placing camping facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.

Interpretive Group

Land capability classification: Greenlee—7s; Tate—7e

GtC—Greenlee-Tate-Ostin complex, 1 to 15 percent slopes, extremely stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Greenlee—drainageways or coves; Tate—coves or stream terraces; Ostin—flood plains
Elevation: 1,200 to 2,300 feet
Hillslope profile position: Greenlee—backslopes, footslopes, and shoulders; Tate—footslopes and toeslopes; Ostin—toeslopes
Geomorphic component: Greenlee—mountain flanks, mountain bases, head slopes,

side slopes, and base slopes; Tate—mountain bases, base slopes, risers, and treads; Ostin—risers and treads
Shape of areas: Generally long and narrow
Size of areas: 3 to 50 acres

Composition

Greenlee soil and similar soils: 40 percent
Tate soil and similar soils: 35 percent
Ostin soil and similar soils: 15 percent
Dissimilar soils: 10 percent

Typical Profile

Greenlee
Surface layer:
0 to 2 inches—dark brown very cobbly sandy loam

Subsoil:
2 to 60 inches—dark yellowish brown very cobbly sandy loam

Tate
Surface layer:
0 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 6 inches—dark yellowish brown fine sandy loam

Subsoil:
6 to 15 inches—yellowish brown loam
15 to 26 inches—strong brown clay loam
26 to 50 inches—strong brown gravelly sandy clay loam
50 to 60 inches—strong brown gravelly fine sandy loam

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

Underlying material:
6 to 35 inches—dark yellowish brown extremely cobbly coarse sand
35 to 44 inches—very dark gray sandy loam
44 to 50 inches—dark yellowish brown extremely cobbly coarse sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Greenlee—well drained; Tate—well drained; Ostin—well drained or moderately well drained
Permeability: Greenlee—moderately rapid; Tate—moderate; Ostin—very rapid
Available water capacity: Greenlee—low; Tate—moderate; Ostin—very low
Depth to seasonal high water table: Greenlee and Tate—more than 6.0 feet; Ostin—2.0 to 3.5 feet from January through April
Flooding: Greenlee—none; Tate—rare for very brief periods; Ostin—frequent for very brief periods
Shrink-swell potential: Low
Slope class: Greenlee—gently sloping or strongly sloping; Tate—gently sloping or strongly sloping; Ostin—nearly level or gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.

Rock fragments on the surface: Extremely stony; about 11 percent of the surface is covered with stones that are an average of 15 inches in diameter and are from 2 to 5 feet apart.
Extent of rock outcrops: None
Soil reaction: Greenlee—extremely acid to moderately acid; Tate—very strongly acid to slightly acid, except where lime has been applied; Ostin—very strongly acid or strongly acid
Parent material: Greenlee—colluvium and alluvium derived from felsic to mafic high-grade metamorphic or igneous rock; Tate—alluvium and colluvium derived from felsic high-grade metamorphic rock; Ostin—alluvium derived from felsic high-grade metamorphic or igneous rock or low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Fontaflora soils, which are well drained, have fewer coarse fragments than the Greenlee soil, and are on higher flood plains than the Ostin soil
- Nikwasi soils, which are poorly drained and are in depressions on flood plains
- Soils that are poorly drained or somewhat poorly drained and are on flood plains
- Soils that are moderately well drained and are at the bases of terrace steps

Similar:
- Soils that are similar to the Greenlee soil but have more clay in the subsoil
- Soils that are similar to the Tate soil but have a red subsoil
- Soils that are similar to the Tate soil but have less clay in the subsoil
- Soils that are similar to the Ostin soil but have more rock fragments throughout the profile

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Greenlee and Ostin—unsuited; Tate—poorly suited
Commonly grown crops: None
Management concerns: Greenlee—erodibility, steepness of slope, and equipment limitations; Tate—steepness of slope, equipment limitations, and erodibility; Ostin—hazard of flooding and equipment limitations
Management measures and considerations:
- This map unit is difficult to manage for crop production because of surface stones and the hazard of flooding along the drains. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Greenlee and Tate—poorly suited to pasture and hayland; Ostin—unsuited to pasture and hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Greenlee—droughtiness; Ostin—hazard of flooding and equipment limitations
Management measures and considerations:
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

- Although most flooding occurs during winter, flooding may pose a hazard to livestock and hay crops at any time of the year.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase crop production.

Orchard and ornamental crops

Suitability: Greenlee and Tate—poorly suited; Ostin—unsuited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Equipment limitations, limited size of areas, droughtiness, flooding, and ball and burlap harvesting
Management measures and considerations:

- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- This map unit is difficult to manage for orchard and ornamental crops because of the frequent flooding of the Ostin soil.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.
- The soils in this map unit are difficult to till or dig because of the rock fragments in the surface layer.
- Soils in this map unit are severely limited for ball and burlap harvesting because of the high content of rock fragments in the root zone. A site should be selected on better suited soils.
- This map unit is difficult to manage for orchard and ornamental crops because of the small size of individual useable areas.

Woodland

Suitability: Greenlee—suited; Tate and Ostin—well suited
Productivity class: Greenlee—moderately high, based on yellow-poplar as the indicator species; Tate—moderately high, based on yellow-poplar as the indicator species; Ostin—moderately high, based on yellow-poplar as the indicator species
Management concerns: Greenlee—equipment limitations and seedling mortality; Tate—few limitations for woodland management; Ostin—equipment limitations and seedling mortality
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Surface stones may limit the use of equipment in areas of this map unit.
- Planting seedlings during wet, cool periods increases plant survival rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Greenlee—poorly suited; Tate—suited; Ostin—unsuited
Management concerns: Greenlee—large stones, seepage, cutbanks caving, and steepness of slope; Tate—steepness of slope and restricted permeability; Ostin—flooding, depth to a saturated zone, poor filtering capacity, seepage, and droughtiness
Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Areas of the Tate soil on slopes that are less than 8 percent have the least limitations to overcome.
- Large stones and boulders may be encountered during excavation. Removing or relocating large stones, as necessary, improves the performance of the soil.
- The usability of sites may be improved by careful planning that avoids areas that are subject to flooding.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, large stones, content of rock fragments, and flooding
Management measures and considerations:
- Placing sites in the higher areas and using built-up, level pads help to overcome the flooding limitation.
- Removing or relocating large stones, as necessary, improves the performance of this map unit.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Interpretive Group

Land capability classification: Greenlee—7s; Tate—4e; Ostin—6s

HaA—Hatboro sandy loam, 0 to 2 percent slopes, frequently flooded

Setting

Landscape: Piedmont river valleys
Landform: Flood plains
Elevation: 940 to 1,220 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Long and narrow or irregular
Size of areas: 3 to 30 acres

Composition

Hatboro soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown sandy loam
5 to 10 inches—dark grayish brown sandy loam that has dark yellowish brown masses of oxidized iron
10 to 21 inches—dark grayish brown coarse sandy loam

Subsoil:
21 to 29 inches—dark grayish brown sandy clay loam that has olive brown mottles and gray iron depletions
29 to 34 inches—gray sandy clay loam that has dark yellowish brown masses of oxidized iron
34 to 44 inches—olive gray sandy clay loam that has yellowish brown masses of oxidized iron

Underlying material:
44 to 48 inches—olive gray sandy clay loam that has gray iron depletions and yellowish brown masses of oxidized iron

48 inches—gravel and sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: 0 to 0.5 foot from November through April
Flooding: November to June—frequent for long periods; July to October—frequent for brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: 0 to 30 inches—very strongly acid to neutral; below 30 inches—moderately acid or slightly acid
Parent material: Alluvium
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that have more clay in the subsoil than the Hatboro soil and are intermingled with areas of the Hatboro soil in backswamp positions
- Soils that are well drained, are in slightly more convex areas, and are nearer to the stream channel than the Hatboro soil
- Soils that have more clay in the subsoil than the Hatboro soil, are well drained, and are on small terraces or on higher parts of the flood plain than the Hatboro soil

Similar:
- Arkaqua soils, which are somewhat poorly drained
- Soils that are similar to the Hatboro soil but have less clay in the subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: Corn
Management concerns: Flooding and wetness
Management measures and considerations:
- Installing an artificial drainage system reduces the limitations caused by wetness and improves the productivity of this map unit.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Although most flooding occurs during the winter, crop loss is a risk during the growing season as well.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Flooding and wetness

Management measures and considerations:
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Although most flooding occurs during the winter, flooding may pose a hazard to livestock and hay crops at any time of the year.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Wetness, flooding, and root disease
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of frequent flooding.
- Planting wetness-tolerant species in undrained areas improves productivity.
- Using fungicides helps to control phytophora root disease, which is caused by wetness.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Wetness and flooding
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Using low-pressure ground equipment helps to prevent the rutting of the soil surface and the damage to tree roots caused by soil compaction.
- Harvesting timber during the summer months reduces the risk of damage from flooding.
- Maintaining drainageways and planting trees that are tolerant of wetness increase seedling survival rates.
- Bedding the soil prior to planting helps to establish seedlings and increases the seedling survival rates.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of the soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Unsuited
Management concerns: Flooding, low strength, and depth to a saturated zone
Management measures and considerations:
- This map unit is severely limited for most urban uses because of flooding and wetness.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Flooding and depth to a saturated zone
Management measures and considerations:
- This map unit has severe limitations for most recreational development because of flooding and wetness. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 6w

IoA—Iotla sandy loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landscape: Piedmont foothills and river valleys
Landform: Flood plains
Elevation: 1,100 to 1,240 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Long and narrow
Size of areas: 3 to 50 acres

Composition

Iotla soil and similar soils: 80 percent
Dissimilar soils: 20 percent

Typical Profile

Surface layer:
0 to 12 inches—dark yellowish brown sandy loam

Underlying material:
12 to 21 inches—dark yellowish brown loam that has dark grayish brown iron depletions
21 to 26 inches—dark grayish brown fine sandy loam that has yellowish brown masses of oxidized iron and dark gray iron depletions
26 to 30 inches—light brownish gray and dark gray sand that has light yellowish brown masses of oxidized iron
30 to 50 inches—very dark gray loam
50 to 60 inches—light brownish gray gravelly sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: 1.5 to 3.5 feet from December through March
Flooding: Occasional for brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: 0 to 30 inches—strongly acid to slightly acid, except where lime has been applied; below 30 inches—strongly acid to neutral
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Colvard soils, which are well drained and adjacent to deep stream channels
- Dillard soils, which are moderately well drained and on low terraces
- Soils that have a dark surface layer and are well drained or moderately well drained and are adjacent to the deep stream channels of larger streams
- Soils that have more sand throughout the profile than the Iotla soil, are well drained, and are adjacent to the larger streams in a levy-type position
- Soils that have more sand throughout the profile than the Iotla soil, have more rock fragments than the Iotla soil, and are in the upstream parts of the map unit along high-velocity streams
- Soils that are poorly drained and are in backswamp positions or depressions

Land Use

Dominant uses: Pasture and hayland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and soybeans
Management concerns: Wetness and flooding
Management measures and considerations:
- The potential for flooding during the growing season makes soils in this map unit difficult to manage for cropland.
- Although most flooding occurs during the winter, crop loss is a risk during the growing season as well.
- Harvesting row crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Installing and maintaining an artificial drainage system reduce the limitations caused by wetness and improve the productivity of the soil.
- Avoiding tillage when the soil is wet helps to prevent clodding and crusting.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Wetness and flooding
Management measures and considerations:
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Installing a subsurface drainage system improves the productivity of moisture-sensitive crops such as alfalfa.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Wetness, flooding, and root disease
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of flooding.

- Installing an artificial drainage system reduces the limitations caused by wetness and improves productivity.
- Using fungicides helps to control phytophora root disease, which is caused by wetness.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Harvesting timber during the summer months reduces the risk of damage from flooding.
- Prescribed burning reduces competition from hardwood species.

Urban Development

Suitability: Unsuited
Management concerns: Flooding, depth to a saturated zone, seepage, and cutbanks caving
Management measures and considerations:
- This map unit is severely limited for urban development. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Flooding and depth to a saturated zone
Management measures and considerations:
- This map unit is severely limited for camp areas. A site should be selected on better suited soils.
- Locating picnic areas on the higher parts of the landscape provides improved surface water runoff and helps to keep sites drier during wet seasons.
- This map unit is severely limited for playgrounds because of flooding. A site should be selected on better suited soils.
- Establishing a buffer zone of grass, trees, and shrubs in areas adjacent to streams and drainageways reduces siltation and provides shade.
- Designing and locating paths and trails on the higher parts of the landscape help to minimize the limitations caused by wetness.

Interpretive Group

Land capability classification: 2w

MaD—Maymead fine sandy loam, 10 to 25 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Drainageways, spurs, and hills
Elevation: 2,300 to 3,100
Hillslope profile position: Summits, shoulders, backslopes, and footslopes
Geomorphic component: Mountain flanks, benches, and mountain bases

Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Maymead soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown fine sandy loam
2 to 4 inches—olive brown fine sandy loam

Subsoil:
4 to 14 inches—yellowish brown gravelly fine sandy loam
14 to 18 inches—yellowish brown gravelly fine sandy loam
18 to 33 inches—yellowish brown cobbly fine sandy loam

Underlying material:
33 to 56 inches—yellowish brown cobbly fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones that range from 12 to 15 inches across and are about 20 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Strongly acid or very strongly acid
Parent material: Colluvium derived from low-grade metasedimentary rock
Depth to bedrock: More than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Colvard soils, which have less clay in the subsoil than the Maymead soil, are occasionally flooded, and are on flood plains
- Ostin soils, which have more sand and more rock fragments throughout the profile than the Maymead soil, are frequently flooded, and are on flood plains
- Northcove soils, which have more rock fragments throughout the profile than the Maymead soil and are at the bases of slopes, on head slopes, or in cove bottoms

Similar:
- Soils that are similar to the Maymead soil but have more clay in the subsoil
- Soils that are similar to the Maymead soil but have a redder subsoil
- Maymead soils that have more or less surface stones

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Rhododendron and Fraser fir
Management concerns: Erodibility, equipment limitations, tilth, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The soil in this map unit is difficult to till or dig because of the rock fragments in the surface layer.
- The content of rock fragments in the root zone makes ball and burlap harvesting difficult.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.

- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. A site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for camp areas, picnic areas, and playgrounds because of the steepness of the slope. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: 4e

MeD—Meadowfield-Fairview complex, 15 to 25 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 920 to 1,200 feet
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Side slopes, nose slopes, and head slopes
Shape of areas: Generally long and narrow or irregular
Size of areas: 4 to 200 acres

Composition

Meadowfield soil and similar soils: 65 percent
Fairview soil and similar soils: 25 percent
Dissimilar soils: 10 percent

Typical Profile

Meadowfield
Surface layer:
0 to 4 inches—brown gravelly sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown gravelly sandy loam

Subsoil:
10 to 20 inches—strong brown very gravelly sandy clay loam
20 to 27 inches—dark yellowish brown very gravelly sandy clay loam

Underlying material:
27 to 30 inches—weathered sillimanite schist that has clay loam in cracks
30 to 60 inches—unweathered sillimanite schist bedrock

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Meadowfield—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Meadowfield—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Meadowfield—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones cover less than 0.01 percent of the surface.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Meadowfield—extremely acid to strongly acid; Fairview—extremely acid to moderately acid, except where lime has been applied
Parent material: Meadowfield—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Meadowfield—20 to 40 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Woolwine soils, which have more clay in the subsoil than the Meadowfield soil, have soft bedrock at a depth of 20 to 40 inches, and are intermingled on side slopes or in concave areas on ridges
- Soils that have soft bedrock at a depth of 40 to 60 inches and are on smooth, less sloping areas
- Soils that have more clay than the Meadowfield soil, have soft bedrock at a depth of 20 to 40 inches, and are intermingled with areas of the major soils

- Soils that have soft bedrock at a depth of 40 to 60 inches, average more rock fragments throughout the profile than the major soils, and are intermingled with areas of the major soils
- Areas of rock outcrop on nose slopes and shoulders

Similar:
- Soils that are similar to the Meadowfield soil but have more clay in the subsoil
- Soils that are similar to the Fairview soil but have less clay in the subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Meadowfield—poorly suited; Fairview—unsuited
Commonly grown crops: None
Management concerns: Equipment limitations and erodibility; Meadowfield—droughtiness and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion by helping to stabilize the soil, control surface runoff, and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations and erodibility; Meadowfield—droughtiness and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and hardwoods
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting; Meadowfield—droughtiness and rooting depth; Fairview—herbicide retention and root disease
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.
- The moderately deep rooting depth of the Meadowfield soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

- The amount of rock fragments in the root zone of the Meadowfield soil makes ball and burlap harvesting difficult.
- The soils in this map unit retain soil-applied herbicides because of their high clay content. The concentration of herbicides may damage future crops.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland

Suitability: Suited

Productivity class: Meadowfield—low, based on chestnut oak as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species

Management concerns: Equipment limitations, erodibility, seedling mortality, and competition from undesirable plants

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Special site preparation, such as harrowing and bedding, reduces seedling mortality, increases early seedling growth, and helps to establish seedlings.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Meadowfield soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited

Management concerns: Depth to bedrock and steepness of slope

Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Poorly suited

Management concerns: Depth to bedrock and steepness of slope

Management measures and considerations:

- Providing a level pad that has a gravel surface improves the suitability of this map unit for tents and other facilities.

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Meadowfield—6s; Fairview—3e

MoE—Meadowfield-Rhodhiss complex, 25 to 60 percent slopes, very stony

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,000 to 1,250 feet
Hillslope profile position: Backslopes and shoulders
Geomorphic component: Side slopes, nose slopes, and head slopes
Shape of areas: Irregular or elongated
Size of areas: 4 to 200 acres

Composition

Meadowfield soil and similar soils: 60 percent
Rhodhiss soil and similar soils: 20 percent
Dissimilar soils: 20 percent

Typical Profile

Meadowfield
Surface layer:
0 to 4 inches—brown gravelly sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown gravelly sandy loam

Subsoil:
10 to 20 inches—strong brown very gravelly sandy clay loam
20 to 27 inches—dark yellowish brown very gravelly sandy clay loam

Underlying material:
27 to 30 inches—weathered sillimanite schist that has clay loam in cracks
30 to 60 inches—unweathered sillimanite schist bedrock

Rhodhiss
Surface layer:
0 to 3 inches—dark grayish brown sandy loam

Subsurface layer:
3 to 8 inches—dark yellowish brown sandy loam

Subsoil:
8 to 14 inches—strong brown sandy clay loam
14 to 25 inches—yellowish red sandy clay loam
25 to 30 inches—strong brown sandy clay loam

Underlying material:
30 to 49 inches—yellow, strong brown, and olive saprolite that has a sandy loam texture
49 to 60 inches—reddish yellow, dark gray, and olive gray saprolite that has a sandy loam texture

Soil Properties and Qualities

Depth class: Meadowfield—moderately deep; Rhodhiss—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Meadowfield—low; Rhodhiss—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones and cobbles that are an average of 13 inches in diameter and are about 25 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Meadowfield—extremely acid to strongly acid; Rhodhiss—very strongly acid to slightly acid
Parent material: Meadowfield—residuum weathered from felsic high-grade metamorphic rock; Rhodhiss—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Meadowfield—20 to 40 inches to hard bedrock; Rhodhiss—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that have fewer coarse fragments throughout the profile than the Meadowfield soil, have hard bedrock at a depth of 40 to 60 inches, and are on shoulders and nose slopes
- Soils that have fewer coarse fragments throughout the profile than the majors soils, have soft or hard bedrock at a depth of 20 to 40 inches, and are intermingled with areas of the major soils
- Soils that are hard bedrock at a depth of less than 20 inches and are on shoulders and nose slopes

Similar:
- Soils that are similar to the Rhodhiss soil but have more clay in the subsoil
- Soils that are similar to the Meadowfield soil but have soft bedrock at a depth of 20 to 40 inches and hard bedrock at a depth of 40 to 60 inches

Land Use

Dominant uses: Woodland
Other uses: Home sites and pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None

Management concerns: Erodibility and equipment limitations; Meadowfield—rooting depth, tilth, and droughtiness

Management measures and considerations:

- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland

Suitability: Pasture—poorly suited to areas of soils that have slopes from 25 to 50 percent and unsuited to areas that have slopes greater than 50 percent; hayland—unsuited

Commonly grown crops: Tall fescue and clover

Management concerns: Erodibility and equipment limitations; Meadowfield—droughtiness and rooting depth

Management measures and considerations:

- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope makes this map unit difficult to manage for pasture and hayland.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- Using drought-tolerant plants increases productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops

Suitability: Meadowfield—poorly suited; Rhodhiss—suited to areas that have slopes from 25 to 50 percent and unsuited to areas that have slopes greater than 50 percent

Commonly grown crops: A variety of shrubs and hardwoods

Management concerns: Erodibility and equipment limitations; Meadowfield—droughtiness, rooting depth, tilth, and ball and burlap harvesting

Management measures and considerations:

- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use. Some of the less sloping areas, however, may be usable.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.
- The moderately deep rooting depth of the Meadowfield soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- The Meadowfield soil in this map unit is severely limited for ball and burlap harvesting because of the high content of rock fragments in the root zone. A site should be selected on better suited soils.

Woodland

Suitability: Suited to areas that have slopes from 25 to 50 percent and poorly suited to areas that have slopes greater than 50 percent

Productivity class: Meadowfield—low, based on chestnut oak as the indicator species; Rhodhiss—moderately high, based on shortleaf pine as the indicator species

Management concerns: Erodibility, equipment limitations, seedling mortality, hazard of windthrow, and competition from undesirable plants

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Meadowfield soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited to areas that have slopes from 25 to 50 percent and unsuited to areas that have slopes greater than 50 percent
Management concerns: Steepness of slope, depth to bedrock, and large stones
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and large stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Meadowfield—7s; Rhodhiss—7e

MwC—Meadowfield-Woolwine complex, 8 to 15 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,000 to 1,200 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves and upper side slopes
Shape of areas: Long with irregular widths
Size of areas: 4 to 150 acres

Composition

Meadowfield soil and similar soils: 45 percent
Woolwine soil and similar soils: 25 percent
Dissimilar soils: 30 percent

Typical Profile

Meadowfield
Surface layer:
0 to 4 inches—brown gravelly sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown gravelly sandy loam

Subsoil:
10 to 20 inches—strong brown very gravelly sandy clay loam
20 to 27 inches—dark yellowish brown very gravelly sandy clay loam

Underlying material:
27 to 30 inches—weathered sillimanite schist that has clay loam in cracks
30 to 60 inches—unweathered sillimanite schist bedrock

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60—multicolored, weathered sillimanite schist

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Meadowfield—low; Woolwine—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few widely stones and boulders cover less than 0.1 percent of the surface.
Extent of rock outcrops: None
Soil reaction: Meadowfield—extremely acid to strongly acid; Woolwine—extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Meadowfield—20 to 40 inches to hard bedrock; Woolwine—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Fairview soils, which do not have bedrock within a depth of 60 inches and are intermingled with areas of the major soils in smooth areas
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

- Soils that have hard bedrock at a depth of 20 inches and are on shoulders and nose slopes
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

Similar:

- Soils that are similar to the Meadowfield soil but have soft bedrock at a depth of 20 to 40 inches and hard bedrock at a depth of 40 to 60 inches

Land Use

Dominant uses: Pasture, hayland, and woodland

Agricultural Development

Cropland

Suitability: Meadowfield—poorly suited; Woolwine—suited
Commonly grown crops: Small grain
Management concerns: Erodibility, droughtiness, and rooting depth
Management measures and considerations:

- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Using conservation tillage and maintaining maximum ground cover help to enhance rainfall infiltration and reduce moisture loss caused by evaporation.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Pasture and hayland

Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue, orchardgrass, and clover
Management concerns: Erodibility, equipment limitations, droughtiness, and rooting depth
Management measures and considerations:

- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Using drought-tolerant plants increases productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops

Suitability: Suited
Commonly grown crops: Apples and a variety of shrubs and hardwoods
Management concerns: Erodibility, ball and burlap harvesting, and tilth
Management measures and considerations:

- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.
- The moderately deep rooting depth of the soils in this map unit makes them difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

- Soils in this map unit are severely limited for ball and burlap harvesting because of the high content of rock fragments in the root zone.
- The high content of rock fragments on the soil surface makes these soils difficult to till.

Woodland

Suitability: Well suited
Productivity class: Meadowfield—low, based on chestnut oak as the indicator species; Woolwine—moderately high, based on shortleaf pine as the indicator species
Management concerns: Hazard of windthrow and competition from undesirable plants
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Productivity is limited because of the moderately deep rooting depth of these soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock, seepage, low strength, and steepness of slope
Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.
- Providing a level pad that has a gravel surface for picnic tables and other facilities improves the performance of the soil.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Meadowfield—6s; Woolwine—4e

NkA—Nikwasi loam, 0 to 3 percent slopes, frequently flooded

Setting

Landscape: Blue Ridge mountains
Landform: Flood plains

Elevation: 2,800 to 4,100 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Irregular
Size of areas: 1 to 100 acres

Composition

Nikwasi soil and similar soils: 75 percent
Dissimilar soils: 25 percent

Typical Profile

Surface layer:
0 to 10 inches—black loam
10 to 24 inches—black loam

Underlying material:
24 to 30 inches—dark gray gravelly sandy loam
30 to 62 inches—dark gray very gravelly sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid
Available water capacity: Low
Depth to seasonal high water table: 0 to 0.5 foot from November through April
Flooding: Frequent for very brief periods
Shrink-swell potential: Low
Slope class: Nearly level
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Alluvium derived from felsic to mafic, low-grade to high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Somewhat poorly drained soils that are on the outer edges of map units away from the stream channels
- Moderately well drained soils that are on the outer edges of map units away from the stream channels
- Well drained soils that are colluvial in nature, have more clay than the Nikwasi soil, and are on raised positions and benches adjacent to the Nikwasi soil
- Poorly drained soils that have a strata with a high content of rock fragments at a depth of less than 20 inches
- Poorly drained soils that have more clay in the subsoil than the Nikwasi soil and are on low-lying depressions in backwater areas

Similar:
- Nikwasi soils that have fine sandy loam and sandy loam surface textures
- Poorly drained soils that have a surface layer less than 24 inches thick that is thin or dark
- Nikwasi soils that have slopes greater than 3 percent

- Soils that are similar to the Nikwasi soil but flood occasionally and are on slightly raised positions
- Soils that are similar to the Nikwasi soil but have thick organic layers over the mineral layers
- Nikwasi soils that have a recent sandy overwash

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Wetness and flooding
Management measures and considerations:
- This map unit is severely limited for crop production because of wetness and flooding. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Flooding, wetness, herbicide retention, soil fertility, nutrient leaching, and erodibility
Management measures and considerations:
- Harvesting hay crops as soon as possible is a good way to reduce the risk of damage from flooding.
- Flooding may pose a hazard to livestock.
- Maintaining existing drainageways and ditches helps to remove excess water.
- The soil in this map unit retains soil-applied herbicides because of the high content of organic matter on the soil surface. The concentration of herbicides may damage future crops.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- Using split applications increases the effectiveness of fertilizer and herbicides.
- A rotational grazing system, a well-planned clipping and harvesting schedule, and removal of livestock from pastures in time to allow forage plants to recover before winter dormancy help to maintain pastures and increase productivity.
- Fencing livestock away from creeks and streams helps to prevent streambank erosion and sedimentation.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Wetness and flooding
- This map unit is severely limited for orchard and ornamental crops because of wetness and flooding. A site should be selected on better suited soils.

Woodland
Suitability: Poorly suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Wetness and flooding
Management measures and considerations:
- This map unit is severely limited for timber production because of wetness and flooding. A site should be selected on better suited soils.

Urban Development

Suitability: Unsuited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for urban uses because of flooding and wetness. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Depth to a saturated zone and flooding
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 6w

NnD—Northcove very cobbly loam, 15 to 30 percent slopes, rubbly

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Drainageways, coves, and structural benches
Elevation: 1,400 to 3,700 feet
Hillslope profile position: Shoulders, backslopes, and footslopes
Geomorphic component: Mountain flanks, mountain bases, head slopes, and base slopes
Shape of areas: Irregular or oblong
Size of areas: 5 to 25 acres

Composition

Northcove soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—very dark brown very cobbly loam
6 to 9 inches—very dark grayish brown very cobbly loam

Subsoil:
9 to 60 inches—yellowish brown very cobbly loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.

Rock fragments on the surface: Rubbly; about 25 percent of the surface is covered with stones that are an average of 12 inches across and are about 4.5 feet apart and boulders that range from 3 to 4 feet across and are about 90 feet apart.
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid
Parent material: Colluvium derived from low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Maymead and Tate soils, which have fewer rock fragments throughout the profile than the Northcove soil and are on benches or terraces and along edges of colluvium
- Ostin soils, which have more sand throughout the profile than the Northcove soil, are frequently flooded, and are on flood plains

Similar:
- Soils that are similar to the Northcove soil but formed in colluvium from high-grade metamorphic rocks such as gneiss and granite
- Soils that are similar to the Northcove soil but have a dark surface layer that is more than 10 inches thick

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: High, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome the limitations to road and trail construction caused by the large number of stones and boulders on the surface.
- The high content of rock fragments in the soil makes it difficult to replant and establish seedlings.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.

Urban Development

Suitability: Poorly suited
Management concerns: Large stones and steepness of slope
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 7s

NnE—Northcove very cobbly loam, 30 to 50 percent slopes, rubbly

Setting

Landscape: Blue Ridge mountains
Landform: Drainageways, coves, and structural benches
Elevation: 2,200 to 4,200 feet
Hillslope profile position: Shoulders, backslopes, and footslopes
Geomorphic component: Mountain flanks, mountain bases, head slopes, and base slopes
Shape of areas: Generally irregular or oblong
Size of areas: 5 to 50 acres

Composition

Northcove soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—very dark brown very cobbly loam
6 to 9 inches—very dark grayish brown very cobbly loam

Subsoil:
9 to 60 inches—yellowish brown very cobbly loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Rubbly; about 25 percent of the surface is covered with stones that are an average of 12 inches across and are about 4.5 feet apart and boulders that range from 3 to 4 feet across and are about 90 feet apart.
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid
Parent material: Colluvium derived from low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Maymead soils, which have fewer rock fragments throughout the profile than the Northcove soil and are on benches or terraces and along edges of colluvium

Similar:
- Soils that are similar to the Northcove soil but are formed in colluvium from high-grade metamorphic rocks such as gneiss and granite
- Soils that are similar to the Northcove soil but have a dark surface layer that is more than 10 inches thick

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations

Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Woodland
Suitability: Suited
Productivity class: High, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome the limitations to road and trail construction caused by the large number of stones and boulders on the surface.
- The high content of rock fragments in the soil makes it difficult to replant and establish seedlings.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.

Urban Development

Suitability: Poorly suited
Management concerns: Large stones and steepness of slope
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and surface stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: 7s

PaC2—Pacolet sandy clay loam, 8 to 15 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,080 to 1,300 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves and side slopes
Shape of areas: Irregular
Size of areas: 10 to 40 acres

Composition

Pacolet soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsoil:
7 to 28 inches—red clay that has reddish yellow mottles
28 to 44 inches—red clay loam that has reddish yellow and pink mottles

Underlying material:
44 to 60 inches—yellowish red sandy loam saprolite that has reddish yellow and dark reddish brown mottles
60 to 72 inches—yellowish red sandy loam saprolite that has reddish yellow, dark reddish brown, and reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Random areas of the Woolwine soil, which has soft bedrock at a depth of 20 to 40 inches

Similar:
- Soils that are similar to the Pacolet soil but have a thicker subsoil
- Soils that are similar to the Pacolet soil but have more mica in the subsoil

Land Use

Dominant uses: Cropland, pasture, and hayland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: Corn, small grain, and soybeans
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface helps to minimize clodding and crusting and maximize water infiltration.
- Tilling only during dry periods helps to prevent clodding and crusting and increases water infiltration.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility, equipment limitations, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Erodibility, rooting depth, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- The soil in this map unit retains soil-applied herbicides because of its high clay content. The concentration of herbicides may damage future crops.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on loblolly pine as the indicator species

Management concerns: Equipment limitations and seedling mortality
Management measures and considerations:
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.
- Special site preparation, such as harrowing and bedding, reduces seedling mortality, increases early seedling growth, and helps to establish seedlings.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: High clay content, restricted permeability, steepness of slope, and low strength
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Grading or shaping land prior to construction reduces damage from surface water and helps to control erosion.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping and picnic facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.
- This map unit is severely limited for playgrounds because of the steepness of the slope. A site should be selected on better suited soils.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 6e

PaD2—Pacolet sandy clay loam, 15 to 25 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,060 to 1,280 feet
Hillslope profile position: Backslopes
Geomorphic component: Side slopes
Shape of areas: Elongated and generally narrow
Size of areas: 4 to 50 acres

Composition

Pacolet soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsoil:
7 to 28 inches—red clay that has reddish yellow mottles
28 to 44 inches—red clay loam that has reddish yellow and pink mottles

Underlying material:
44 to 60 inches—yellowish red sandy loam saprolite that has reddish yellow and dark reddish brown mottles
60 to 72 inches—yellowish red sandy loam saprolite that has reddish yellow, dark reddish brown, and reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Random areas of soils that have hard bedrock at a depth of less than 40 inches

Similar:
- Pacolet soils that have a sandy loam surface layer
- Pacolet soils that have a gravelly sandy loam surface layer
- Soils that are similar to the Pacolet soil but have a yellow or a brown subsoil
- Soils that are similar to the Pacolet soil but have more mica in the subsoil

Land Use

Dominant use: Woodland
Other uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and soil fertility

Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility, equipment limitations, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Erodibility, equipment limitations, ball and burlap harvesting, and root disease
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on loblolly pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.
- Special site preparation, such as harrowing and bedding, reduces seedling mortality, increases early seedling growth, and helps to establish seedlings.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: High clay content, restricted permeability, steepness of slope, and low strength
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for camp areas, picnic areas, and playgrounds because of the steepness of the slope. A site should be selected on better suited soils.
- Constructing roads and trails on the contour and placing facilities in the less sloping areas of the map unit help overcome the limitations caused by the slope.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: 7e

PnC—Pineola gravelly loam, 8 to 15 percent slopes, stony

Setting

Landscape: Blue Ridge mountains
Landform: Mountains and mountain slopes
Elevation: 3,600 to 4,000 feet
Hillslope profile position: Summits, shoulders, and upper backslopes
Geomorphic component: Mountaintops and mountain flanks
Shape of areas: Irregular
Size of areas: 6 to 150 acres

Composition

Pineola soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly loam

Subsoil:
7 to 20 inches—yellowish brown clay loam
20 to 26 inches—brownish yellow loam

Underlying material:
26 to 32 inches—brownish yellow and very pale brown gravelly loam saprolite
32 to 61 inches—multicolored, weathered metasiltstone

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained

Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with widely scattered stones and cobbles that range from 10 to 24 inches in diameter and are from 25 to 75 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Soils that have bedrock at a depth of more than 60 inches and are in scattered areas throughout the map unit
- Soils that have soft or hard bedrock at a depth of less than 20 inches, are on shoulders, and are in scattered areas throughout the map unit
- Whiteoak soils, which are colluvial in nature, have bedrock at a depth of more than 60 inches, and are in saddles and on toe slopes
- Random areas of rock outcrops

Similar:
- Pineola soils that have a fine sandy loam or sandy loam surface texture in the fine earth fraction
- Pineola soils that have a lighter-colored surface layer or have a thinner dark surface layer
- Soils that are similar to the Pineola soil but have less clay in the subsoil
- Soils that are similar to the Pineola soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the Pineola soil but have soft bedrock at a depth of 40 to 60 inches

Land Use

Dominant uses: Woodland
Other uses: Nursery stock and Christmas trees

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.

- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the soil.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Fraser fir, rhododendron, and hemlock
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Woodland
Suitability: Well suited
Productivity class: High, based on eastern white pine as the indicator species
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of the soil.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, depth to bedrock, large stones, and soil fertility
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

- The local Health Department should be contacted for guidance on sanitary facilities.
- This map unit is severely limited for sewage lagoons because of the steepness of the slope and depth to bedrock. A site should be selected on better suited soils.
- This map unit is severely limited for sanitary landfills. A site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- The soft bedrock underlying the Pineola soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Carefully planning locations for roads helps to minimize the need for removal of large stones.
- Using lime, fertilizer, mulch, and irrigation water helps to establish lawns and landscaping plants.
- Soils in this map unit retain soil-applied herbicides because of the high clay content of the soil. The concentration of herbicides may be damaging to landscaping plants.

Recreational Development

Suitability: Poorly suited
Management concerns: Soil fertility, steepness of slope, and small stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize the production of vegetative cover.
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Removing or relocating large stones, as necessary, improves the performance of this map unit.

Interpretive Group

Land capability classification: 4e

PnD—Pineola gravelly loam, 15 to 30 percent slopes, stony

Setting

Landscape: Blue Ridge mountains
Landform: Mountains
Elevation: 3,600 to 3,960 feet
Hillslope profile position: Summits, shoulders, and upper backslopes
Geomorphic component: Mountaintops and mountain flanks
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Pineola soil and similar soils: 85 percent
Dissimilar soils: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly loam

Subsoil:
7 to 20 inches—yellowish brown clay loam
20 to 26 inches—brownish yellow loam

Underlying material:
26 to 32 inches—brownish yellow and very pale brown gravelly loam saprolite
32 to 61 inches—multicolored, weathered metasiltstone

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 of the surface is covered with widely scattered stones and cobbles that range from 10 to 24 inches in diameter and are from 25 to 75 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Soils that have bedrock at a depth of more than 60 inches and are in scattered areas throughout the map unit
- Soils that have soft or hard bedrock at a depth of less than 20 inches, are on shoulders, and are in scattered areas throughout the map unit
- Whiteoak soils, which are colluvial in nature, have bedrock at a depth of more than 60 inches, and are in saddles and on toe slopes
- Random areas of rock outcrops

Similar:
- Pineola soils that have a fine sandy loam or sandy loam surface texture in the fine earth fraction
- Pineola soils that have a lighter-colored surface layer or a thinner dark surface layer
- Soils that are similar to the Pineola soil but have less clay in the subsoil
- Soils that are similar to the Pineola soil but have hard bedrock at a depth of 20 to 40 inches
- Soils that are similar to the Pineola soil but have soft bedrock at a depth of 40 to 60 inches

Land Use

Dominant uses: Woodland
Other uses: Nursery stock and Christmas trees

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the soil.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Fraser fir, rhododendron, and hemlock
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- The soil in this map unit retains soil-applied herbicides because of its high clay content. The concentration of herbicides may damage future crops.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland

Suitability: Suited
Productivity class: High, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, and hazard of windthrow
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Productivity is limited because of the moderately deep rooting depth of the soil.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, depth to bedrock, and soil fertility
Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- The soft bedrock underlying the Pineola soil does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.
- Using lime, fertilizer, mulch, and irrigation water helps to establish lawns and landscaping plants.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, soil fertility, and small stones
Management measures and considerations:

- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize the production of vegetative cover.

Interpretive Group

Land capability classification: 6e

Qu—Pits, quarry

This miscellaneous map unit consists of areas where all the soil material has been removed and the underlying rock has been taken out and crushed for gravel. The largest quarry is on the Catawba River, north of Morganton. The areas around the quarry pit generally are covered with piles of rock and spoil material.

Setting

Landscape: Blue Ridge mountains and Piedmont uplands and river valleys
Elevation: Variable
Landform: Ridges, interfluves, side slopes, terraces, and flood plains
Landform position: Summits, shoulders, backslopes, footslopes, risers, and treads
Shape of areas: Irregularly rounded
Size of areas: 5 to 75 acres in size

Composition

Pits, quarry: 95 percent
Dissimilar soils: 5 percent

Soil Properties and Qualities

The properties and qualities of the original soil material have been greatly altered by the rock mining or quarrying operation. The original landscape and topography and the original infiltration and drainage patterns have been changed.

Minor Components

Dissimilar:
- Unexcavated areas and spoil areas, where soil material, rock, and other spoil have been dumped, may be included around the excavated site.

Use and Management

Uses: Gravel and rock mining

This map unit is not used for crops, pasture, hayland, woodland, or urban development. The spoil areas have very little vegetation and are a source of sediment. The steepness of the slope on the cut or fill areas is a major limitation, and erosion is a hazard.

Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Interpretive Group

Land capability classification: 8s

RhD—Rhodhiss sandy loam, 15 to 25 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,000 to 1,300 feet
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Side slopes, nose slopes, and head slopes
Shape of areas: Long and relatively narrow or irregular
Size of areas: 4 to about 100 acres

Composition

Rhodhiss soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown sandy loam

Subsurface layer:
3 to 8 inches—dark yellowish brown sandy loam

Subsoil:
8 to 14 inches—strong brown sandy clay loam
14 to 25 inches—yellowish red sandy clay loam
25 to 30 inches—strong brown sandy clay loam

Underlying material:
30 to 49 inches—yellow, strong brown, and olive saprolite that has a sandy loam texture
49 to 60 inches—reddish yellow, dark gray, and olive gray saprolite that has a sandy loam texture

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Woolwine soils, which have predominantly more clay in the subsoil than the Rhodhiss soil, have soft bedrock at a depth of 20 to 40 inches, and are on side slopes in some areas, especially in areas of sillimanite schist geology

Similar:
- Soils that are similar to the Rhodhiss soil but have more clay in the subsoil

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: Corn

Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Resource management systems, such as terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and soil conserving crops in rotation, reduce soil erosion and help control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Erodibility, equipment limitations, and root disease
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on shortleaf pine as the indicator species
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope and seepage
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

- The local Health Department should be contacted for guidance on sanitary facilities.
- Proper compaction and the use of proper liner material can prevent unwanted seepage from sewage lagoons and sanitary landfills.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep eroding soil on site.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: 6e

RhE—Rhodhiss sandy loam, 25 to 45 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 950 to 1,260 feet
Hillslope profile position: Backslopes
Geomorphic component: Side slopes, nose slopes, and head slopes
Shape of areas: Long and relatively narrow or irregular
Size of areas: 4 to about 100 acres

Composition

Rhodhiss soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown sandy loam

Subsurface layer:
3 to 8 inches—dark yellowish brown sandy loam

Subsoil:
8 to 14 inches—strong brown sandy clay loam
14 to 25 inches—yellowish red sandy clay loam
25 to 30 inches—strong brown sandy clay loam

Underlying material:
30 to 49 inches—yellow, strong brown, and olive saprolite that has a sandy loam texture
49 to 60 inches—reddish yellow, dark gray, and olive gray saprolite that has a sandy loam texture

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Woolwine soils, which have predominantly more clay in the subsoil than the Rhodhiss soil, have soft bedrock at a depth of 20 to 40 inches, and are on side slopes in some areas, especially in areas of sillimanite schist geology
- Cliffield soils, which have hard bedrock at a depth of 20 to 40 inches, have more rock fragments throughout the profile than the Rhodhiss soil, and are intermingled with areas of the Rhodhiss soil on side slopes.
- Soils that have soft bedrock at a depth of 20 to 40 inches and are intermingled with areas of the Rhodhiss soil on side slopes

Similar:
- Soils that are similar to the Rhodhiss soil but have more clay in the subsoil

Land Use

Dominant use: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, and root disease
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on shortleaf pine as the indicator species
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, seepage, and cutbanks caving
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- This map unit is severely limited for most recreational uses because of the steepness of the slope. A site should be selected on better suited soils.
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.

Interpretive Group

Land capability classification: 7e

RoE—Rhodhiss-Bannertown complex, 25 to 50 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges

Elevation: 950 to 1,250 feet
Hillslope profile position: Backslopes and shoulders
Geomorphic component: Side slopes and nose slopes
Shape of areas: Generally long and narrow with irregular widths
Size of areas: 5 to 50 acres

Composition

Rhodhiss soil and similar soils: 50 percent
Bannertown soil and similar soils: 30 percent
Dissimilar soils: 20 percent

Typical Profile

Rhodhiss
Surface layer:
0 to 3 inches—dark grayish brown sandy loam

Subsurface layer:
3 to 8 inches—dark yellowish brown sandy loam

Subsoil:
8 to 14 inches—strong brown sandy clay loam
14 to 25 inches—yellowish red sandy clay loam
25 to 30 inches—strong brown sandy clay loam

Underlying material:
30 to 49 inches—yellow, strong brown, and olive saprolite that has a sandy loam texture
49 to 60 inches—reddish yellow, dark gray, and olive gray saprolite that has a sandy loam texture

Bannertown
Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 6 inches—yellowish brown loam
6 to 11 inches—dark yellowish brown loam
11 to 24 inches—strong brown gravelly sandy loam

Underlying material:
24 to 31 inches—strong brown gravelly sandy loam

Bedrock:
31 inches—unweathered gneiss

Soil Properties and Qualities

Depth class: Rhodhiss—very deep; Bannertown—moderately deep
Drainage class: Rhodhiss—well drained; Bannertown—somewhat excessively drained
Permeability: Rhodhiss—moderate; Bannertown—moderately rapid
Available water capacity: Rhodhiss—moderate; Bannertown—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones cover less than 0.01 percent of the surface.

Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Rhodhiss—very strongly acid to slightly acid; Bannertown—extremely acid to moderately acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Rhodhiss—more than 60 inches to soft or hard bedrock; Bannertown—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Meadowfield soils, which have more rock fragments throughout the profile than the major soils and are intermingled with areas of the major soils
- Woolwine soils, which have more clay in the subsoil than the major soils, have soft bedrock at a depth of 20 to 40 inches, and are intermingled with areas of the major soils
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils
- Soils that have hard bedrock at a depth of less than 20 inches and generally are on shoulders and nose slopes

Similar:
- Soils that are similar to the Rhodhiss soil but have more clay in the subsoil
- Soils that are similar to the Bannertown soil but have more clay in the subsoil
- Soils that are similar to the Bannertown soil but have soft bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None

Management concerns: Erodibility and equipment limitations; Bannertown—ball and burlap harvesting

Management measures and considerations:

- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for ornamental and orchard crops because the steepness of the slope helps to cause erosion and limits equipment use.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Restricting ball and burlap harvesting to wet periods helps to prevent fracture of the ball and separation of the soil from the roots caused by low moisture and the low content of clay in the Bannertown soil.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland

Suitability: Suited

Productivity class: Rhodhiss—moderately high, based on shortleaf pine as the indicator species; Bannertown—high, based on eastern white pine as the indicator species

Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Maintaining surface litter increases water infiltration.
- Planting during wet periods or when the soil is moist for extended periods helps to increase seedling survival rates.
- Productivity is limited because of the moderately deep rooting depth of the Bannertown soil.

Urban Development

Suitability: Poorly suited

Management concerns: Steepness of slope, depth to bedrock, seepage, and cutbanks caving

Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

- This map unit is severely limited for recreational uses because of the steepness of the slope. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Rhodhiss—7e; Bannertown—7e

RsE—Rion-Cliffside complex, 25 to 60 percent slopes, very stony

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,080 to 1,260 feet
Hillslope profile position: Backslopes
Geomorphic component: Side slopes
Shape of areas: Elongated
Size of areas: 10 to 50 acres

Composition

Rion soil and similar soils: 50 percent
Cliffside soil and similar soils: 40 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsoil:
8 to 22 inches—brown gravelly sandy clay loam
22 to 34 inches—yellowish red gravelly sandy clay loam
34 to 44 inches—strong brown gravelly clay loam that has reddish yellow mottles

Underlying material:
44 to 60 inches—strong brown gravelly sandy loam that has reddish yellow mottles

Cliffside
Surface layer:
0 to 7 inches—brown very cobbly sandy loam

Subsurface layer:
7 to 16 inches—strong brown very gravelly sandy loam

Subsoil:
16 to 30 inches—yellowish red very gravelly sandy clay loam

Bedrock:
30 to 60 inches—unweathered, slightly fractured sillimanite schist

Soil Properties and Qualities

Depth class: Rion—very deep; Cliffside—moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Rion—low; Cliffside—very low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep

Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1 percent of the surface is covered with stones and cobbles that range from 10 to 18 inches in diameter and are from 5 to 20 feet apart.
Extent of rock outcrops: None
Soil reaction: Rion—very strongly acid or strongly acid, except where lime has been applied; Cliffside—very strongly acid or strongly acid
Parent material: Rion—residuum weathered from felsic high-grade metamorphic or igneous rock; Cliffside—residuum weathered from felsic high-grade metamorphic rock
Depth to bedrock: Rion—more than 60 inches to hard bedrock; Cliffside—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Soils that have hard bedrock at a depth of less than 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the Cliffside soil but have fewer rock fragments in the subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads

helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Maintaining maximum ground cover helps to enhance rainfall infiltration and reduces moisture loss caused by evaporation.
- The moderately deep rooting depth of the Cliffside soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.

Woodland
Suitability: Suited
Productivity class: Rion—moderately high, based on shortleaf pine as the indicator species; Cliffside—moderately high, based on chestnut oak as the indicator species
Management concerns: Rion—erodibility and equipment limitations; Cliffside—erodibility, equipment limitations, and hazard of windthrow
Management measures and considerations:
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Cliffside soil.

Urban Development

Suitability: Poorly suited
Management concerns: Rion—steepness of slope; Cliffside—steepness of slope and depth to bedrock
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Rion—7e; Cliffside—7s

SoC—Soco-Ditney complex, 8 to 15 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains and ridges

Elevation: 1,480 to 4,200 feet
Hillslope profile position: Summits and shoulders
Geomorphic component: Mountaintops and interfluves
Shape of areas: Generally long and narrow with irregular widths
Size of areas: 4 to 150 acres

Composition

Soco soil and similar soils: 50 percent
Ditney soil and similar soils: 40 percent
Dissimilar soils: 10 percent

Typical Profile

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Ditney
Surface layer:
0 to 5 inches—very dark gray fine sandy loam
5 to 7 inches—olive brown fine sandy loam

Subsoil:
7 to 20 inches—brown fine sandy loam
20 to 27 inches—yellowish brown fine sandy loam

Underlying material:
27 to 34 inches—pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles

Bedrock:
34 to 60 inches—unweathered arkose

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Soco—moderate; Ditney—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 0.5 percent of the surface is covered with stones that are an average of 12 inches in diameter and are about 40 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.

Soil reaction: Soco—extremely acid to strongly acid, except where lime has been applied; Ditney—extremely acid to strongly acid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ditney—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Unicoi soils, which have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of less than 20 inches, and generally are on shoulders and nose slopes

Similar:
- Soils that are similar to the major soils but have soft bedrock at a depth of slightly more than 40 inches
- Soils that are similar to the major soils but have more clay in the subsoil

Land Use

Dominant uses: Woodland
Other uses: Nursery crops

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Using drought-tolerant plants increases productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Fraser fir, rhododendron, and hemlock
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Restricting ball and burlap harvesting to wet periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and a low content of clay.

Woodland
Suitability: Well suited
Productivity class: Soco—high, based on eastern white pine as the indicator species; Ditney—moderately high, based on eastern white pine as the indicator species
Management concerns: Hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Surface stones may limit the use of equipment in areas of this map unit.
- Reducing the remaining canopy during site preparation increases natural hardwood regeneration.
- Periodically harvesting windthrown trees that fell as a result of high winds and a limited rooting depth can increase productivity in areas of these soils.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Depth to bedrock, steepness of slope, seepage, frost action, and surface stones
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.
- The soft bedrock underlying the Soco soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes for local roads and streets.
- Using lime, fertilizer, mulch, and irrigation water helps to establish lawns and landscaping plants.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope, acidity, and surface stones
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface for picnic tables and other facilities improves the performance of the soil.
- This map unit is severely limited for playgrounds. A site should be selected on better suited soils.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Soco—4e; Ditney—4e

SoD—Soco-Ditney complex, 15 to 30 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,400 to 4,200 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, mountaintops, mountain flanks, side slopes, and nose slopes
Shape of areas: Irregular
Size of areas: 5 to 200 acres

Composition

Soco soil and similar soils: 50 percent
Ditney soil and similar soils: 45 percent
Dissimilar soils: 5 percent

Typical Profile

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Ditney
Surface layer:
0 to 5 inches—very dark gray fine sandy loam
5 to 7 inches—olive brown fine sandy loam

Subsoil:
7 to 20 inches—brown fine sandy loam
20 to 27 inches—yellowish brown fine sandy loam

Underlying material:
27 to 34 inches—pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles

Bedrock:
34 to 60 inches—unweathered arkose

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Soco—moderate; Ditney—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 0.5 percent of the surface is covered with stones that are an average of 12 inches in diameter and are about 40 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Soco—extremely acid to strongly acid, except where lime has been applied; Ditney—extremely acid to strongly acid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ditney—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Unicoi soils, which have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of less than 20 inches, and generally are on shoulders and nose slopes
- Soils that have bedrock at a depth of more than 60 inches and generally are intermingled with areas of the major soils in smooth areas

Similar:
- Soils that have soft bedrock at a depth of more than 40 inches or have more clay in the subsoil than the major soils

Land Use

Dominant uses: Woodland
Other uses: Nursery crops

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations

Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and surface stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Using split applications increases the effectiveness of fertilizer and herbicides.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Fraser fir, rhododendron, and hemlock
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Using split applications increases the effectiveness of fertilizer and herbicides.
- Restricting ball and burlap harvesting to wet periods helps to prevent fracture of the ball and separation of the soil from the roots caused by low moisture and the low content of clay in the soils.

Woodland
Suitability: Suited
Productivity class: Soco—high, based on eastern white pine as the indicator species; Ditney—moderately high, based on eastern white pine as the indicator species
Management concerns: Erodibility, equipment limitations, seedling mortality, and hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.

- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- The high content of rock fragments in the soil makes it difficult to replant and establish seedlings.
- Productivity is limited because of the moderately deep rooting depth of these soils.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, depth to bedrock, and seepage
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.
- The local Health Department should be contacted for guidance on sanitary facilities.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, acidity, and surface stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Soco—6e; Ditney—6e

SoE—Soco-Ditney complex, 30 to 50 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,400 to 4,200 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, narrow interfluves, side slopes, nose slopes, and head slopes
Shape of areas: Irregular
Size of areas: 10 to 500 acres

Composition

Soco soil and similar soils: 65 percent
Ditney soil and similar soils: 30 percent
Dissimilar soils: 5 percent

Typical Profile

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Ditney
Surface layer:
0 to 5 inches—very dark gray fine sandy loam
5 to 7 inches—olive brown fine sandy loam

Subsoil:
7 to 20 inches—brown fine sandy loam
20 to 27 inches—yellowish brown fine sandy loam

Underlying material:
27 to 34 inches—pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles

Bedrock:
34 to 60 inches—unweathered arkose

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Soco—moderate; Ditney—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones that are an average of 12 inches in diameter and are about 40 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Soco—extremely acid to strongly acid, except where lime has been applied; Ditney—extremely acid to strongly acid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ditney—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Unicoi soils, which have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of less than 20 inches, and generally are on nose slopes
- Soils that have bedrock at a depth of more than 60 inches and generally are interspersed with areas of the major soils in smooth areas

Similar:
- Soils that are similar to the major soils but have soft bedrock at a depth of slightly more than 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility, equipment limitations, and rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of these soils.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Fraser fir, rhododendron, and hemlock
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the soils in this map unit makes them difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Restricting ball and burlap harvesting to wet periods helps to prevent fracture of the ball and separation of the soil from the roots caused by low moisture and the low content of clay in the soils.

Woodland

Suitability: Suited
Productivity class: Soco—high, based on eastern white pine as the indicator species; Ditney—moderately high, based on eastern white pine as the indicator species
Management concerns: Erodibility and equipment limitations; Ditney—seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Surface stones may limit the use of equipment in areas of this map unit.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.
- Periodically harvesting windthrown trees increases the productivity of these shallow soils.
- Maintaining surface litter increases the infiltration of water and reduces seedling mortality.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, depth to bedrock, and seepage
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, acidity, and surface stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Soco—7e; Ditney—7e

SoF—Soco-Ditney complex, 50 to 80 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains
Landform: Mountains
Elevation: 1,400 to 4,200 feet
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks
Shape of areas: Irregular
Size of areas: 5 to 500 acres

Composition

Soco soil and similar soils: 55 percent
Ditney soil and similar soils: 35 percent
Dissimilar soils: 10 percent

Typical Profile

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Ditney
Surface layer:
0 to 5 inches—very dark gray fine sandy loam
5 to 7 inches—olive brown fine sandy loam

Subsoil:
7 to 20 inches—brown fine sandy loam
20 to 27 inches—yellowish brown fine sandy loam

Underlying material:
27 to 34 inches—pale yellow loamy fine sand saprolite that has yellowish brown and pale yellow mottles

Bedrock:
34 to 60 inches—unweathered arkose

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Soco—moderate; Ditney—low
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.1 percent of the surface is covered with stones that are an average of 12 inches in diameter and are about 40 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Soco—extremely acid to strongly acid, except where lime has been applied; Ditney—extremely acid to strongly acid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Ditney—20 to 40 inches to hard bedrock

Minor Components

Dissimilar:
- Unicoi soils, which have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of less than 20 inches, and are intermingled with areas of the major soils
- Maymead soils, which are formed in colluvium and are in small concave areas on lower side slopes or footslopes
- Northcove soils, which have more rock fragments throughout the profile than the major soils, are formed in colluvium, and are in small concave areas on lower side slopes or footslopes

Similar:
- Soils that are similar to the major soils but have soft bedrock at a depth of slightly more than 40 inches

Land Use

Dominant uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for pasture and hay crop production. A site should be selected on better suited soils.

Orchard and ornamental crops
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for orchard and ornamental crops. A site should be selected on better suited soils.

Woodland
Suitability: Poorly suited
Productivity class: Soco—high, based on eastern white pine as the indicator species; Ditney—moderately high, based on eastern white pine as the indicator species
Management concerns: Erodibility and equipment limitations; Ditney—seedling mortality
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.

- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Using cable logging methods helps to overcome equipment limitations and helps prevent the acceleration of erosion caused by the construction of roads and skid trails and the disturbance of the forest floor caused by heavy machinery.
- Planting during wet periods or when the soil is moist for extended periods of time increases seedling survival rates.
- Productivity is limited because of the moderately deep rooting depth of these soils.

Urban Development

Suitability: Unsuited
Management concerns: Steepness of slope, depth to bedrock, and seepage
Management measures and considerations:
- This map unit has severe limitations for most urban uses. A site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope, acidity, and surface stones
Management measures and considerations:
- This map unit is severely limited for recreational development because of the steepness of the slope and rock fragments on the surface. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Soco—7e; Ditney—7e

SsC—Stecoah-Soco complex, 8 to 15 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains and spurs
Elevation: 2,500 to 3,850 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and upper mountain flanks
Shape of areas: Mostly long and narrow or irregular
Size of areas: 5 to 50 acres

Composition

Stecoah soil and similar soils: 80 percent
Soco soil and similar soils: 15 percent
Dissimilar soils: 5 percent

Typical Profile

Stecoah
Surface layer:
0 to 2 inches—very dark brown fine sandy loam

Subsoil:
2 to 14 inches—light olive brown fine sandy loam
14 to 27 inches—brownish yellow fine sandy loam
27 to 40 inches—brownish yellow loam

Underlying material:
40 to 49 inches—light gray silt loam
49 to 60 inches—weathered arkose

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Soil Properties and Qualities

Depth class: Stecoah—deep; Soco—moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with stones that are an average of 10 inches across and are about 70 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Stecoah—very strongly acid or strongly acid, except where lime has been applied; Soco—extremely acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Stecoah—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock; Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Nikwasi soils, which are poorly drained and are on flood plains
- Rock outcrops, which are mainly on shoulders

Similar:
- Soils that are similar to the Stecoah soil but have soft bedrock at a depth of more than 60 inches
- Soils that are similar to the Stecoah soil but have hard bedrock at a depth of 40 to 60 inches
- Soils that are similar to the Soco soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland
Other uses: Pasture and nursery stock

Agricultural Development

Cropland

Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations; Soco—rooting depth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Soco soil.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Pasture and hayland

Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.

Orchard and ornamental crops

Suitability: Well suited
Commonly grown crops: Fraser fir, rhododendron, eastern white pine, and hemlock
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Soco soil makes this map unit difficult to manage for ornamental and orchard crops because of the hazard of windthrow.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.

Woodland

Suitability: Well suited
Productivity class: Stecoah—very high, based on eastern white pine as the indicator species; Soco—high, based on eastern white pine as the indicator species
Management concerns: Soco—hazard of windthrow

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Productivity is limited because of the moderately deep rooting depth of the Soco soil.

Urban Development

Suitability: Poorly suited
Management concerns: Stecoah—steepness of slope, seepage, and soil fertility; Soco—steepness of slope, depth to bedrock, and seepage
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and acidity
Management measures and considerations:
- Applying lime and fertilizer according to recommendations from soil tests improves performance of the soil and helps to vegetate open areas and maintain the stability of the soil.
- Providing a level pad that has a gravel surface improves the suitability of this map unit for tents and other facilities.
- Constructing roads and trails on the contour and placing facilities in the less sloping areas of the map unit help overcome the limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Stecoah—4e; Soco—4e

SsD—Stecoah-Soco complex, 15 to 30 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation: 1,600 to 3,920 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Shape of areas: Mostly long and narrow or irregular
Size of areas: 5 to 50 acres

Composition

Stecoah soil and similar soils: 50 percent
Soco soil and similar soils: 40 percent
Dissimilar soils: 10 percent

Typical Profile

Stecoah
Surface layer:
0 to 2 inches—very dark brown fine sandy loam

Subsoil:
2 to 14 inches—light olive brown fine sandy loam
14 to 27 inches—brownish yellow fine sandy loam
27 to 40 inches—brownish yellow loam

Underlying material:
40 to 49 inches—light gray silt loam
49 to 60 inches—weathered arkose

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Soil Properties and Qualities

Depth class: Stecoah—deep; Soco—moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.02 percent of the surface is covered with stones that are an average of 10 inches across and are about 70 feet apart.
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Stecoah—very strongly acid or strongly acid, except where lime has been applied; Soco—extremely acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Stecoah—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock; Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Rock outcrops, which are mainly on shoulders

Similar:
- Soils that are similar to the Stecoah soil but have soft bedrock at a depth of more than 60 inches
- Soils that are similar to the Soco soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland
Other uses: Pasture and nursery stock

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations; Soco—rooting depth
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Fraser fir, rhododendron, eastern white pine, and hemlock
Management concerns: Erodibility, equipment limitations, soil fertility, and ball and burlap harvesting; Soco—rooting depth
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The moderately deep rooting depth of the Soco soil makes this map unit difficult to manage for ornamental and orchard crops because of the hazard of windthrow.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

- Avoiding ball and burlap harvesting during dry periods helps prevent fracture of the ball and separation of the soil from the roots caused by low moisture and high sand content.

Woodland
Suitability: Suited
Productivity class: Stecoah—very high, based on eastern white pine as the indicator species; Soco—high, based on eastern white pine as the indicator species
Management concerns: Erodibility and equipment limitations; Soco—hazard of windthrow
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Productivity is limited because of the moderately deep rooting depth of the Soco soil.

Urban Development

Suitability: Poorly suited
Management concerns: Stecoah—steepness of slope, seepage, and soil fertility; Soco—steepness of slope, depth to bedrock, and seepage
Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and acidity
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.

Interpretive Group

Land capability classification: Stecoah—6e; Soco—6e

SsE—Stecoah-Soco complex, 30 to 50 percent slopes, stony

Setting

Landscape: Blue Ridge mountains and foothills
Landform: Mountains and spurs
Elevation: 2,200 to 3,880 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks

Shape of areas: Broad and irregular
Size of areas: 5 to 400 acres

Composition

Stecoah soil and similar soils: 65 percent
Soco soil and similar soils: 30 percent
Dissimilar soils: 5 percent

Typical Profile

Stecoah
Surface layer:
0 to 2 inches—very dark brown fine sandy loam

Subsoil:
2 to 14 inches—light olive brown fine sandy loam
14 to 27 inches—brownish yellow fine sandy loam
27 to 40 inches—brownish yellow loam

Underlying material:
40 to 49 inches—light gray silt loam
49 to 60 inches—weathered arkose

Soco
Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsurface layer:
5 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 34 inches—yellowish brown gravelly loam

Underlying material:
34 to 48 inches—weathered quartzite

Soil Properties and Qualities

Depth class: Stecoah—deep; Soco—moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony, about 0.02 percent of the surface is covered with stones that are an average of 10 inches across and are about 70 feet apart
Extent of rock outcrops: Nonrocky; a few scattered areas of rock outcrops cover less than 0.1 percent of the surface.
Soil reaction: Stecoah—very strongly acid or strongly acid, except where lime has been applied; Soco—extremely acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Depth to bedrock: Stecoah—40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock; Soco—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Minor Components

Dissimilar:
- Northcove soils, which have more rock fragments throughout the profile than the major soils, formed in colluvium, and are in concave areas and coves on side slopes
- Soils that have a dark surface layer, have more rock fragments throughout the profile than the major soils, formed in colluvium, and are in concave areas such as hollows and coves

Similar:
- Soils that are similar to the Stecoah soil but have soft bedrock at a depth of more than 60 inches
- Soils that are similar to the Soco soil but have hard bedrock at a depth of 20 to 40 inches

Land Use

Dominant uses: Woodland
Other uses: Pasture and nursery stock

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- This map unit is severely limited for crop production because of the steepness of the slope and large stones. A site should be selected on better suited soils.

Pasture and hayland
Suitability: Poorly suited to pasture; unsuited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The construction of trails enables livestock to graze in areas where access is limited.
- Applying lime, fertilizer, seed, and herbicides by hand increases productivity on the steeper parts of the map unit.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: Rhododendron, mountain laurel, and hemlock
Management concerns: Erodibility, equipment limitations, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

- Applying lime, fertilizer, seed, and herbicides by hand or constructing access roads helps to overcome the unsafe operating conditions for power machinery caused by the steepness of the slope.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.
- The slope affects the shape of the plant on the uphill side of the slope.
- Restricting ball and burlap harvesting to wet periods helps to prevent fracture of the ball and separation of the soil from the roots caused by low moisture and the low content of clay in the soils.

Woodland

Suitability: Suited

Productivity class: Stecoah—very high, based on eastern white pine as the indicator species; Soco—high, based on eastern white pine as the indicator species

Management concerns: Erodibility and equipment limitations; Soco—hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Productivity is limited because of the moderately deep rooting depth of the Soco soil.

Urban Development

Suitability: Poorly suited

Management concerns: Stecoah—steepness of slope, seepage, and soil fertility; Soco—steepness of slope, depth to bedrock, and seepage

Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited

Management concerns: Steepness of slope and acidity

Management measures and considerations:

- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.

Interpretive Group

Land capability classification: Stecoah—7e; Soco—7e

TaC—Tate fine sandy loam, 8 to 15 percent slopes

Setting

Landscape: Blue Ridge mountains, South Mountains, Blue Ridge foothills, and Piedmont river valleys

Landform: Drainageways and stream terraces

Elevation: 1,200 to 2,500 feet

Hillslope profile position: Footslopes and toeslopes

Geomorphic component: Mountain bases, base slopes, and terrace risers and treads

Shape of areas: Long and narrow or irregular
Size of areas: 3 to 45 acres

Composition

Tate soil and similar soils: 55 percent
Dissimilar soils: 45 percent

Typical Profile

Surface layer:
0 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 6 inches—dark yellowish brown fine sandy loam

Subsoil:
6 to 15 inches—yellowish brown loam
15 to 26 inches—strong brown clay loam
26 to 50 inches—strong brown gravelly sandy clay loam
50 to 60 inches—strong brown gravelly fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones cover less than 0.01 percent of the surface.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Alluvium and colluvium derived from felsic high-grade metamorphic rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Greenlee and Fontaflora soils, which have more rock fragments throughout the profile than the Tate soil and are on small flood plains
- Colvard soils, which have less clay throughout the profile than the Tate soil and are on flood plains
- Dillard soils and other moderately well drained soils that are in slight depressions
- Other somewhat poorly drained soils that are in depressions

Similar:
- Soils that are similar to the Tate soil but have more clay in the subsoil
- Soils that are similar to the Tate soil but have a redder subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and small grain
Management concerns: None
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations
Management measures and considerations:
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Eastern white pine
Management concerns: None
Management measures and considerations:
- No significant limitations affect orchard or ornamental crop management.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: None
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, steepness of slope, and frost action
Management measures and considerations:
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- This map unit is severely limited for sewage lagoons because of seepage and steepness of slope. A site should be selected on better suited soils.
- This map unit is severely limited for sanitary landfills because of seepage. A site should be selected on better suited soils.
- No significant limitations affect shallow excavations.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit helps improve performance of the soil for dwellings and small commercial buildings.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Using suitable subgrade or base material reduces damage from frost heave.
- No significant limitations affect lawns and landscaping.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Providing a level pad that has a gravel surface for picnic tables and other facilities improves the performance of the soil.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 4e

TeB—Tate fine sandy loam, 2 to 8 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains, South Mountains, Blue Ridge foothills, and Piedmont river valleys
Landform: Drainageways and stream terraces
Elevation: 1,200 to 2,500 feet
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Mountain bases, base slopes, and terrace treads
Shape of areas: Long and narrow or irregular
Size of areas: 3 to 200 acres

Composition

Tate soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 6 inches—dark yellowish brown fine sandy loam

Subsoil:
6 to 15 inches—yellowish brown loam
15 to 26 inches—strong brown clay loam
26 to 50 inches—strong brown gravelly sandy clay loam
50 to 60 inches—strong brown gravelly fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low

Slope class: Gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones that range from 12 to 14 inches in diameter and are about 20 feet apart.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to slightly acid, except where lime has been applied
Parent material: Alluvium and colluvium derived from felsic high-grade metamorphic rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Random areas of soils that have a greater number of coarse fragments throughout the profile than the Tate soil

Similar:
- Soils that are similar to the Tate soil but have more clay in the subsoil
- Soils that are similar to the Tate soil but have a redder subsoil

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and small grain
Management concerns: Equipment limitations
Management measures and considerations:
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations
Management measures and considerations:
- Removing the larger stones and limiting equipment use to the larger open areas help to overcome the equipment limitations.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Eastern white pine
Management concerns: Equipment limitations
Management measures and considerations:
- Removing the larger stones and limiting equipment use to the larger open areas improve soil workability.

Woodland

Suitability: Well suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Equipment limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Surface stones may limit the use of equipment in areas of this map unit.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, steepness of slope, and frost action
Management measures and considerations:
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- This map unit is severely limited for sewage lagoons and sanitary landfills because of seepage. A site should be selected on better suited soils.
- No significant limitations affect shallow excavations.
- No significant limitations affect dwellings.
- Carefully planning locations for roads helps to minimize the need for removal of large stones.
- Using suitable subgrade or base material reduces damage from frost heave.
- No significant limitations affect lawns and landscaping.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- No significant limitations affect camp or picnic areas.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 3e

ToB—Toast sandy loam, 2 to 8 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,080 to 1,500 feet
Hillslope profile position: Summits and shoulders
Geomorphic component: Interfluves and upper side slopes
Shape of areas: Elongated or irregular
Size of areas: 3 to 30 acres

Composition

Toast soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
6 to 12 inches—light olive brown sandy loam

Subsoil:
12 to 22 inches—yellowish brown sandy clay
22 to 30 inches—strong brown clay that has red mottles
30 to 37 inches—strong brown and red sandy clay

Underlying material:
37 to 42 inches—brownish yellow and yellowish red sandy clay loam saprolite that has red clay loam bodies
42 to 55 inches—yellowish red and brownish yellow sandy loam saprolite that has red mottles
55 to 60 inches—reddish yellow sandy loam saprolite that has red and pinkish white mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Random areas of soils that have hard bedrock at a depth of 20 to 40 inches and are along ridges

Similar:
- Soil that are similar to the Toast soil but have a red subsoil
- Soils that are similar to the Toast soil but have less clay in the subsoil
- Soils that are similar to the Toast soil but have a thicker, clayey subsoil
- Soils that are similar to the Toast soil but are moderately eroded and have a clay loam or sandy clay loam surface layer

Land Use

Dominant uses: Pasture and hayland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn
Management concerns: No significant limitations
Management measures and considerations:
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue and clover
Management concerns: No significant limitations
Management measures and considerations:
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: None
Management concerns: Root disease and ball and burlap harvesting
Management measures and considerations:
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on shortleaf pine as the indicator species
Management concerns: No significant limitations affect woodland management.
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Suited
Management concerns: Restricted permeability, seepage, steepness of slope, and high clay content
Management measures and considerations:
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Proper compaction and the use of the proper liner material can prevent unwanted seepage from sewage lagoons.
- The high clay content of the soil may make digging shallow hand excavations for footings and foundations difficult.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.

- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.

Recreational Development

Suitability: Well suited
Management concerns: Steepness of slope
Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.

Interpretive Group

Land capability classification: 2e

ToC—Toast sandy loam, 8 to 15 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,080 to 1,500 feet
Hillslope profile position: Summits and shoulders
Geomorphic component: Interfluves and upper side slopes
Shape of areas: Elongated or irregular
Size of areas: 5 to 150 acres

Composition

Toast soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
6 to 12 inches—light olive brown sandy loam

Subsoil:
12 to 22 inches—yellowish brown sandy clay
22 to 30 inches—strong brown clay that has red mottles
30 to 37 inches—strong brown and red sandy clay

Underlying material:
37 to 42 inches—brownish yellow and yellowish red sandy clay loam saprolite that has red clay loam bodies
42 to 55 inches—yellowish red and brownish yellow sandy loam saprolite that has red mottles
55 to 60 inches—reddish yellow sandy loam saprolite that has red and pinkish white mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate

Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to strongly acid, except where lime has been applied
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Greater than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Random areas of soils that have hard bedrock at a depth of 20 to 40 inches and are along ridges
- Soils that have less clay in the subsoil than the Toast soil, have soft or hard bedrock at a depth of 20 to 40 inches, and are on shoulders or in scattered areas throughout the map unit
- Random areas of soils that have hard bedrock at a depth of less than 20 inches

Similar:
- Soils that are similar to the Toast soil but have a red subsoil
- Soils that are similar to the Toast soil but have less clay in the subsoil
- Soils that are similar to the Toast soil but have a thicker clayey subsoil
- Soils that are similar to the Toast soil but are moderately eroded and have a clay loam or sandy clay loam surface layer
- Soils that are similar to the Toast soil but have a gravelly surface layer

Land Use

Dominant uses: Pasture and hayland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- A rotational grazing system and the timely removal of livestock from pastures so that

forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: None
Management concerns: Root disease and ball and burlap harvesting
Management measures and considerations:
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Well suited
Productivity class: Moderately high, based on shortleaf pine as the indicator species
Management concerns: No significant limitations affect woodland management.
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize production and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: Restricted permeability, seepage, steepness of slope, and high clay content
Management measures and considerations:
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance on sanitary facilities.
- Proper design that adjusts for the slope improves the performance of sewage lagoons.
- The high clay content of the soil may make digging shallow hand excavations for footings and foundations difficult.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.

Interpretive Group

Land capability classification: 4e

Ud—Udorthents, loamy

This map unit consists of miscellaneous areas where natural soils have been altered by cutting, filling, and shaping. The surface layer is loamy soil material that is variable in composition, depth, slope, and the ability to grow plants. Borrow pits, cut and fill areas, earthen dams, and landfills comprise most of this miscellaneous unit.

Borrow pits are areas where all the original soils and much of the underlying layers have been removed for use as fill material or construction aggregate. Cuts are 3 to 25 feet deep and have steep side slopes on one or more sides. The surface is generally uneven and many areas have exposed bedrock. Plant growth in these areas generally is poor. Most of the areas are naturally reseeded in wild grasses, weeds, shortleaf pine, and Virginia pine. Erosion is a severe hazard in unstabilized areas. Major reclamation generally is necessary to prepare these areas for the economic production of plants or development for other purposes.

Cut and fill areas are areas where the soil has been altered by grading to achieve a particular land configuration. Cut areas have had more than two feet of soil removed and fill areas have had more than two feet of fill material placed over the natural soil. Some of the major uses for these areas include athletic fields in school yards, major highways and interchanges, and industrial sites. Several large areas are used for agricultural purposes and are established with grass or used for crop production. Buildings and pavement cover up to 15 percent of some areas.

Landfills are excavated areas where deeply graded trenches, up to 30 feet deep, have been backfilled with alternating layers of solid refuse and soil material. After the final cover is added, the areas are nearly level to gently sloping. Most areas are seeded to grass or planted in trees. These areas are unsuited to most building purposes because of subsidence and the danger of methane gas from the decomposition of refuse. Landfill areas are labeled on the soil map.

Setting

Landscape: Primarily Piedmont uplands but also Piedmont river valleys and Blue Ridge foothills
Landform: Ridges and stream terraces
Elevation: 900 to 1,260
Hillslope profile position: Summits, shoulders, backslopes, and footslopes
Geomorphic component: Interfluves, side slopes, base slopes, and terrace treads
Shape of areas: Irregular, but generally rectangular
Size of areas: 4 to 100 acres.

Composition

Udorthents and similar soils: 95 percent
Dissimilar soils: 5 percent

Soil Properties and Qualities

Depth class: Deep and very deep
Drainage class: Variable, but mostly well drained
Permeability: Moderate to slow
Available water capacity: Variable
Depth to seasonal high water table: Variable, generally more than 40 inches
Flooding: None
Shrink-swell potential: Low
Slope class: Variable
Extent of erosion: Variable; potential for erosion is high because of highly disturbed soils.
Soil reaction: Extremely acid to moderately acid, except where lime has been applied

Parent material: Fill areas—mixtures of natural soils; excavated areas—variable, depending on the type of underlying bedrock
Depth to bedrock: Fill areas—40 to more than 60 inches; excavated areas—variable, bedrock is commonly exposed at the soil surface

Minor Components

Dissimilar:
- Small areas of undisturbed, natural soils are intermingled in areas of the Udorthents.

Land Use

Dominant uses: Athletic fields, major highways and interchanges, airports, landfills, earthen dams, borrow pits, and industrial sites

Agricultural Development

Cropland
Suitability: Unsuited
Commonly grown crops: None
Management concerns: Erodibility
Management measures and considerations:
- The varying length and steepness and direction of the slope limit the use of erosion-control structures in areas of this map unit.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Soil fertility and highly disturbed soils
Management measures and considerations:
- This map unit is difficult to manage for pasture and hay production because of the highly variable soil properties.

Orchard and ornamental crops
Suitability: Unsuited
Management concerns: Soil fertility and highly disturbed soils
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of the highly variable soil properties.

Woodland
Suitability: Unsuited
Productivity class: Not rated
Management concerns: Soil fertility and highly disturbed soils
Management measures and considerations:
- This map unit is severely limited for timber production. A site should be selected on better suited soils.

Urban Development

Suitability: Suited
Management concerns: Highly disturbed soils
Management measures and considerations:
- Present condition of the site and previous land use can affect urban development. Onsite investigation is needed before planning for the use and management of specific areas of this map unit.

Recreational Development

Suitability: Poorly suited
Management concerns: Highly disturbed soils

Management measures and considerations:
- Present condition of the site and previous land use can affect recreational development. Onsite investigation is needed before planning for the use and management of specific areas of this map unit.

Interpretive Group

Land capability classification: 7e

UnB—Unison fine sandy loam, 2 to 8 percent slopes

Setting

Landscape: Piedmont river valleys
Landform: High stream terraces
Elevation: 1,000 to 1,250 feet
Hillslope profile position: Toeslopes
Geomorphic component: Treads
Shape of areas: Somewhat elongated or irregular
Size of areas: 4 to 30 acres

Composition

Unison soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
4 to 10 inches—strong brown clay loam

Subsoil:
10 to 50 inches—strong brown clay loam that has yellowish red mottles
50 to 60 inches—reddish yellow clay loam that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones cover less than 0.01 percent of the surface.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Old alluvium
Depth to bedrock: Greater than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Small areas of Banister soils, which are moderately well drained
- Areas of somewhat poorly drained soils in the lower positions
- Colvard soils, which have less clay in the subsoil than the Unison soil and are on flood plains

Similar:
- Soils that are similar to the Unison soil but have a soil reaction as high as neutral
- Soils that are similar to the Unison soil but have less clay in the subsoil

Land Use

Dominant uses: Pasture, hayland, and cropland

Agricultural Development

Cropland
Suitability: Well suited
Commonly grown crops: Corn and soybeans
Management concerns: Erodibility
Management measures and considerations:
- Conservation tillage, contour farming, strip cropping, cover crops, crop residue management, grassed waterways, and field borders improve soil tilth, reduce off-site sediment damage, and help to conserve soil moisture and control erosion.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue
Management concerns: Few limitations for pasture management
Management measures and considerations:
- Proper stocking rates, pasture rotation, the timely deferment of grazing, and restricted use during wet weather help to keep pastures and the soil in good condition.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Root disease and ball and burlap harvesting
Management measures and considerations:
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Well suited
Productivity class: Very high, based on eastern white pine as the indicator species
Management concerns: Few limitations for woodland management
Management measures and considerations:
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.

Urban Development

Suitability: Poorly suited
Management concerns: High clay content, moderate shrink swell-potential, and low strength in the subsoil

Management measures and considerations:
- The limitations caused by the moderate permeability of the clayey part of the subsoil can be overcome by increasing the size of the absorptive area of the septic tank filter field.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel and providing proper compaction increase its strength and stability.
- Providing roads with a gravel base and an adequate wearing surface improves trafficability for year-round use.

Recreational Development

Suitability: Well suited
Management concerns: Steepness of slope and small stones
Management measures and considerations:
- No significant limitations affect camp or picnic areas.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: 2e

UnC—Unison fine sandy loam, 8 to 15 percent slopes

Setting

Landscape: Piedmont river valleys
Landform: High stream terraces
Elevation: 980 to 1,300 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Shape of areas: Somewhat elongated
Size of areas: 4 to 40 acres

Composition

Unison soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
4 to 10 inches—strong brown clay loam

Subsoil:
10 to 50 inches—strong brown clay loam that has yellowish red mottles
50 to 60 inches—reddish yellow clay loam that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate

Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones or cobbles cover less than 0.01 percent of the surface.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Old alluvium
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Dissimilar:
- Small random areas of soils that have less clay in the subsoil than the Unison soil

Similar:
- Small areas of similar soils that have a soil reaction as high as neutral
- Small areas of upland soils that have more clay in the subsoil

Land Use

Dominant uses: Pasture, hayland, and cropland
Other uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion and help to control surface runoff and maximize water infiltration.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well-planned clipping and harvesting schedule increase productivity and help to maintain pastures.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: A variety of shrubs and trees
Management concerns: Root disease and ball and burlap harvesting
Management measures and considerations:
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Well suited
Productivity class: Very high, based on eastern white pine as the indicator species
Management concerns: No significant limitations affect woodland management.
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.

Urban Development

Suitability: Poorly suited
Management concerns: Restricted permeability, steepness of slope, seepage, high clay content, and low strength
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields improves performance.
- Avoiding the installation of septic system distribution lines during wet periods reduces the smearing and sealing of trench walls.
- Proper compaction and the use of the proper liner material can prevent unwanted seepage from sewage lagoons.
- Proper design that adjusts for the slope improves the performance of sewage lagoons.
- This map unit is severely limited for sanitary landfills. A site should be selected on better suited soils.
- The high clay content of the soil may make digging shallow hand excavations for footings and foundations difficult.
- Steepness of slope may cause difficulties when digging shallow excavations. Careful planning for digging improves the performance of the soil and helps to control erosion.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.
- Grading, including the cutting and filling of slopes, helps to overcome the limitations caused by the slope.

Interpretive Group

Land capability classification: 3e

UnD—Unison fine sandy loam, 15 to 25 percent slopes

Setting

Landscape: Piedmont river valleys
Landform: High stream terraces
Elevation: 950 to 1,300 feet
Hillslope profile position: Toeslopes
Geomorphic component: Risers
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Unison soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

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

Subsurface layer:
4 to 10 inches—strong brown clay loam

Subsoil:
10 to 50 inches—strong brown clay loam that has yellowish red mottles
50 to 60 inches—reddish yellow clay loam that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Nonstony; a few scattered stones and cobbles cover less than 0.01 percent of the surface.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Old alluvium
Depth to bedrock: More than 60 inches to hard bedrock

Minor Components

Similar:
- Areas of soils that are similar to the Unison soil but have cobbly or gravelly surfaces

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Equipment limitations and erodibility
Management measures and considerations:
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use.
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue and clover
Management concerns: Equipment limitations and erodibility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- The steepness of the slope limits equipment use in the steeper areas of this map unit.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, equipment limitations, root disease, and ball and burlap harvesting
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.

Woodland
Suitability: Suited
Productivity class: Very high, based on eastern white pine as the indicator species
Management concerns: Erodibility and equipment limitations
Management measures and considerations:
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, seepage, and high clay content

Management measures and considerations:
- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and small stones
Management measures and considerations:
- This map unit is severely limited for most recreational development. A site should be selected on better suited soils.
- Constructing paths and trails on the contour and providing adequate water-control structures, such as culverts, help to maintain trail stability.
- Grading and filling some areas may be helpful in overcoming the limitations caused by surface gravel and small stones.

Interpretive Group

Land capability classification: 4e

Ur—Urban land

This map unit consists of areas where more than 85 percent of the surface is covered with buildings, asphalt, concrete, or other impervious material. Most areas are in or near the business districts of towns, outlying industrial plants, or commercial shopping centers.

Setting

Landscape: Variable
Landform: Variable
Elevation: Variable
Hillslope profile position: Variable, but generally summits or shoulders
Geomorphic component: Generally interfluves
Shape of areas: Irregular
Size of areas: 5 to 100 acres or more

Composition

Urban land: 95 percent
Dissimilar components: 5 percent

Soil Properties and Qualities

The original soils have been greatly altered by cutting, filling, grading, shaping, paving, or building development. The original landscape, topography, and commonly the drainage pattern, have been changed. Specific soil properties need to be determined at each site. The slope typically ranges from 0 to 4 percent.

Minor Components

Dissimilar:
- Lawns, cemeteries, parks, playgrounds, parking lot islands, and drainageways that are interspersed with areas of undisturbed or man-made soil surfaces

Similar:
- Adjacent areas of cutbanks or fill banks around leveled Urban land

Land Use

Dominant use: Urban development

Agricultural Development

Cropland
Suitability: Unsuited to cropland

Pasture and hayland
Suitability: Unsuited to pasture or hayland

Orchard and ornamental crops
Suitability: Unsuited to orchard or ornamental crops

Woodland
Suitability: Unsuited to woodland

Urban and Recreational Development

Suitability: Variable
Management concerns:
- The original soils have been greatly altered by cutting, filling, grading, and shaping. The original landscape, topography, and commonly the drainage pattern, have been changed. The major problem in this unit is excessive water runoff from roofs, streets, and parking lots. This increases the hazard of flooding in low-lying areas.

Management measures and considerations:
- Onsite investigation is needed before planning for the use and management of specific areas of this map unit.

Interpretive Group

Land capability classification: Urban land—8s; Udorthents—7e

W—Water

This map unit consists of areas where the surface is covered by ponds, rivers, and lakes for all or most of the year. Individual delineated boundaries were made to try to match the photo image on the map base, but these boundaries may vary over time or because of seasonal conditions.

There are no interpretations given for this map unit.

WeC—Whiteoak fine sandy loam, 8 to 15 percent slopes, stony

Setting

Landscape: Blue Ridge mountains
Landform: Coves, fans, and drainageways
Elevation: 3,200 to 3,750 feet
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Mountain bases
Shape of areas: Irregular
Size of areas: 2 to 50 acres

Composition

Whiteoak soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown fine sandy loam

Subsoil:
9 to 12 inches—dark yellowish brown loam
12 to 30 inches—yellowish brown clay loam
30 to 55 inches—yellowish brown loam
55 to 62 inches—yellowish brown loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Stony; about 0.05 percent of the surface is covered with stones that range from 12 to 15 inches in diameter and are about 40 feet apart.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Colluvium derived from felsic to mafic low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Soils that have more rock fragments in the subsoil than the Whiteoak soil and are in drainageways and random areas
- Poorly drained Nikwasi soils, which are loamy in the upper part, are 20 to 40 inches to strata that are high in rock fragments, and are along stream channels
- Somewhat poorly drained soils that are loamy in the upper part, are 20 to 40 inches to strata that are high in rock fragments, and are along stream channels

Similar:
- Whiteoak soils that have a sandy loam or loam surface texture
- Whiteoak soils that have a surface layer that has less organic matter than the Whiteoak soil in this map unit and lack the thick, dark surface layer of the soil in this map unit
- Soils that are similar to the Whiteoak soil but flood for very brief periods, though rarely

Land Use

Dominant uses: Pasture and hayland
Other uses: Building site development and woodland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: None

Management concerns: Erodibility, tilth, herbicide retention, and soil fertility
Management measures and considerations:
- The use of resource management systems, such as contour farming, conservation tillage, crop residue management, and stripcropping, and the use of winter cover crops and crop rotations that include grasses and legumes reduce soil erosion, help to maximize rainfall infiltration, increase available water capacity, and improve soil fertility.
- Avoiding tillage during wet periods and incorporating crop residue into the soil or leaving residue on the soil surface help to prevent clodding and crusting and increase rainfall infiltration.
- The soil in this map unit retains soil-applied herbicides because of the high content of organic matter on the soil surface. The concentration of herbicides may damage future crops.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Slow air drainage may allow frost in the late spring to damage new growth in some years.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations, erodibility, herbicide retention, and soil fertility
Management measures and considerations:
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- Fencing livestock away from creeks and streams helps to prevent streambank erosion and sedimentation.
- The soil in this map unit retains soil-applied herbicides because of the high content of organic matter on the soil surface. The concentration of herbicides may damage future crops.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- A rotational grazing system, a well-planned clipping and harvesting schedule, and removal of livestock from pastures in time to allow forage plants to recover before winter dormancy help to maintain pastures and increase productivity.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, root disease, frost action, herbicide retention, and soil fertility
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Slow air drainage may allow frost in the late spring to damage new growth in some years.
- Using fungicides helps to control phytophora root disease, which is caused by wetness.
- Maintaining plant cover or using mulch reduces damage to the roots caused by frost heave.
- Using plant-applied herbicides instead of soil-applied herbicides, which can be tied up by organic matter, increases the effectiveness of the herbicides.

- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Woodland
Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Erodibility, seedling mortality, and herbicide retention
Management measures and considerations:
- Constructing roads on the contour; installing water-control structures such as broad base dips, water bars, and culverts; and avoiding diversion of water directly onto fill slopes help to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the aquatic habitat.
- Livestock should not be allowed to graze in areas managed for woodland.
- Managing the soil for the natural regeneration of hardwoods and planting improved varieties of eastern white pine are the best methods for the reforestation of the soil.
- Seedlings may need to be replanted on warm, south- to west-facing slopes because of reduced soil moisture.
- Planting when the soil is moist for extended periods increases seedling survival rates.
- Soil-applied herbicides are retained because of herbicide-organic matter binding and may damage tree seedlings when cropland is converted to woodland.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, erodibility, seeps and springs, corrosivity, and large stones
Management measures and considerations:
- The local Health Department should be contacted for guidance on sanitary facilities.
- Increasing the size of septic tank absorption fields and installing distribution lines on the contour improve performance.
- This map unit is severely limited for sewage lagoons because of the steepness of the slope. A site should be selected on better suited soils.
- Proper design and the use of grading to adjust for slope improve the performance of sanitary landfills.
- Steepness of slope may cause difficulties when digging shallow excavations. Careful planning prior to digging improves performance of the soil and helps to control erosion.
- Large stones and boulders may be encountered during excavation.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing landscaping plants on the natural contour reduces erosion and increases water infiltration.

Recreational Development

Suitability: Suited
Management concerns: Steepness of slope
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping and picnic facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.

- Extensive grading, including the cutting and filling of slopes, may reduce the limitations for playground development.

Interpretive Group

Land capability classification: 4e

WhD—Whiteoak fine sandy loam, 15 to 30 percent slopes, very stony

Setting

Landscape: Blue Ridge mountains
Landform: Coves, fans, and drainageways
Elevation: 3,450 to 3,800 feet
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Mountain flanks and mountain bases
Shape of areas: Irregular
Size of areas: 2 to 50 acres

Composition

Whiteoak soil and similar soils: 90 percent
Dissimilar soils: 10 percent

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown fine sandy loam

Subsoil:
9 to 12 inches—dark yellowish brown loam
12 to 30 inches—yellowish brown clay loam
30 to 55 inches—yellowish brown loam
55 to 62 inches—yellowish brown loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Extent of erosion: Slight; less than 25 percent of the original surface layer has been removed.
Rock fragments on the surface: Very stony; about 1.0 percent of the surface is covered with stones that range from 12 to 15 inches in diameter and are about 15 feet apart.
Extent of rock outcrops: None
Soil reaction: Very strongly acid to moderately acid, except where lime has been applied
Parent material: Colluvium derived from felsic to mafic low-grade metasedimentary rock
Depth to bedrock: More than 60 inches to soft or hard bedrock
Other distinctive properties: Random areas of seeps and springs

Minor Components

Dissimilar:
- Soils that have more rock fragments in the subsoil than the Whiteoak soil, are in drainageways, and occur randomly throughout the map unit
- Poorly drained Nikwasi soils, which are loamy in the upper part, are 20 to 40 inches to strata that are high in rock fragments, and are along stream channels

Similar:
- Whiteoak soils that have a sandy loam or loam surface texture
- Whiteoak soils that have a surface layer that has less organic matter than the Whiteoak soil in this map unit and lack the thick, dark surface layer of the soil in this map unit
- Soils that are similar to the Whiteoak soil but flood for very brief periods, though rarely, and are along stream channels

Land Use

Dominant uses: Pasture, hayland, and ornamental crops
Other uses: Building site development and woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Erodibility, tilth, herbicide retention, and soil fertility
Management measures and considerations:
- The use of resource management systems, such as contour farming, conservation tillage, crop residue management, and stripcropping, and the use of winter cover crops and crop rotations that include grasses and legumes reduce soil erosion, help to maximize rainfall infiltration, increase available water capacity, and improve soil fertility.
- Avoiding tillage during wet periods and incorporating crop residue into the soil or leaving residue on the soil surface help to prevent clodding and crusting and increase rainfall infiltration.
- The soil in this map unit retains soil-applied herbicides because of the high content of organic matter on the soil surface. The concentration of herbicides may damage future crops.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.
- Slow air drainage may allow frost in the late spring to damage new growth in some years.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations, erodibility, herbicide retention, and soil fertility
Management measures and considerations:
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Preparing seedbeds on the contour or across the slope reduces soil erosion and increases germination.
- Fencing livestock away from creeks and streams helps to prevent streambank erosion and sedimentation.
- The soil in this map unit retains soil-applied herbicides because of the high content of organic matter on the soil surface. The concentration of herbicides may damage future crops.

- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize productivity when establishing, maintaining, or renovating pasture and hayland.
- A rotational grazing system, a well-planned clipping and harvesting schedule, and removal of livestock from pastures in time to allow forage plants to recover before winter dormancy help to maintain pastures and increase productivity.

Orchard and ornamental crops

Suitability: Suited
Commonly grown crops: None
Management concerns: Erodibility, root disease, frost action, herbicide retention, and soil fertility
Management measures and considerations:

- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Slow air drainage may allow frost in the late spring to damage new growth in some years.
- Using fungicides helps to control phytophora root disease, which is caused by wetness.
- Maintaining plant cover or using mulch reduces damage to the roots caused by frost heave.
- Using plant-applied herbicides instead of soil-applied herbicides, which can be tied up by organic matter, increases the effectiveness of the herbicides.
- Applying lime and fertilizer according to recommendations from soil tests increases the availability of plant nutrients and helps to maximize crop productivity.

Woodland

Suitability: Suited
Productivity class: Moderately high, based on yellow-poplar as the indicator species
Management concerns: Erodibility, seedling mortality, and herbicide retention
Management measures and considerations:

- Constructing roads on the contour; installing water-control structures, such as broad base dips, water bars, and culverts; and avoiding the diversion of water directly onto fill slopes help to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Establishing a buffer zone of trees and shrubs in areas adjacent to streams reduces siltation and provides shade for the aquatic habitat.
- Livestock should not be allowed to graze in areas managed for woodland.
- Managing the soil for the natural regeneration of hardwoods and planting improved varieties of eastern white pine are the best methods for the reforestation of the soil.
- Seedlings may need to be replanted on warm, south- to west-facing slopes because of reduced soil moisture.
- Planting when the soil is moist for extended periods increases seedling survival rates.
- Soil-applied herbicides are retained because of herbicide-organic matter binding and may damage tree seedlings when cropland is converted to woodland.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope, erodibility, seeps and springs, corrosivity, and large stones
Management measures and considerations:

- This map unit has severe limitations affecting most urban uses. Onsite investigation is needed for each intended use or else a site should be selected on better suited soils.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope
Management measures and considerations:
- Constructing roads and trails on the contour and placing camping and picnic facilities in the less sloping areas of the map unit help to overcome the limitations caused by the slope.
- Extensive grading, including the cutting and filling of slopes, may reduce the limitations for playground development.

Interpretive Group

Land capability classification: 6e

WoB2—Woolwine-Fairview complex, 2 to 8 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 980 to 1,280 feet
Hillslope profile position: Summits
Geomorphic component: Interfluves
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Woolwine soil and similar soils: 45 percent
Fairview soil and similar soils: 40 percent
Dissimilar soils: 15 percent

Typical Profile

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60 inches—multicolored, weathered sillimanite schist

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles

26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Woolwine—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Woolwine—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Woolwine—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Woolwine—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Woolwine—20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Meadowfield soils, which have less clay in the subsoil than the major soils, have more rock fragments throughout the profile than the major soils, and are on shoulders, nose slopes, or are intermingled with areas of the major soils
- Soils that have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of 40 to 60 inches, and are on shoulders, nose slopes, or are intermingled with areas of the major soils
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the major soils but have less clay in the subsoil
- Woolwine soils that have a very gravelly surface

Land Use

Dominant uses: Hayland, pasture, and cropland

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and soybeans
Management concerns: Woolwine—droughtiness and rooting depth; Fairview—erodibility and tilth
Management measures and considerations:
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, help to control soil erosion, control surface runoff, and maximize rainfall infiltration.

- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Woolwine soil.

Pasture and hayland
Suitability: Well suited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Woolwine—droughtiness; Fairview—erodibility
Management measures and considerations:
- Using drought-tolerant plants increases productivity in areas of the Woolwine soil.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Woolwine soil.
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.

Orchard and ornamental crops
Suitability: Well suited
Commonly grown crops: Eastern white pine and apples
Management concerns: Ball and burlap harvesting, root disease, and herbicide retention; Woolwine—droughtiness and rooting depth; Fairview—erodibility
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase productivity.
- The moderately deep rooting depth of the Woolwine soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- The soils in this map unit retain soil-applied herbicides because of their high clay content. The concentration of herbicides may damage future crops.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland
Suitability: Well suited
Productivity class: Woolwine—moderately high, based on shortleaf pine as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species
Management concerns:
- No significant limitations affect woodland management.
- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.

Urban Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Woolwine—depth to bedrock, low strength, and high clay content; Fairview—restricted permeability, steepness of slope, low strength, and high clay content

Management measures and considerations:

- This map unit is difficult to manage for septic tank absorption fields because the dominant soils are moderately deep. The local Health Department should be contacted for guidance on sanitary facilities.
- Proper compaction and the use of the proper liner material can prevent unwanted seepage from sewage lagoons.
- This map unit is severely limited for sanitary landfills and shallow excavations because of the depth to bedrock.
- The drilling and blasting of rock or the use of special earthmoving equipment helps to increase the depth in areas of the Woolwine soil.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.
- Grading or filling may help overcome the limitations for lawns and landscaping caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Woolwine—content of rock fragments
Management measures and considerations:

- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Woolwine—3e; Fairview—3e

WoC2—Woolwine-Fairview complex, 8 to 15 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 980 to 1,250 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, side slopes, and nose slopes
Shape of areas: Irregular
Size of areas: 5 to 400 acres

Composition

Woolwine and similar soils 45 percent
Fairview soil and similar soils: 35 percent
Dissimilar soils: 20 percent

Typical Profile

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60 inches—multicolored, weathered sillimanite schist

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Woolwine—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Woolwine—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Woolwine—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Woolwine—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Woolwine—20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Meadowfield soils, which have less clay in the subsoil than the major soils, have more rock fragments throughout the profile than the majors soils, and are intermingled with areas of the major soils on shoulders and nose slopes
- Area of soils that have hard bedrock at a depth of 40 to 60 inches and are on shoulders, nose slopes, and back slopes
- Random areas of soils that have more rock fragments in the subsoil and less clay in the subsoil than the major soils, have hard bedrock at a depth of less than 20 inches, and are on nose slopes and shoulders
- Areas of soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the major soils but have less clay in the subsoil
- Soils that are similar to the major soils but have a sandy loam, fine sandy loam, or very gravelly surface

Land Use

Dominant uses: Pasture and hayland
Other uses: Urban development

Agricultural Development

Cropland
Suitability: Suited
Commonly grown crops: Corn and soybeans
Management concerns: Woolwine—droughtiness and rooting depth; Fairview—erodibility and tilth
Management measures and considerations:
- Resource management systems, such as conservation tillage, crop residue management, stripcropping, and sod-based rotations, reduce soil erosion by helping to stabilize the soil, control surface runoff, and maximize water infiltration.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Woolwine soil.

Pasture and hayland
Suitability: Well suited to pasture; suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Woolwine—droughtiness; Fairview—erodibility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.
- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Incorporating plant residue into the soil improves the water-holding capacity.
- Using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Woolwine soil.

Orchard and ornamental crops
Suitability: Suited
Commonly grown crops: Eastern white pine and apples
Management concerns: Ball and burlap harvesting, root disease, and herbicide retention; Woolwine—droughtiness and rooting depth; Fairview—erodibility and equipment limitations
Management measures and considerations:
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase productivity.
- The moderately deep rooting depth of the Woolwine soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- The soils in this map unit retains soil-applied herbicides because of their high clay content. The concentration of herbicides may damage future crops.

- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland

Suitability: Well suited

Productivity class: Woolwine—moderately high, based on shortleaf pine as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species

Management concerns: Equipment limitations, seedling mortality, and hazard of windthrow

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to maximize productivity and ensure planting success.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Woolwine soil.
- Soil-applied herbicides are retained because of herbicide-organic matter binding and may damage tree seedlings when cropland is converted to woodland.
- Avoiding logging operations during wet periods helps to prevent rutting and damage to tree roots as a result of compaction.

Urban Development

Suitability: Woolwine—poorly suited; Fairview—suited

Management concerns: Steepness of slope, restricted permeability, depth to bedrock, and low strength

Management measures and considerations:

- The Woolwine soil in this map unit has severe limitations for sanitary facilities because of depth to bedrock. The local Health Department should be contacted for additional guidance.
- This map unit is limited for building site development because of the steepness of the slope and depth to bedrock. A site should be selected on better suited soils.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- The soft bedrock underlying the Woolwine soil in this map unit does not require special equipment for excavation, but the soil is difficult to revegetate or pack if used in fill slopes.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Grading or filling may help overcome the limitations for lawns and landscaping caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Woolwine—poorly suited; Fairview—suited

Management concerns: Steepness of slope and content of rock fragments

Management measures and considerations:

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Interpretive Group

Land capability classification: Woolwine—4e; Fairview—6e

WoD2—Woolwine-Fairview complex, 15 to 25 percent slopes, moderately eroded

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 950 to 1,220 feet
Hillslope profile position: Backslopes
Geomorphic component: Side slopes and nose slopes
Shape of areas: Long and narrow or irregular
Size of areas: 10 to 80 acres

Composition

Woolwine soil and similar soils: 55 percent
Fairview soil and similar soils: 25 percent
Dissimilar soils: 20 percent

Typical Profile

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60 inches—multicolored, weathered sillimanite schist

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Soil Properties and Qualities

Depth class: Woolwine—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Woolwine—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep

Extent of erosion: Woolwine—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Woolwine—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Woolwine—20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Meadowfield soils, which have less clay in the subsoil and more rock fragments throughout the profile than the major soils and are intermingled with the major soils on shoulders and nose slopes
- Areas of soils that have less clay in the subsoil and have more rock fragments throughout the profile than the major soils, have hard bedrock from 40 to 60 inches, and are intermingled with areas of the major soils
- Soils that have hard bedrock at a depth of 10 to 20 inches and are on nose slopes and shoulders
- Areas of soils that have soft bedrock at a depth of 40 to 60 inches and are on smooth side slopes

Similar:
- Soils that are similar to the major soils but have less clay in the subsoil
- Soils that are similar to the major soils but have a sandy loam, fine sandy loam, or very gravelly surface

Land Use

Dominant uses: Woodland
Other uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Equipment limitations, erodibility, rooting depth, and droughtiness
Management measures and considerations:
- This map unit is difficult to manage for cultivated crops because the steepness of the slope limits equipment use and because the Woolwine soil is moderately deep to a root-restricting layer and has a low available water capacity.
- Resource management systems, such as terraces and diversions, stripcropping, contour tillage, no-till, and crop residue management, reduce soil erosion and help to control surface runoff and maximize rainfall infiltration.

Pasture and hayland
Suitability: Suited to pasture; poorly suited to hayland
Commonly grown crops: Tall fescue
Management concerns: Equipment limitations and erodibility
Management measures and considerations:
- The steepness of the slope limits equipment use in the steeper areas of this map unit.

- A rotational grazing system and the timely removal of livestock from pastures so that forage plants can recover before winter dormancy help to keep pastures in good condition and increase productivity.
- Planting adapted species helps to ensure the production of high-quality forage plants and reduces the hazard of erosion.

Orchard and ornamental crops
Suitability: Woolwine—suited; Fairview—well suited
Commonly grown crops: Apples
Management concerns: Equipment limitations, erodibility, ball and burlap harvesting, root disease, and herbicide retention; Woolwine—droughtiness and rooting depth
Management measures and considerations:

- This map unit is difficult to manage for the production of ornamental and orchard crops because the steepness of the slope limits equipment use.
- Establishing and maintaining sod between rows and on access roads reduce the hazard of erosion.
- Avoiding ball and burlap harvesting during conditions of extreme moisture helps to prevent fracture or deformation of the ball and tearing of the roots.
- Using supplemental irrigation and planting crop varieties that are adapted to droughty conditions increase productivity.
- The moderately deep rooting depth of the Woolwine soil makes this map unit difficult to manage for ornamental and orchard crops because of the low available water capacity and the hazard of windthrow.
- The soils in this map unit retain soil-applied herbicides because of their high clay content. The concentration of herbicides may damage future crops.
- Using fungicides helps to control phytophora root disease, which is caused by the restricted movement of air and water that results from the high clay content of the subsoil.

Woodland
Suitability: Suited
Productivity class: Woolwine—moderately high, based on shortleaf pine as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species
Management concerns: Erodibility, equipment limitations, and seedling mortality
Management measures and considerations:

- Installing broad-based dips, water bars, and culverts helps to stabilize logging roads, skid trails, and landings.
- Reseeding all disturbed areas using adapted grasses and legumes helps to control erosion.
- Reforestation immediately after harvesting operations that uses minimal site preparation and recommended tree species helps to control soil erosion and prevent the siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the limitations caused by the slope.
- Periodically harvesting windthrown trees that fell as a result of high winds and the limited rooting depth of the soil can increase productivity in areas of the Woolwine soil.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, reduce competition from unwanted plants.

Urban Development

Suitability: Poorly suited
Management concerns: Steepness of slope and depth to bedrock

Management measures and considerations:

- This map unit is severely limited for sanitary facilities. The local Health Department should be contacted for additional guidance on sanitary facilities.
- Building structures on the contour to conform to the natural slope or building in the less sloping areas of the map unit decreases the limitations caused by the slope.
- Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Because of the moderately deep rooting depth of the Woolwine soil, establishing and maintaining lawns and landscaping are difficult, especially if the soil has been significantly disturbed during construction.

Recreational Development

Suitability: Poorly suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Vegetating cleared and graded areas as soon as possible helps to maintain the stability of the soil and prevent erosion.
- Cutting, filling, or grading only those areas that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Interpretive Group

Land capability classification: Woolwine—6e; Fairview—7e

WwB—Woolwine-Fairview-Urban land complex, 2 to 8 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,100 to 1,250 feet
Hillslope profile position: Summits
Geomorphic component: Interfluves
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Woolwine soil and similar soils: 35 percent
Fairview soil and similar soils: 30 percent
Urban land and similar soils: 25 percent
Dissimilar soils: 10 percent

Typical Profile

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60 inches—multicolored, weathered sillimanite schist

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Urban land
Urban land consists of areas where more than 85 percent of the surface is covered with buildings, asphalt, concrete, or other impervious material

Soil Properties and Qualities

Depth class: Woolwine—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Woolwine—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Extent of erosion: Woolwine—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Woolwine—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Woolwine—20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Cliffield soils, which have less clay in the subsoil and have more rock fragments throughout the profile than the major soils, are on shoulders or nose slopes, or are intermingled with areas of the major soils
- Soils that have more rock fragments throughout the profile than the major soils, have hard bedrock at a depth of 40 to 60 inches, and are on shoulders or nose slopes or are intermingled with areas of the major soils
- Soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the major soils

Similar:
- Soils that are similar to the major soils but have less clay in the subsoil
- Woolwine soils that have a very gravelly surface

Land Use

Dominant uses: Commercial buildings and parking lots
Other uses: Home sites

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas; Woolwine—droughtiness and rooting depth; Fairview—erodibility
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: Tall fescue and orchardgrass
Management concerns: Limited size of areas; Woolwine—droughtiness; Fairview—erodibility
Management measures and considerations:
- This map unit is difficult to manage for pasture and hay crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: Apples
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of the small size of individual useable areas.

Woodland
Suitability: Poorly suited
Productivity class: Woolwine—moderately high, based on short leaf pine as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species; Urban land—none assigned
Management concerns: Limited size of areas
Management measures and considerations:
- Since timber production is rarely feasible in this map unit because of the small size of individual useable areas and the intermittent areas of urban land, trees should be planted primarily for their esthetic value.

Urban Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Woolwine—depth to bedrock, low strength, and high clay content; Fairview—restricted permeability, steepness of slope, low strength, and high clay content
Management measures and considerations:
- This map unit is difficult to manage for septic tank absorption fields because the

dominant soils are moderately deep. Access to public sewage systems eliminates the need for onsite systems.
- This map unit is severely limited for sewage lagoons and sanitary landfills because of the close proximity of urban development. A more suitable site should be selected.
- Onsite investigation is needed to determine the suitability and limitations of this map unit for dwellings and commercial buildings.
- Drilling and blasting rock or using special earthmoving equipment increases the depth of these soils.
- Incorporating sand and gravel into the soil and compacting roadbeds improve soil strength.
- Grading or filling may help overcome the limitations for lawns and landscaping caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Woolwine—content of rock fragments
Management measures and considerations:
- These areas are not recommended for use as camp areas because of the close proximity to urban development.
- No significant limitations affect picnic areas.
- Cutting, filling, or grading only those areas for playgrounds that require excavation improves soil stability and reduces equipment limitations caused by the slope.
- No significant limitations affect paths or trails.

Interpretive Group

Land capability classification: Woolwine—3e; Fairview—3e; Urban land—8s

WwC—Woolwine-Fairview-Urban land complex, 8 to 15 percent slopes

Setting

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,100 to 1,250 feet
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, side slopes, and nose slopes
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Woolwine soil and similar soils: 40 percent
Fairview soil and similar soils: 25 percent
Urban land and similar soils: 20 percent
Dissimilar soils: 15 percent

Typical Profile

Woolwine
Surface layer:
0 to 4 inches—dark brown gravelly loam
4 to 8 inches—yellowish brown gravelly loam

Subsurface layer:
8 to 12 inches—yellowish brown clay loam

Subsoil:
12 to 18 inches—yellowish red clay loam
18 to 31 inches—red clay that has yellowish red mottles

Underlying material:
31 to 60 inches—multicolored, weathered sillimanite schist

Fairview
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsurface layer:
7 to 12 inches—yellowish red clay loam that has red mottles

Subsoil:
12 to 26 inches—red clay that has yellowish red mottles
26 to 38 inches—red clay loam

Underlying material:
38 to 60 inches—multicolored saprolite that has a loam texture

Urban land
Urban land consists of areas where more than 85 percent of the surface is covered with buildings, asphalt, concrete, or other impervious material

Soil Properties and Qualities

Depth class: Woolwine—moderately deep; Fairview—very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Woolwine—low; Fairview—moderate
Depth to seasonal high water table: Greater than 6.0 feet
Flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Extent of erosion: Woolwine—slight; less than 25 percent of the original surface layer has been removed; Fairview—moderate; from 25 to 75 percent of the original surface layer has been removed.
Rock fragments on the surface: None
Extent of rock outcrops: None
Soil reaction: Extremely acid to moderately acid, except where lime has been applied
Parent material: Woolwine—residuum weathered from felsic high-grade metamorphic rock; Fairview—residuum weathered from felsic high-grade metamorphic or igneous rock
Depth to bedrock: Woolwine—20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock; Fairview—more than 60 inches to soft or hard bedrock

Minor Components

Dissimilar:
- Cliffield soils, which have less clay in the subsoil and more rock fragments throughout the profile than the major soils and are intermingled with areas of the major soils on shoulders and nose slopes
- Area of soils that have hard bedrock at a depth of 40 to 60 inches and are on shoulders, nose slopes, and back slopes
- Random areas of soils that have more rock fragments and less clay in the subsoil than the major soils, have hard bedrock at a depth of less than 20 inches, and are on nose slopes and shoulders

- Areas of soils that have soft bedrock at a depth of 40 to 60 inches and are intermingled with areas of the majors soils

Similar:
- Soils that are similar to the major soils but have less clay in the subsoil
- Soils that are similar to the major soils but have a sandy loam, fine sandy loam, or very gravelly surface

Land Use

Dominant uses: Commercial buildings and parking lots
Other uses: Home sites

Agricultural Development

Cropland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for pasture and hay crop production because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Orchard and ornamental crops
Suitability: Poorly suited
Commonly grown crops: None
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for orchard and ornamental crops because of the small size of individual useable areas, the intermittent areas of urban land, and the areas of highly disturbed soils.

Woodland
Suitability: Poorly suited
Productivity class: Woolwine—moderately high, based on short leaf pine as the indicator species; Fairview—moderately high, based on loblolly pine as the indicator species; Urban land—none assigned
Management concerns: Limited size of areas
Management measures and considerations:
- Since timber production is rarely feasible in this map unit because of the small size of individual useable areas and the intermittent areas of urban land, trees should be planted primarily for their esthetic value.

Urban Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Steepness of slope, restricted permeability, depth to bedrock, and low strength

Management measures and considerations:

- The Woolwine soil in this map unit has severe limitations for sanitary facilities because of depth to bedrock. The local Health Department should be contacted for additional guidance.
- This map unit is limited for building site development because of the steepness of the slope and depth to bedrock. A site should be selected on better suited soils.
- The drilling and blasting of rock or the use of special earthmoving equipment helps to increase the depth of the Woolwine soil.
- Incorporating sand and gravel into the soil, compacting roadbeds, and designing roads to conform to the natural slope improve soil strength.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Recreational Development

Suitability: Woolwine—poorly suited; Fairview—suited
Management concerns: Steepness of slope and content of rock fragments
Management measures and considerations:

- Placing facilities in the less sloping areas of the map unit helps to overcome the limitations caused by the slope.
- Grading or filling may help overcome the limitations caused by surface gravel and small stones in some areas of this map unit.

Interpretive Group

Land capability classification: Woolwine—4e; Fairview—6e; Urban land—8s

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 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

Russell Lyday, district conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

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 North Carolina Cooperative Extension Service.

In 2000, Burke County had approximately 8,500 acres of harvested cropland. This acreage included about 4,000 acres of hayland, 2,500 acres of ornamental trees and shrubs, 1,300 acres of corn, 400 acres of small grains, and 300 acres of soybeans. Small grain crops included wheat, oats, barley, and rye. The hayland consisted mainly of tall fescue, though the county had small acreages of orchardgrass, alfalfa, and warm-season annuals. There were about 19,000 acres of pasture for beef and horses (N.C. Cooperative Extension Service, Burke Center, *Burke County Land Usage*, 2001).

Most of the row crops in the county are grown on the nearly level soils of the flood plains, such as the Colvard, Biltmore, and Arkaqua soils, and on gently sloping terraces, such as the Unison soils (fig. 10). Some row crops are grown on well drained, gently sloping to strongly sloping upland soils, such as the Fairview soils. Hayland and pasture occur on the soils of nearly level flood plains to moderately steep uplands, such as the Colvard, Arkaqua, and Fairview soils.

A small acreage in the county is used for melons, sweet corn, tomatoes, peppers, broccoli, and other vegetables and fruits. Deep and very deep soils that are characterized by good natural drainage are especially well suited to many vegetables and small fruits.

The latest information on growing specialty crops, such as information on site selection, fertilization, liming, and selection of plant varieties, can be obtained from the local office of the North Carolina Cooperative Extension Service.

Federal and State regulations require that any areas designated as wetlands cannot be altered without prior approval. Contact the local office the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

Cropland

Management considerations on cropland in the county include controlling erosion, improving soil fertility, applying a system of pest management, improving tilth, and installing a drainage system.

Erosion control.—Erosion is a major concern on most of the soils used for cropland in Burke County. Soil erosion as a result of rainfall is a hazard on soils that have a slope of more than 2 percent. Fairview and Unison soils are examples. As the slope increases, the hazard of erosion and the difficulty in controlling erosion also increase. Soil erosion by floodwater scour is a hazard on nearly level soils on flood plains, such as the Arkaqua and Colvard soils.

Figure 10.—An area of soils on a flood plain. Soils on flood plains are highly productive for agricultural and ornamental crop production, but they have limitations because of occasional flooding during the growing season.

Loss of the surface layer through erosion is damaging. Soil productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Fairview soils. Erosion on farmland results in the sedimentation of streams. Controlling erosion minimizes the pollution of water by runoff carrying plant nutrients, soil particles, and plant residue. It improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping areas of clayey soils, preparing a good seedbed is difficult because much or all of the original friable surface layer has been lost through erosion. This degree of erosion is common in areas of Fairview soils.

Resource management systems provide a protective surface cover, reduce runoff, and increase the rate of water infiltration. Maintaining a vegetative cover on the soil helps to minimize soil loss and maintain the productive capacity of the soil. Including forage crops of grasses and legumes in the cropping system helps to control erosion. The forage crops may add nitrogen to the soil and improve tilth.

Minimizing tillage and leaving crop residue on the surface increase the rate of water infiltration, reduce runoff, and help to control erosion. Planting crops in existing crop residue using the no-till method is effective in controlling erosion on the cropland in Burke County.

Contour farming and stripcropping help to control erosion on many of the soils in the survey area. They are best suited to soils that have smooth, uniform slopes.

Information about erosion-control measures for each kind of soil is available at the local office of the Natural Resources Conservation Service.

Soil fertility.—The soils in Burke County generally are low in natural fertility and are naturally acid. Additions of lime and fertilizer are needed for the production of most kinds of crops.

Liming requirements are a major concern on cropland. The acidity level in the soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil.

A soil test is a guide to what amount and kind of lime should be used. The desired pH levels may differ, depending on the soil properties and the crop to be grown.

Nitrogen fertilizer is required for most crops. It is generally not required, however, for clover, for soybeans, and for alfalfa that is established. A reliable soil test is not available for predicting nitrogen requirements. Appropriate rates of nitrogen application are described in the section “Yields per Acre.”

Soil tests can indicate the need for phosphorus and potassium fertilizer. Phosphorus and potassium tend to build up in the soil.

Weed control.—Weed management on cropland includes the use of cultural, biological, and chemical practices.

Cultural weed control includes the use of residue from the previous crop to cover the soil surface, crop rotation, and cover crops. Selecting genetically improved crops permits the post-emergence treatment of weeds with crop-tolerant herbicides.

The use of herbicides for weed control is a common practice on the cropland in Burke County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as organic matter content and texture of the surface layer, affect the rate of pre-emergent herbicide application. Estimates of both of these properties were determined for the soils in this survey area. The table “Physical Soil Properties” shows a general range of organic matter content in the surface layer of the soils. The texture of the surface layer is shown in the USDA texture column in the table “Engineering Soil Properties.”

In some areas the organic matter content projected for the different soils is outside the range shown in the table. The content can be higher in soils that have received large amounts of animal or manmade waste. Soils that have recently been brought into cultivation may have a higher content of organic matter in the surface layer than similar soils that have been cultivated for a long time. Conservation tillage, or no-till, can increase the content of organic matter in the surface layer. A lower content of organic matter is common where the surface layer has been partly or completely removed by erosion or land smoothing. Current soil tests should be used for specific organic matter determinations.

Tilth.—Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils that have good tilth have a granular and porous surface layer.

Most of the soils in Burke County that are used for crops have a low content of organic matter in the surface layer (less than 1 percent). On some of these soils, intense rainfall on a bare surface causes the formation of a crust. After the crust forms, the soil is almost impervious to water. The soil reduces the rate of water infiltration and increases the runoff rate. Regularly adding crop residue or manure or maintaining a dense vegetative sod can improve soil structure and prevent the formation of a crust.

A content of organic matter between 1.5 and 2.0 percent is good. Soils that have a higher content of clay, such as the Fairview, Bethlehem, and Unison soils, become cloddy if they are cultivated under wet conditions. The sustained use of no-till farming that maintains 80 percent or more of ground cover can improve the physical, chemical, and biological properties of the soil.

Some soils in the survey area have poor tilth because of gravel in the surface layer. The content and size of the pebbles affect the use of tillage implements.

Stones and boulders are common in many of the colluvial soils in the survey area. In some places the rock fragments prevent tillage. The section “Map Unit Descriptions” identifies where rock fragments occur within the soil profile.

Drainage.—Wetness may be a management concern for soils on flood plains in Burke County. Small areas of somewhat poorly drained soils commonly occur on the larger well drained flood plains. Soils with poor internal drainage and a high water table include the Arkaqua, Banister, Hatboro, and Nikwasi soils. The majority of flood plains along the smaller tributaries are comprised of these wetter soils. Where drains are permitted, installing and maintaining surface or subsurface drains can improve yields by lowering the water table and improving drainage.

Managing drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Soils along the river bottoms in Burke County are flooded for brief or very brief periods, generally between December and June. Flash flooding as a result of intensive rainfall can occur on the upper reaches of stream bottoms at any time of the year.

Ornamental Crops

Ornamental trees and shrubs are the largest crops in the county, both in acreage planted and cash receipts. In 2000, the county had more than 2,500 acres of ornamental crops. Fifty percent of the total county farm income was derived from this segment of the farming economy (N.C. Cooperative Extension Service, Burke Center, *Farm Income*, 2001). Growers have been successful in producing broadleaf evergreens, coniferous trees and shrubs, and deciduous trees and shrubs suitable for hardiness zones 4-8 (fig. 11). The community of Jonas Ridge, which has an elevation of 3,000 feet, is located in the northwest corner of the county in the Blue Ridge physiographic province. The climate and soils of this area permit the production of Fraser fir Christmas trees and native shrubs, such as rhododendron.

Soil-plant-landscape relationships.—Native and hybrid ornamental crops grow well on well drained, loamy soils. These soils are generally limited to the flood plains. The content of clay in the soils should be 15 to 30 percent for optimum ball and burlap harvesting. In Burke County, Colvard soils are best suited to ornamental crops.

Many fields on flood plains contain both well drained and somewhat poorly drained soils. It is important to select planting stock better suited to the drainage

Figure 11.—Hemlocks growing in an area of Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded. Areas of this unit are ideal for the production of ornamental shrubs and trees, such as these hemlocks.

characteristics of the subfield. Hemlock, spruce, and pine are more adapted to well drained soils, such as the Colvard soils. Sites that have somewhat poorly drained soils, such as the Arkaqua soils, are better suited to birch and maple. Artificial drainage may not always correct the drainage limitations associated with the physical characteristics of the soil.

Site selection.—Soils that have a clay content of less than 15 percent should not be used for ornamental species that are ball and burlap harvested. These soils do not cling together and thus ball poorly. Also, deep sandy soils have relatively little water-holding capacity and require substantial irrigation. Soils that have a clay content of more than 30 percent can be dug only within a narrow range of water content. Soils that are wet, are in natural drainageways, or have a clay content of more than 30 percent should not be used for ornamental species. Annual field crops are not as likely to be affected by high water tables as perennial field-grown nursery stock, which will be in production for 3 to 5 years. Wet soils, or seasonally wet soils, hold excess moisture around roots, which results in poor growth and encourages Phytophthora root disease. Upland soils that have a slope of more than 8 percent should not be used for ornamental species because the hazard of erosion is severe when the soils are cultivated. On all soils, a cover of a living or dead crop should be maintained to prevent excessive loss of soil, nutrients, and pesticides. All field borders and surface drainage channels should be established in perennial grasses, which can filter storm runoff from the field.

Access roads should be carefully planned and constructed. If possible, they should not be constructed in natural drainageways, in wet areas, or where, because of the slope, the roadbed grade would be more than 10 percent. They should be surfaced or seeded with perennial vegetation as soon as possible after construction. Regular applications of lime and fertilizer help maintain the sod. Cut and fill slopes should be stabilized with vegetation.

Lime, fertilizer, and herbicides.—Because of insufficient natural fertility, the soils in Burke County cannot quickly produce ornamentals. They are typically low in nitrogen, phosphorous, and potassium. Some soils are too acid for ornamental crops, especially for hybrid shrubbery and some tree species. Application rates for lime and fertilizer should be determined by soil tests and by tissue analysis of the crop.

Herbicides should be applied according to integrated pest management principles and label directions. The content of organic matter, the texture of the surface layer, and the depth to a water table affect the amount of preemergent herbicides used and the frequency of application. A high content of organic matter or clay in the surface layer can inhibit the activity of some herbicides. Water in soils in areas of seeps and springs can reduce the effectiveness of herbicides.

Pasture and Hayland

In 2000, Burke County had more than 5,000 beef cattle and 3,000 horses (N.C. Cooperative Extension Service, Burke Center, *Farm Income*, 2001). Most of the pasture and hayland in the county supports a mixture of grasses and legumes. Most of the hay is grown in rotation with pasture. The harvested hay commonly is rolled into large, round bales.

About 14 percent of the total farm income in the county is derived from the sale of livestock. A successful livestock enterprise depends on a forage program that provides large quantities of good-quality feed. In Burke County, poultry and beef enterprises are interdependent because poultry waste is commonly applied to pasture and hayland. Applications of poultry waste provide the nutrients necessary for the production of livestock feed.

Selection of forage species.—The soils in the survey area vary widely in their ability to produce grasses and legumes because of differences in such properties as depth to bedrock or to other limiting layers, internal drainage, and available water capacity. The forage species selected for planting should be appropriate for the soil.

Most of the soils in Burke County are suited to locally grown grasses and legumes, such as tall fescue, orchardgrass, alfalfa, ladino clover, and red clover (fig. 12). Yields and quality of forage vary from farm to farm and from soil type to soil type. In areas on the steeper slopes and in stony areas, limitations are severe because establishing and maintaining forage plants are difficult. The relative suitability of each soil for forage is given in the section “Detailed Soil Map Units.”

Maintenance of pasture and hayland.—A well-balanced forage program includes the use of a variety of both cool- and warm-season forage species, nutrient and pest management, and rotational grazing.

In older pastures, eliminating the lower yielding species and establishing a desirable grass-clover mixture can improve the quality and quantity of forage. On the steeper slopes, performing renovation practices in contour strips or using no-till techniques helps to reduce soil loss. Adding clover to a desirable grass sod can greatly improve the quality of forage for beef, reduce fescue toxicity problems, and reduce the amount of nitrogen fertilizer required.

Renovation can increase forage yields in areas that have a good stand of grass. Renovation involves partially destroying the sod, applying lime and fertilizer, and seeding desirable forage species. Adding legumes to the stand of grass provides high-quality feed. Legumes increase summer production and transfer nitrogen from the air into the soil through symbiotic bacteria. Under growing conditions, alfalfa can fix 200 to 300 pounds of nitrogen per acre per year, red clover can fix 100 to 200 pounds, and ladino clover can fix 100 to 150 pounds. An acre of annual forage legumes, such as Korean lespedeza or vetch, can fix 75 to 100 pounds of nitrogen per year. Warm-

Figure 12.—An area of Arkaqua loam, 0 to 2 percent slopes, occasionally flooded, used for hay. Although subject to occasional flooding, well managed areas of the Arkaqua soils are suited to the production of hay.

season grasses should be used to round out forage programs on farms. They can be grazed when cool-season forage species are dormant.

Applications of fertilizer and lime are needed for the production of pasture and hay because the soils are low in fertility, particularly calcium and phosphorus. Application rates for fertilizer and lime should be determined by the results of soil tests, the kind of forage, and the desired yield. Fertilizer and lime should be incorporated into a well prepared seedbed before planting. After the sod has been established, fertility levels should be maintained by annual topdress applications. For maximum yields, fertilizer should be applied to cool-season plants, such as fescue, orchardgrass, and clover, in spring and fall, just prior to the growing season.

Rotational grazing that uses cross-fencing is needed to prevent overgrazing or undergrazing (fig. 13). Grazing plants to shorter than 3 inches greatly reduces the forage production for most species. Undergrazing reduces feeding value, wastes forage, and encourages diseases and insects. Mowing helps to prevent uneven growth, control weeds, and keep plants at a nutritious stage. Tall fescue may be stockpiled for grazing in late fall and winter. The growth that occurs from August through November can be managed and accumulated and can extend the grazing season.

Additional information on managing pasture and hayland is available at the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Soil Quality

Definition of Soil Quality

Soil quality is the fitness of a specific kind of soil to function within its surroundings, support plant and animal production, maintain or enhance water and air quality, and support human health and habitation. Many people define soil quality as soil health.

Figure 13.—Horses grazing in paddocks of cool-season grasses in an area of Fairview sandy clay loam, 15 to 25 percent slopes, moderately eroded. A rotational grazing system increases the production of forage crops.

The quality of a soil can be viewed in two ways. The first view recognizes that, depending on the environmental function of interest, some soils are simply better suited than others to effectively perform that function. For example, soils that are shallow to bedrock have inherently poor quality for supporting deep-rooted trees or for use as sites for dwellings with basements. Sandy soils that have a high content of gravel may have inherently poor quality for filtering household wastes applied through an onsite septic system. Alternatively, these same soils may have good quality for use in the construction of local roads and streets. This view of soil quality is useful for comparing the abilities of one soil to those of another and is often used to evaluate the worth or suitability of soils for specific uses.

The second view of soil quality relates to the dynamic nature of soils, which is influenced by human use and management. A given soil may have a certain level of quality for fulfilling a given environmental function, but it may be functioning at a level below its inherent capability because of past disturbance or current management systems. For example, a farming system that does not protect the surface layer from erosion results in the loss of clay and other finer sized soil mineral particles, organic matter, nutrients, and other beneficial properties. In most cases, the eroded soil functions at below its original potential for production and its condition or health is considered impaired or lower in quality. Significant improvements in soil quality, under a high level of management, can increase crop yields 25 to 50 percent or more.

A soil in a wetland, if drained or covered with sediment from nearby uplands, may not serve as effectively as a filter as it would in its natural condition. Many areas of poorly drained soils are in wetlands but are functioning below their highest potential in the filtration of water before it enters adjacent streams and rivers.

Functions of Soil

Soil is a living, dynamic resource. It has biological, chemical, and physical properties which are continually changing. It performs several important functions within the natural environment.

Soil provides a physical matrix, chemical environment, and biological setting for the exchange of water, air, nutrients, and heat necessary for living organisms.

Soil controls the movement of rainfall or irrigation water in the environment. It partitions the water into several components. Some of the applied water runs off of the soil and enters waterways directly. The remaining water infiltrates the soil and either is stored in the soil and used for plant growth or percolates through the soil and into the ground water. This regulation of water flow affects the movement of soluble materials, such as nitrate nitrogen and pesticides, through the environment.

Soil regulates biological activity and molecular exchanges among solid, liquid, and gaseous phases and thus affects nutrient cycling, plant growth, and the decomposition of organic materials.

Acting as a filter, soil protects the quality of water, air, and other resources. Soils in wetlands are particularly important as natural filters of chemicals applied to farmlands, golf courses, lawns, and other managed areas.

Soil provides mechanical support for living organisms and their structures. People and wildlife depend on this function.

Importance of Soil Quality to Landowners

Soil quality has a direct effect on plant growth and the productivity of cropland, pasture, hayland, and woodland. It also affects the movement of water over, into, and through the soil. Maintaining or enhancing the quality of the soil can help to reduce the onsite and offsite effects of soil erosion. It can help to increase yields and reduce the offsite movement of nitrates and other chemicals to adjacent water bodies and to ground water by ensuring the efficient use of nutrients by the crop and soil organisms within the soil biological system. Maintaining a high level of soil quality ensures that the resource is sustained for the future.

The inherent quality of many soils has been degraded through past management practices. However, modern improved management practices, such as no-till cropping systems, tree planting, and riparian buffers, can improve soil quality and enhance the environmental functioning of the soil. Generally, management practices that maintain a vegetative cover on the soil, return the maximum practical amount of crop residue to the soil, and minimize soil-disturbing activities, such as tillage, result in higher levels of soil quality.

Concerns Related to Soil Quality

Examples of the degradation of soil quality include:

- Loss of soil material through erosion
- Deposition of sediment by wind or floodwaters
- Compaction of soil layers near the surface
- Loss of granular soil structure at the surface
- Reduction of infiltration rates
- Formation of a soil crust
- Nutrient loss or imbalance
- Pesticide carryover
- Buildup of salts
- Unfavorable change in pH range
- Loss of organic matter
- Reduced biological activity and poor breakdown of residue

Soil-Quality Indicators

The quality of a given soil can be improved over time if it is managed properly. Monitoring key indicators of soil quality over time can ensure that the quality of the soil is maintained or enhanced.

Soil-quality indicators are physical, chemical, and biological properties, processes, and characteristics that can be measured as changes in the soil are monitored. Indicators can be categorized into four general groups: visual, physical, chemical, and biological.

Visual indicators may be obtained from direct observation or photographic interpretation. Exposure of the subsoil, change in soil color, ephemeral gullies, ponding, runoff, plant response, weed species, surface crusting, blowing soil, and soil deposition are a few examples. Visual evidence can be a clear indication that soil quality is changing in either a negative or a positive way.

Physical indicators are usually obtained by observation or laboratory analysis. They include topsoil thickness, bulk density, porosity, aggregate stability, texture, crusting, and compaction. These indicators primarily reflect factors affecting root growth, biological activity of soil, seedling emergence, and infiltration or movement of water and air within the soil.

Chemical indicators generally require sampling and laboratory analysis. They include measurements of pH, salinity, organic matter, phosphorus concentrations, cation-exchange capacity, nutrient cycling, concentrations of elements that may be potential contaminants, and concentrations of elements that are needed for plant growth and development. The chemical condition of soil affects soil-plant relationships, water quality, buffering capacities, availability of nutrients and water to plants and other organisms, mobility of contaminants, and some physical conditions, such as the tendency for a crust to form.

Biological indicators may be obtained by observation and measurement. They include measurements of micro- and macro- organisms, their activity, and their by-products. Populations of bacteria, fungi, earthworms, nematodes, and mites have been suggested as indicators in some parts of the country. Respiration rate can be used to detect microbial decomposition of organic matter in the soil. Ergosterol, a fungal by-product, has been used to measure the activity of organisms that play an important role in the formation and stability of soil aggregates. Measurements of decomposition rates of plant residue in bags or measurements of weed seed numbers or pathogen populations can also be used as biological indicators of soil quality.

Selecting Indicators

Soil quality can be monitored through the observation or measurement of key Soil-quality indicators. A monitoring program should include several indicators, depending on the original condition of the soil and the desired goals for soil quality. In planning monitoring strategies, one should consider the time of year that sites are monitored, the stage of crop growth, and the location within the field where observations are made.

The selection of indicators should be based on:

- The land use
- The relationship between an indicator and the soil function being assessed
- The ease and reliability of the measurement
- The variation between sampling times and the variation across the sampling area
- The sensitivity of the measurement to changes in soil management
- The extent to which the soil indicator can be subject to routine monitoring and sampling
- The skills required for use and interpretation of the indicator

The monitoring system should be used primarily to detect trend changes that are measurable over a 1- to 10- year period. By monitoring trends over time, one can determine if the soil is improving, degrading, or remaining stable under the current management system. If the detected changes indicate that degradation is rapidly occurring, land managers can correct problems before undesired and possibly irreversible loss of soil quality occurs.

Contact the local office of the Natural Resources Conservation Service, the Soil and Water Conservation District, or the Cooperative Extension Service for assistance in developing a plan for monitoring soil quality over time.

Yields per Acre

The average yields per acre that can be expected of the principal crops and pasture plants under a high level of management are shown in the tables “Land Capability and Yields per Acre of Crops” and “Land Capability and Yields per Acre of Pasture.” 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 of map units in the survey area also is 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.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the tables “Land Capability and Yields per Acre of Crops” and “Land Capability and Yields per Acre of Pasture” 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.

The *productivity index* is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made.

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 tables.

Prime Farmland and Other Important Farmlands

The table “Prime Farmland and Other Important Farmlands” 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.

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.

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

Albert Coffey, forester, Natural Resources Conservation Service, helped prepare this section.

Owners of forestland in Burke County have many objectives. These objectives include producing timber; conserving wildlife, soil, and water; preserving esthetic value; and providing opportunities for recreational activities, such as commercial hunting. Public demand for clean water and recreational areas creates pressures and opportunities for owners of forestland (fig. 14).

The tables in this section can help forestland 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.

The potential productivity of woodland depends on physiography, soil properties, climate, and the effects of past management. Specific soil properties and site characteristics, including soil depth, texture, structure, and depth to the water table, affect forestland productivity primarily by influencing available water capacity, aeration, and root development. The net effects of the interaction of these soil properties and site characteristics determine the potential site productivity.

Examples of past management decisions that limit productivity are overgrazing and timber high-grading. These factors can affect forest health, vitality, species composition, and, ultimately, the quantity, quality, and value of the timber produced. The potential volume of wood produced by a stand of timber is not always the best

Figure 14.—Loblolly pine in an area of forestland. Forestland management practices in the Piedmont include reforestation using loblolly pine.

indicator of the value of a site. Species composition and quality are as important as volume.

Naturally occurring site factors are also important. The steepness and length of slopes and landform position affect water movement and availability. Elevation and aspect affect the amount of sunlight a site receives and the rate of evaporation. Sites on south-facing slopes are warmer and drier than those on north-facing slopes. The amount of rainfall and the length of growing season influence site productivity. While rainfall generally increases as elevation increases, productivity gains may be offset by a shorter growing season. The most productive sites are generally below 4,000 feet in elevation, on north- to east-facing slopes or on those shaded by the higher mountains, in sheltered coves, or in concave areas on footslopes and toeslopes. Most of the soils on these cool slopes have an A horizon that is thicker and has more organic matter than that of soils on warm slopes.

Soils on warm slopes include minor components, such as areas in narrow, unmapped drainageways. These areas can produce yields higher than those of the soil map unit as a whole. Soils on cool slopes include minor components, such as areas on exposed spur ridges. These areas can produce yields lower than those of the soil map unit as a whole. In either case, different tree species may occur in these areas of minor components.

A knowledge of soils helps to provide a basic understanding of the distribution and growth of tree species on the landscape. For example, yellow-poplar grows well on deep or very deep, moist soils, and scarlet oak or pine is common in areas where the rooting depth is restricted or the moisture supply is limited.

The ability of a soil to serve as a reservoir for moisture, as measured by the available water capacity, is primarily influenced by texture, organic matter content, rooting depth, and content of rock fragments. Because of the fairly even and abundant summer rainfall in the survey area, available water capacity is a limitation affecting tree growth only on shallow soils, such as the Cleveland and Unicoi soils.

The living plant community is part of the nutrient reservoir. The decomposition of leaves, stems, and other organic material recycles the nutrients that have accumulated in the forest ecosystem. Fire, excessive trampling by livestock, and erosion can result in the loss of these nutrients. Forestland management should include prevention of wildfires, erosion control, and protection from grazing.

This soil survey can be used in planning ways to increase the productivity of forestland. Some soils are susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber.

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 (USDA, 2000).

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.

The estimates of the productivity of the soils in this survey are based mainly on yellow-poplar, eastern white pine, and chestnut oak (Beck, 1962; Doolittle, 1960; Olson, 1959).

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.

The landowner interested in timber production is faced with the challenge of producing greater yields from smaller areas. These smaller areas are primarily due to trends in land ownership, including increased residential and commercial development. Meeting this challenge requires intensive management and silvicultural practices. Many modern silvicultural techniques resemble those long practiced in agriculture. They include establishing, releasing, and thinning a desirable young stand; propagating the more productive species and genetic varieties; providing appropriate rotations and fiber utilization; and controlling insects, diseases, and undesirable species. Although timber crops require decades to grow, the goal of intensive management is similar to that of intensive agriculture. This goal is to produce the greatest yield of the most valuable crop as quickly as possible.

Commercial forests cover about 235,508 acres, or about 73 percent of the land area of Burke County (USDA, Forest Service, 1991). Commercial forest is land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber production. Eastern white pine, yellow-poplar, and northern red oak are the most important timber species in the county because they grow fast, are adapted to the soil and climate, and bring the highest average sale value per acre.

For purposes of forest inventory, the predominant forest types identified in Burke County are described in the following paragraphs (USDA, Forest Service, 1991).

White pine-hemlock—This forest type covers 57,787 acres. It is predominantly eastern white pine. Commonly included trees are hemlock, sweet birch, and red maple.

Loblolly-shortleaf—This forest type covers 20,209 acres. It is predominantly loblolly pine, shortleaf pine, or other kinds of southern yellow pine or a combination of these species. Commonly included trees are oak, hickory, and gum.

Oak-pine—This forest type covers 60,240 acres. It is predominantly hardwoods, generally upland oaks. Pine species make up 25 to 50 percent of the stand. Commonly included trees are gum, hickory, and yellow-poplar.

Oak-hickory—This forest type covers 103,272 acres. It is predominantly upland oaks or hickory, or both. Commonly included trees are yellow-poplar, elm, red maple, and black locust.

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”

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.

Recreation

Burke County offers a variety of recreational opportunities. The Burke County Recreation Department and other municipal and community recreation organizations coordinate recreational activities and sports leagues at fields, parks, courts, and schools all over the county. There are also several public swimming pools, fitness trails, and golf courses around the county. Lake James, Lake Rhodhiss, and Lake Hickory have public access areas that provide opportunities for boating, fishing, swimming, and other water sports (fig. 15). The Catawba River, between Lake James and Lake Rhodhiss, and the Johns River are popular rivers for canoeing and fishing. Numerous other small streams provide fishing opportunities, especially trout fishing, in the cooler waters in the mountains and foothills. Several privately owned campgrounds have playgrounds or other facilities that provide opportunities for camping, picnicking, hiking, fishing, and swimming.

Burke County has State and Federal lands that allow public access and numerous recreational opportunities. North Carolina’s largest State Park, the South Mountain State Park, is in Burke County and has areas for horseback riding, hiking, backpacking, fishing, camping, picnicking, and mountain biking. The staff also provides educational programs on the fauna and flora of the area. Lake James State Park, located on the area’s largest lake, offers access for activities, such as boating, swimming, fishing, camping, and picnicking. Pisgah National Forest in the Blue Ridge mountains and foothills allows access for all kinds of outdoor recreation. The Linville

Figure 15.—Lake James, which provides opportunities for many water-related recreational activities. The lake also provides flood control, hydroelectric power, and natural scenic beauty.

Gorge Wilderness Area lies within the Pisgah National Forest and is known for its extremely steep and rugged terrain and numerous prominent rock formations (fig. 16). Recreational activities in this area include hiking, backpacking, camping, rock climbing, biking, motorcycle trail riding, fishing, and hunting.

The Blue Ridge Parkway, on the crest of the Blue Ridge mountains, crosses the northernmost part of the county and provides beautiful vistas overlooking Burke County to the south and east. The parkway also provides access to overlooks of the spectacular Linville Falls, located at the northern end of the Linville Gorge.

Because of the increasing demand for private and public recreational areas and facilities, a knowledge of soils and soil properties is necessary for the planning and development of new facilities as well as the maintenance of existing facilities.

The soils of the survey area are rated in the tables "Camp Areas, Picnic Areas, and Playgrounds" and "Paths, Trails, and Golf Fairways" according to limitations that affect their suitability for recreation. 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.

Figure 16.—The Linville Gorge Wilderness Area, one of eastern America's most scenic and rugged gorges, providing primitive recreational opportunities.

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 the tables “Camp Areas, Picnic Areas, and Playgrounds” and “Paths, Trails, and Golf Fairways” can be supplemented by other information in this survey, for example, interpretations for building site development in the tables “Dwellings and Small Commercial Buildings” and “Roads and Streets, Shallow Excavations, and Lawns and Landscaping,” sanitary facilities in the tables “Sewage Disposal” and “Landfills,” construction materials in the tables “Source of Sand and Gravel” and “Source of Reclamation Material, Roadfill, and Topsoil,” and water management in the table “Ponds and Embankments.”

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 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, 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, 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, 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; 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.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Information about soils can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife. Soils information also helps locate areas that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat and in determining the intensity of management needed for each element of the habitat.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, and pokeberry.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, yellow-poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountain laurel, mountainmahogany, bitterbrush, snowberry, lowbush blueberry, and highbush blueberry.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, white-tailed deer, and black bear.

Habitat for wetland wildlife consists of open, marshy, or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, muskrat, mink, and beaver.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

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.

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.

This survey can be used to locate probable areas of hydric soils.

The following map units meet the definition of hydric soils and, in addition, 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 (National Research Council, 1995; Hurt and others, 2002).

HaA Hatboro sandy loam, 0 to 2 percent slopes, frequently flooded
NkA Nikwasi loam, 0 to 3 percent slopes, frequently flooded

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.

AaA Arkaqua loam, 0 to 2 percent slopes, occasionally flooded
BaB Banister loam, 1 to 6 percent slopes, rarely flooded
CmA Chewacla loam, 0 to 2 percent slopes, frequently flooded
CvA Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded
DaB Dillard fine sandy loam, 2 to 8 percent slopes, rarely flooded
FnA Fluvaquents-Udifluvents complex, 0 to 3 percent slopes, mounded, occasionally flooded
FoB Fontaflora-Ostin complex, 0 to 5 percent slopes, flooded
GcD Greenlee very cobbly sandy loam, 15 to 30 percent slopes, extremely bouldery
GrD Greenlee-Tate complex, 15 to 30 percent slopes, extremely stony
GrE Greenlee-Tate complex, 30 to 50 percent slopes, extremely stony
GtC Greenlee-Tate-Ostin complex, 1 to 15 percent slopes, extremely stony
IoA Iotla sandy loam, 0 to 2 percent slopes, occasionally flooded

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 (fig. 17), 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

Figure 17.—A construction site on a sloping landscape. Sloping landscapes often have cut and fill areas that can be used to make building sites more level. Soils information for building site development is useful for planning and site design.

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. 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"

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. 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 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. 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 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. 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 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.

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.

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.

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.

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, mixed, active, mesic 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. There can be some variation in the texture of the surface layer or of the substratum within a 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.

Arkaqua Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Landscape: Piedmont river valleys
Landform: Flood plains
Elevation range: 930 to 1,100 feet
Slope range: 0 to 2 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Fine-loamy, mixed, active, mesic Fluvaquentic Dystrudepts

Typical Pedon

Arkaqua loam, 0 to 2 percent slopes, occasionally flooded; in Burke County, about 1.6 miles south of Interstate 40 from Morganton on N.C. Highway 18, about 0.5 mile west on Secondary Road 1931, about 425 feet north, in hay field; Morganton South USGS topographic quadrangle; lat. 35 degrees 42 minutes 24 seconds N. and long. 81 degrees 39 minutes 00 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; friable; common fine and very fine roots; few fine flakes of mica; strongly acid; abrupt smooth boundary.

Bw1—9 to 22 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common very fine roots; many medium distinct strong brown (7.5YR 5/8) masses of oxidized iron and common fine distinct brown (10YR 5/3) iron depletions on faces of peds and in pores; common fine flakes of mica; strongly acid; gradual wavy boundary.

Bw2—22 to 36 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; few fine prominent strong brown (7.5YR 4/6) masses of oxidized iron and common medium prominent grayish brown (10YR 5/2) iron depletions on faces of peds and in pores; common fine flakes of mica; strongly acid; clear wavy boundary.

Cg1—36 to 40 inches; gray (2.5Y 5/1) clay loam; massive; friable; few fine prominent strong brown (7.5YR 4/6) and many coarse distinct olive brown (2.5Y 4/4) masses of oxidized iron; common fine flakes of mica; very strongly acid; clear wavy boundary.

Cg2—40 to 48 inches; gray (2.5Y 5/1) loam; massive; very friable; common coarse distinct olive brown (2.5Y 4/4) masses of oxidized iron; common fine flakes of mica; very strongly acid; clear wavy boundary.

Ab—48 to 53 inches; very dark gray (2.5Y 3/1) loamy sand; massive; very friable; common fine flakes of mica; very strongly acid; clear wavy boundary.

C´g—53 to 60 inches; dark grayish brown (2.5Y 4/2) coarse sand; loose; very friable; many prominent light olive brown (2.5Y 5/6) masses of oxidized iron; common flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 35 to 60 inches
Depth to contrasting soil material: Strata of sand and gravel at 44 to 72 inches or more
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: Few to many throughout the profile
Reaction: Very strongly acid to slightly acid

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4
Texture—loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron depletions in shades of light brownish gray and grayish brown within 24 inches of the surface

Bg horizon (where present):
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2
Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red

C horizon (where present):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4
Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

Cg horizon:
Color—neutral in hue or hue of 10YR to 5Y; value of 4 to 6 and chroma of 0 to 2
Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, or clay loam
Redoximorphic features (where present)—masses of oxidized iron in shades of yellow, brown, and red

Ab horizon:
Color—hue of 2.5Y, value of 3 to 5, and chroma of 1 or 2
Texture—loamy sand, sandy loam, fine sandy loam, loam, silt loam, or clay loam

C´g horizon:
Color—neutral in hue or hue of 10YR to 5Y; value of 4 to 6 and chroma of 0 to 2
Texture—gravelly coarse sand, coarse sand, sand, or loamy sand
Redoximorphic features (where present)—masses of oxidized iron in shades of yellow, brown, and red

Ashe Series

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,200 to 3,600 feet
Slope range: 15 to 95 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, and side slopes
Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Dystrudepts (fig. 18)

Typical Pedon

Ashe gravelly sandy loam in an area of Ashe-Cleveland-Rock outcrop, 30 to 95 percent slopes, extremely bouldery; in Burke County, about 11.2 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 3.7 miles northeast on Secondary Road 1405, about 3.2 miles north on U.S. Forest Service Road 299, about 300 feet east, in woods; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 54 minutes 20 seconds N. and long. 81 degrees 45 minutes 18 seconds W.

Oi—2 inches to 0; partially decomposed and fresh hardwood and pine litter.
A—0 to 3 inches; dark brown (10YR 3/3) gravelly sandy loam; weak medium granular structure; very friable; many fine and very fine, common medium, and few coarse roots; 15 percent, by volume, gravel; strongly acid; clear wavy boundary.
Bw—3 to 25 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak medium subangular blocky structure; very friable; common fine and few medium roots; 20 percent, by volume, gravel; strongly acid; abrupt wavy boundary.
Cr—25 to 32 inches; multicolored weathered granite that is partially consolidated but can be dug with difficulty with hand tools; abrupt wavy boundary.
R—32 inches; unweathered granite.

Range in Characteristics

Thickness of the solum: 14 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: None to common
Content and size of rock fragments: 5 to 50 percent, by volume, in the A and C horizons and 5 to 35 percent, by volume, in the Bw horizon; mostly gravel, cobbles, and stones
Reaction: Very strongly acid to moderately acid

A horizon:
Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon (where present):
Color—multicolored or similar to that of the Bw horizon

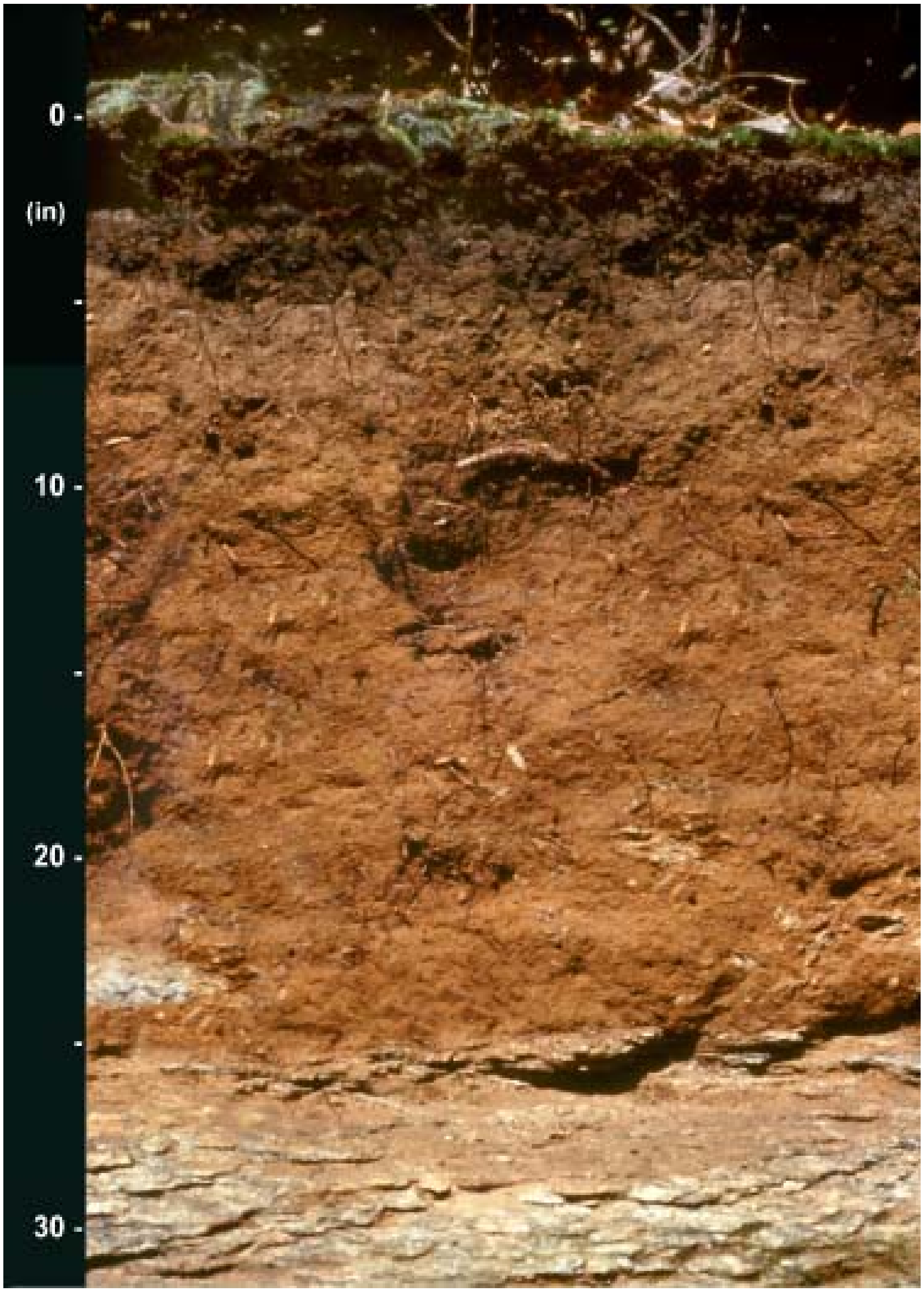

Figure 18.—Profile of the moderately deep, somewhat excessively drained Ashe soil.

Texture (fine-earth fraction)—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or loam

Cr horizon:

Type of bedrock—weathered, felsic high-grade metamorphic or igneous rock that is partially consolidated but can be dug with difficulty with hand tools

R layer:

Type of bedrock—unweathered, felsic high-grade metamorphic or igneous rock

Banister Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Alluvium
Landscape: Piedmont river valleys
Landform: Stream terraces
Elevation: 1,000 to 1,150 feet
Slope range: 1 to 6 percent
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Treads
Taxonomic classification: Fine, mixed, semiactive, mesic Aquic Hapludults (fig. 19)

Typical Pedon

Banister loam, 1 to 6 percent slopes, rarely flooded; in Burke County, about 1.3 miles north of Morganton on N.C. Highway 181, about 1.9 miles south and west on N.C. Highway 126, about 40 feet north, in white pine plantation; Morganton North USGS topographic quadrangle; lat. 35 degrees 45 minutes 12 seconds N. and long. 81 degrees 44 minutes 46 seconds W.

Ap—0 to 7 inches; brown (10YR 5/3) loam; weak medium granular structure; friable; common fine and medium and few coarse roots; moderately acid; abrupt smooth boundary.

BA—7 to 10 inches; brownish yellow (10YR 6/6) loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; moderately acid; gradual wavy boundary.

Bt1—10 to 25 inches; brownish yellow (10YR 6/6) clay; weak medium subangular blocky structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt2—25 to 31 inches; yellowish brown (10YR 5/8) clay; weak medium subangular blocky structure; friable; few fine roots; few medium faint strong brown (7.5YR 5/8) and common medium prominent light yellowish brown (10YR 6/4) masses of oxidized iron and common fine prominent light gray (10YR 7/2) iron depletions; strongly acid; clear wavy boundary.

BCg—31 to 41 inches; light brownish gray (2.5Y 6/2) clay loam; weak coarse subangular blocky structure; friable; many coarse prominent strong brown (7.5YR 5/8) masses of oxidized iron; strongly acid; clear wavy boundary.

Cg—41 to 60 inches; light brownish gray (2.5Y 6/2) sandy clay loam; massive; friable; common coarse prominent reddish yellow (7.5YR 6/8) masses of oxidized iron; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few or common
Content and size of rock fragments: Less than 15 percent, by volume, in the solum and less than 25 percent, by volume, in the C horizon; mostly gravel
Reaction: Extremely acid to strongly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4; horizon less than 6 inches thick where value is 3
Texture—loam

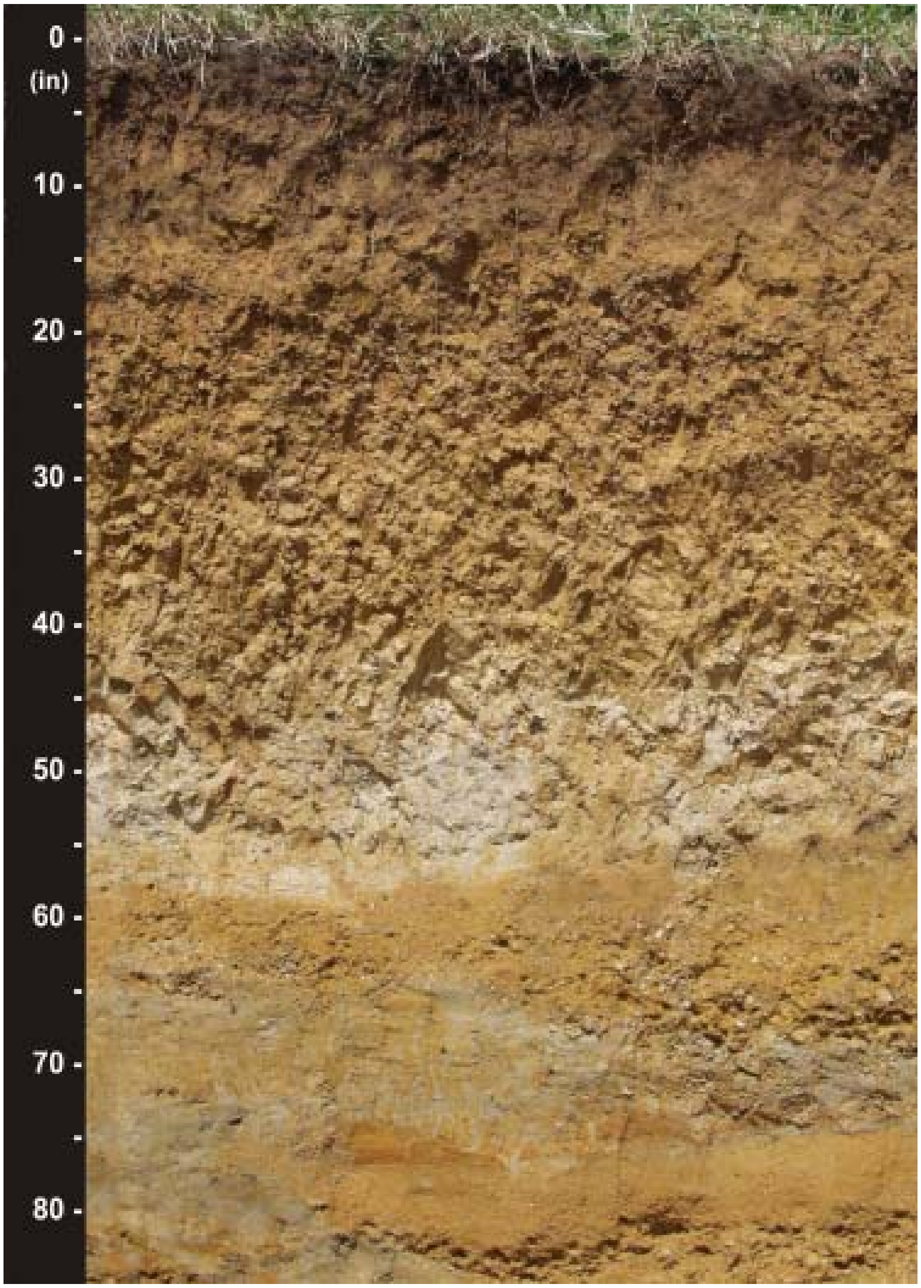

Figure 19.—Profile of the very deep, moderately well drained Banister soil.

E horizon (where present):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 or 6
Texture—sandy loam, fine sandy loam, loam, or silt loam

BE or BA horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8
Texture—loam, sandy clay loam, or clay loam

Bt horizon (upper part):
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8
Texture—sandy clay loam, clay loam, sandy clay, or clay

Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

Bt horizon (lower part):
Color—neutral in hue or hue of 7.5YR to 2.5Y; value of 4 to 7 and chroma of 0 to 8
Texture—sandy clay loam, clay loam, sandy clay, or clay
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

BC or CB horizon (where present):
Color—neutral in hue or hue of 7.5YR to 2.5Y; value of 4 to 7 and chroma of 3 to 8; or multicolored
Texture—sandy loam, sandy clay loam, clay loam, or sandy clay
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

BCg horizon:
Color—neutral in hue or hue of 7.5YR to 2.5Y; value of 4 to 7 and chroma of 0 to 2
Texture—sandy loam, sandy clay loam, clay loam, or sandy clay
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

C horizon (where present):
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8; or multicolored
Texture (fine-earth fraction)—typically stratified, ranges from sand to sandy clay loam
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

Cg horizon:
Color—neutral in hue or hue of 7.5YR to 2.5Y; value of 4 to 7 and chroma of 0 to 2
Texture (fine-earth fraction)—typically stratified, ranges from sand to sandy clay loam
Redoximorphic features—masses of oxidized iron in shades of yellow, brown, and red and iron or clay depletions in shades of gray

Bannertown Series

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 950 to 1,250 feet
Slope range: 25 to 50 percent
Hillslope profile position: Backslopes and shoulders
Geomorphic component: Nose slopes and side slopes
Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Bannertown sandy loam in an area of Rhodhiss-Bannertown complex, 25 to 50 percent slopes; in Burke County, approximately 6.4 miles west on N.C. Highway 126 from Independence Drive in Morganton, about 0.9 mile south on Secondary Road 1233, about 0.3 mile southwest on East Shore Drive to end of loop, about 250 feet south, in woods on north aspect backslope; Oak Hill USGS topographic quadrangle; lat. 35 degrees 45 minutes 30 seconds N. and long. 81 degrees 49 minutes 28 seconds W.

A—0 to 2 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many very fine and fine, common medium, and few coarse roots; few fine flakes of mica; 5 percent, by volume, gravel; strongly acid; abrupt smooth boundary.

Bw1—2 to 6 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; friable; common fine and medium and few coarse roots; few fine flakes of mica; 5 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bw2—6 to 11 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine flakes of mica; 10 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bw3—11 to 24 inches; strong brown (7.5YR 4/6) gravelly sandy loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

C—24 to 31 inches; strong brown (7.5YR 4/6) gravelly sandy loam; massive; friable; few fine roots; few fine flakes of mica; 30 percent, by volume, gravel; abrupt wavy boundary.

R—31 inches; unweathered gneiss.

Range in Characteristics

Thickness of the solum: 14 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: Few or common
Content and size of rock fragments: 5 to 35 percent, by volume, throughout the profile; mostly gravel, cobbles, and stones
Reaction: Extremely acid to moderately acid, except where lime has been applied

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—coarse sandy loam, sandy loam, fine sandy loam, or loam

C horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 8, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—loamy coarse sand, loamy sand, loamy fine sand, coarse sandy loam, sandy loam, or fine sandy loam

Cr horizon (where present):
Type of bedrock—multicolored, weathered, felsic high-grade metamorphic or igneous rock that can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered, felsic high-grade metamorphic or igneous rock

Biltmore Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Rapid

Parent material: Recent alluvium
Landscape: Piedmont river valleys
Landform: Flood plains and levees
Elevation range: 950 to 1,100 feet
Slope range: 0 to 5 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Mixed, mesic Typic Udipsamments

Typical Pedon

Biltmore loamy sand, 0 to 5 percent slopes, occasionally flooded; in Burke County, about 500 feet south of N.C. Highway 181 at the Catawba River bridge in Morganton, about 100 feet west of river, in cultivated field; Morganton South USGS topographic quadrangle; lat. 35 degrees 44 minutes 54 seconds N. and long. 81 degrees 42 minutes 24 seconds W.

Ap—0 to 10 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; few fine roots; common fine flakes of mica; moderately acid; clear smooth boundary.
C1—10 to 21 inches; yellowish brown (10YR 5/6) loamy sand; massive; very friable; few fine roots; common fine flakes of mica; strongly acid; gradual wavy boundary.
C2—21 to 51 inches; yellowish brown (10YR 5/8) loamy sand; massive; very friable; common fine flakes of mica; strongly acid; gradual wavy boundary.
C3—51 to 60 inches; yellowish brown (10YR 5/6) loamy sand; massive; very friable; common fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of underlying soil material: 40 to 80 inches or more
Depth to contrasting soil material: 40 inches or more to loamy material or deposits of gravel and cobbles that are stratified with sand or loamy material
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few to many throughout the profile
Content and size of rock fragments: 0 to 10 percent, by volume, above 40 inches and variable below 40 inches; mostly gravel and cobbles in the upper 40 inches
Reaction: Strongly acid to slightly alkaline

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6
Texture—loamy sand

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8; may have chroma of 1 to 6 below 40 inches
Texture (fine-earth fraction)—sand, fine sand, loamy sand, or loamy fine sand above 40 inches; thin strata of less than 6 inches of sandy loam, loam, or silt loam in some pedons between 10 and 40 inches; variable and may contain gravel and cobbles stratified with sandy or loamy sediments below 40 inches

Braddock Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Colluvium and alluvium derived from felsic high-grade metamorphic or igneous rock

Landscape: Blue Ridge mountains, foothills, and river valleys
Landform: Ridges, drainageways, and stream terraces
Elevation range: 1,200 to 2,300 feet
Slope range: 15 to 30 percent
Hillslope profile position: Backslopes, footslopes, and toeslopes
Geomorphic component: Mountain flanks, mountain bases, base slopes, risers, and treads
Taxonomic classification: Fine, mixed, semiactive, mesic Typic Hapludults (fig. 20)

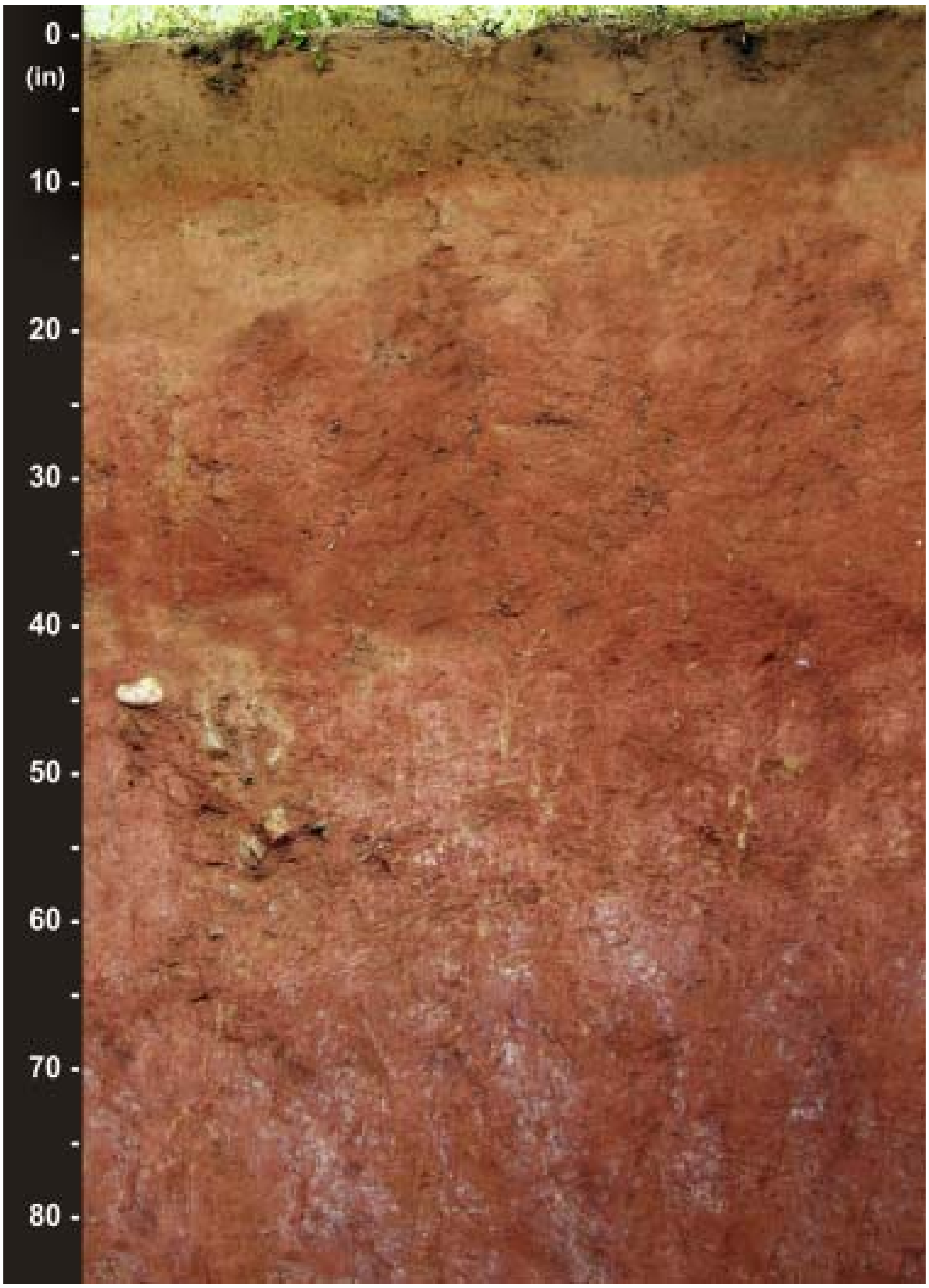

Figure 20.—Profile of the very deep, well drained Braddock soil.

Typical Pedon

Braddock fine sandy loam, 15 to 30 percent slopes; in Burke County, approximately 8.1 miles north on N.C. Highway 181 from the Catawba River bridge in Morganton, about 2.1 miles northwest on Secondary Road 1240, about 0.4 mile northwest on Secondary Road 1261, about 3.75 miles northwest on U.S. Forest Service Road 99 to gate, about 3.1 miles south on U.S. Forest Service Road 118 to road cut, on west side of road; Oak Hill USGS topographic quadrangle; lat. 35 degrees 51 minutes 50 seconds N. and long. 81 degrees 51 minutes 31 seconds W.

Oi—1 inch to 0; fresh and partially decomposed hardwood and pine leaf litter.

Oa—0 to 1 inch; black (10YR 2/1) mucky loam; moderate fine granular structure; very friable; many fine and very fine roots; abrupt smooth boundary.

A—1 to 2 inches; brown (10YR 4/3) fine sandy loam; very dark grayish brown (10YR 3/2) mottles; moderate fine granular structure; very friable; many very fine and fine and common medium roots; very strongly acid; abrupt smooth boundary.

E—2 to 6 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—6 to 21 inches; yellowish red (5YR 4/6) clay; strong fine subangular blocky structure; firm; sticky and plastic; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt2—21 to 41 inches; red (2.5YR 4/6) clay; strong fine subangular blocky structure; firm; 20 percent, by volume, cobbles; strongly acid; gradual wavy boundary.

C—41 to 75 inches; reddish yellow (7.5YR 6/6) loam; common medium distinct light yellowish brown (10YR 6/4) and common fine prominent yellowish red (5YR 5/6) mottles; massive; friable; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: None to few
Content and size of rock fragments: 0 to 35 percent, by volume, in the A, Ap, E, and BA horizons and in the upper part of the Bt horizon and 0 to 60 percent, by volume, in the lower part of the Bt horizon and in the C horizon; mostly gravel, cobbles, and stones
Reaction: Extremely acid to strongly acid, except where lime has been applied

Oa horizon:
Color—hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 1 or 2
Texture (fine-earth fraction)—mucky fine sandy loam or mucky loam

A horizon:
Color—hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 6; horizon less than 6 inches thick where value is 2 or 3
Texture (fine-earth fraction)—fine sandy loam

Ap horizon (where present):
Color—hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 6; some eroded surface layers may have hue of 5YR; horizon less than 6 inches thick where value is 2 or 3
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam; some eroded surface layers may be sandy clay loam, clay loam, or silty clay loam

E horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BA horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy clay loam, clay loam, or clay

Bt horizon:
Color—hue of 10R to 5YR, value of 3 to 5, and chroma of 6 or 8
Texture (fine-earth fraction)—clay loam, silty clay loam, sandy clay, or clay

BC horizon (where present):
Color—hue of 10R to 5YR, value of 3 to 5, and chroma of 6 or 8
Texture (fine-earth fraction)—sandy clay loam, clay loam, silty clay loam, sandy clay, or clay; generally coarser in texture than the Bt horizon and has a higher content of rock fragments

C horizon:
Color—hue of 10R to 7.5YR, value of 3 to 8, and chroma of 1 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, clay loam, silty clay loam, clay, or sandy clay

Brevard Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Colluvium and alluvium derived primarily from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge foothills and Piedmont river valleys
Landform: Hills and stream terraces
Elevation range: 1,000 to 1,300 feet
Slope range: 1 to 6 percent
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Interfluves, side slopes, risers, and treads
Taxonomic classification: Fine-loamy, parasesquic, mesic Typic Hapludults

Typical Pedon

Brevard fine sandy loam, 1 to 6 percent slopes, rarely flooded; in Burke County, approximately 1.8 miles west of Glen Alpine on Secondary Road 1223, about 0.3 mile east of Secondary Road 1230 intersection to gate under power line, about 700 feet northeast, in pine plantation; Glen Alpine USGS topographic quadrangle; lat. 35 degrees 43 minutes 46 seconds N. and long. 81 degrees 48 minutes 40 seconds W.

Ap—0 to 5 inches; strong brown (7.5YR 4/6) fine sandy loam; moderate medium granular structure; friable; few very fine, fine, and coarse and common medium roots; few fine flakes of mica; strongly acid; clear wavy boundary.

Bt—5 to 23 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint reddish brown (5YR 4/4) clay films on all faces of peds; few fine flakes of mica; moderately acid; gradual wavy boundary.

BC—23 to 35 inches; yellowish brown (10YR 5/6) fine sandy loam; few medium distinct yellowish red (5YR 4/6) and few fine faint brownish yellow (10YR 6/6) mottles; moderate coarse subangular blocky structure; friable; common prominent yellowish red (5YR 4/6) clay films on vertical faces of peds; few fine flakes of mica; moderately acid; gradual wavy boundary.

C—35 to 60 inches; yellowish brown (10YR 5/8) fine sandy loam; few fine faint strong brown (7.5YR 5/6) mottles; massive; friable; common fine flakes of mica; 15 percent, by volume, gravel and cobbles; moderately acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches or more
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few or common in the A and B horizons
Content and size of rock fragments: 0 to 50 percent, by volume, in the A horizon, 0 to 35 percent, by volume, in the B horizon, and 15 to 60 percent, by volume, in the C horizon; mostly gravel, cobbles, and stones
Reaction: Very strongly acid to moderately acid, except where lime has been applied

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 2 to 6, and chroma of 2 to 6
Texture—fine sandy loam

E horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon:
Color—hue of 10R to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

BC horizon:
Color—hue of 10R to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or sandy clay loam

C horizon:
Color—variable
Texture (fine-earth fraction)—variable
Content of rock fragments—variable

Buladean Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,200 to 4,100 feet
Slope range: 8 to 95 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes
Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Buladean fine sandy loam in an area of Chestnut-Buladean complex, 50 to 95 percent slopes, stony; in Burke County, approximately 16.5 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 4.4 miles east and north on U.S. Forest Service Road 982, about 2.8 miles northwest on U.S. Forest Service Road 198 to intersection with N.C. Mountains to Sea Trail, about 0.24 mile southwest, about 200 feet downslope, in woods; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 57 minutes 29 seconds N. and long. 81 degrees 45 minutes 03 seconds W.

Oi—1 inch to 0; fresh and partially decomposed hardwood and needle leaf litter.

A—0 to 2 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; many fine and very fine and common medium and coarse roots; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bw1—2 to 24 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; very friable; few fine and common medium and coarse roots; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bw2—24 to 39 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; very friable; few fine and medium roots; few fine flakes of mica; very strongly acid; clear wavy boundary.

BC—39 to 51 inches; yellowish brown (10YR 5/6) gravelly loam; weak medium subangular blocky structure; very friable; few fine and medium roots; about 30 percent, by volume, weathered granite gneiss gravel; very strongly acid; abrupt irregular boundary.

Cr—51 to 60 inches; weathered granite gneiss in shades of brown, olive, and yellow that is partially consolidated but can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 20 to 40 inches

Depth to bedrock: 40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock

Content of mica flakes: None to common in the A, Bw, and BC horizons; none to many in the C horizon

Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel

Reaction: Very strongly acid to moderately acid

A horizon:

Color—hue of 10YR, value of 3 to 6, and chroma of 2 to 4; horizon less than 7 inches thick where value is 3 or less

Texture (fine-earth fraction)—fine sandy loam

Bw horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BC horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 8, and chroma of 3 to 6

Mottles (where present)—shades of gray, yellow, and brown

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon (where present):

Color—hue of 5YR to 2.5Y, value of 3 to 8, and chroma of 1 to 8; or multicolored

Texture (fine-earth fraction)—saprolite that is loamy sand or sandy loam

Cr horizon:

Type of bedrock—weathered, felsic high-grade metamorphic or igneous rock that can be dug with difficulty with hand tools

Cecil Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock

Landscape: Piedmont uplands
Landform: Ridges
Elevation: 1,100 to 1,340 feet
Slope range: 2 to 8 percent
Hillslope profile position: Summits
Geomorphic component: Interfluves
Taxonomic classification: Fine, kaolinitic, thermic Typic Kanhapludults

Typical Pedon

Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded; in Cleveland County, on U.S. Highway 74 west of Shelby, about 0.9 mile west of the Brushy Creek bridge, about 125 feet north of U.S. Highway 74, in cultivated field; Shelby USGS topographic quadrangle; lat. 35 degrees 17 minutes 39 seconds N. and long. 81 degrees 35 minutes 32 seconds W.

Ap—0 to 6 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium granular structure; friable; few fine roots; few fine flakes of mica; moderately acid; abrupt smooth boundary.

Bt—6 to 39 inches; red (2.5YR 4/8) clay; few fine distinct reddish yellow (5YR 6/6) mottles; moderate medium subangular blocky structure; firm; sticky and plastic; few fine roots; common distinct clay films on faces of peds; few fine flakes of mica; 5 percent, by volume, quartz and feldspar fragments; strongly acid; clear wavy boundary.

BC—39 to 65 inches; red (2.5YR 4/8) sandy clay loam; common fine distinct reddish yellow (5YR 6/6) mottles; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few faint clay films on faces of peds; common fine flakes of mica; 5 percent, by volume, quartz and feldspar fragments; strongly acid; gradual wavy boundary.

C—65 to 72 inches; red (2.5YR 5/8) sandy loam; many fine distinct reddish yellow (5YR 6/6) and many fine prominent reddish brown (2.5YR 4/4) mottles; massive; friable; common fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 66 inches to soft or hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: Less than 15 percent, by volume, throughout the profile; mostly pebbles
Reaction: Very strongly acid or strongly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy clay loam

Bt horizon:
Color—hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8
Texture—clay
Mottles (where present)—shades of yellow and brown

BC horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay loam or clay loam
Mottles—shades of yellow and brown

C horizon:
Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8; or multicolored in shades of red, yellow, and brown

Texture—sandy loam or loam saprolite
Mottles (where present)—shades of red and brown

Chestnut Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,200 to 4,100 feet
Slope range: 8 to 95 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, and nose slopes
Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Chestnut fine sandy loam in an area of Ashe-Chestnut-Buladean complex, 50 to 95 percent slopes, extremely stony; in Burke County, about 23.4 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 1.3 miles southwest on U.S. Forest Service Road 469, about 340 feet southeast on U.S. Forest Service Road 237, about 640 feet north to road cut on the N.C. Mountains to Sea Trail; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 56 minutes 40 seconds N. and long. 81 degrees 51 minutes 12 seconds W.

Oi—2 inches to 0; fresh and partially decomposed hardwood litter.
A—0 to 2 inches; dark brown (10YR 3/3) fine sandy loam; weak medium granular structure; very friable; common fine and few medium and coarse roots; 5 percent, by volume, gravel; extremely acid; abrupt wavy boundary.
BA—2 to 6 inches; olive brown (2.5Y 4/4) fine sandy loam; weak medium granular structure; very friable; common fine and few medium and coarse roots; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
Bw—6 to 26 inches; olive yellow (2.5Y 6/6) sandy loam; weak medium subangular blocky structure; friable; common medium and few coarse roots; 5 percent, by volume, gravel; very strongly acid; clear wavy boundary.
BC—26 to 32 inches; brownish yellow (10YR 6/6) gravelly sandy loam; weak medium subangular blocky structure; friable; few fine roots; 30 percent, by volume, gravel and cobbles; very strongly acid; abrupt wavy boundary.
Cr—32 to 60 inches; multicolored, weathered granite gneiss that is partially consolidated but can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 20 to 39 inches
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 5 to 35 percent, by volume, throughout the profile; mostly gravel, cobbles, and stones
Reaction: Extremely acid to moderately acid

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 to 4
Texture (fine-earth fraction)—fine sandy loam

BA horizon:
Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 3 or 4
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BC horizon:
Color—similar to that of the Bw horizon
Texture—similar to that of the Bw horizon but generally has a greater number of coarse fragments

Cr horizon:
Type of bedrock—weathered, felsic high-grade metamorphic or igneous rock that is partially consolidated but can be dug with difficulty with hand tools

Chewacla Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Recent alluvium
Landscape: Piedmont river valleys
Landform: Flood plains
Elevation range: 1,120 to 1,160 feet
Slope range: 0 to 2 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts

Typical Pedon

Chewacla loam, 0 to 2 percent slopes, frequently flooded; in Lincoln County, about 1.5 miles northwest of Lincolnton, about 0.75 mile north on Secondary Road 1005 from the intersection of Secondary Roads 1008 and 1005, about 1,300 feet west of the road along the South Fork of the Catawba River; Lincolnton West USGS topographic quadrangle; lat. 35 degrees 29 minutes 40 seconds N. and long. 81 degrees 16 minutes 37 seconds W.

A—0 to 6 inches; brown (7.5YR 4/4) loam; weak medium granular structure; friable; common fine and medium roots; few fine flakes of mica; slightly acid; clear wavy boundary.

Bw1—6 to 16 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; common fine and medium roots; few medium faint brown (10YR 5/3) masses of oxidized iron; few fine black streaks; few fine flakes of mica; moderately acid; clear smooth boundary.

Bw2—16 to 23 inches; strong brown (7.5YR 4/6) clay loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; few fine and medium roots; few fine faint reddish yellow (7.5YR 6/6) masses of oxidized iron and common medium prominent gray (10YR 5/1) iron depletions; few fine black streaks; common fine and medium flakes of mica; moderately acid; clear smooth boundary.

Bg—23 to 41 inches; gray (10YR 5/1) and light gray (10YR 7/1) clay loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; common medium prominent strong brown (7.5YR 4/6) masses of oxidized iron; few fine black streaks; common fine flakes of mica; moderately acid; gradual wavy boundary.

Cg1—41 to 53 inches; gray (10YR 6/1) sandy clay loam; massive; friable; slightly sticky and slightly plastic; common fine and medium prominent yellowish brown (10YR 5/6) and few fine faint brown (10YR 5/3) masses of oxidized iron; few medium black streaks; common fine flakes of mica; moderately acid; gradual wavy boundary.

Cg2—53 to 60 inches; gray (10YR 5/1) sandy clay loam; massive; friable; slightly sticky and slightly plastic; common fine flakes of mica; few quartz pebbles; moderately acid.

Range in Characteristics

Thickness of the solum: 25 to 65 inches
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few or common
Content and size of rock fragments: Less than 10 percent, by volume, throughout the profile; mostly gravel
Reaction: Very strongly acid to slightly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 4; horizon less than 7 inches thick where value is 3
Texture—loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of red, brown, and yellow and iron depletions in shades of gray within 24 inches of the surface

Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of red, brown, and yellow and iron depletions in shades of gray

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—loamy above 40 inches and variable below 40 inches
Redoximorphic features—reduced matrix

Cleveland Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountain slopes, spurs, and hills
Elevation range: 1,400 to 3,600 feet
Slope range: 30 to 95 percent
Hillslope profile position: Backslopes and shoulders
Geomorphic component: Mountain flanks and crests
Taxonomic classification: Loamy, mixed, active, mesic Lithic Dystrudepts (fig. 21)

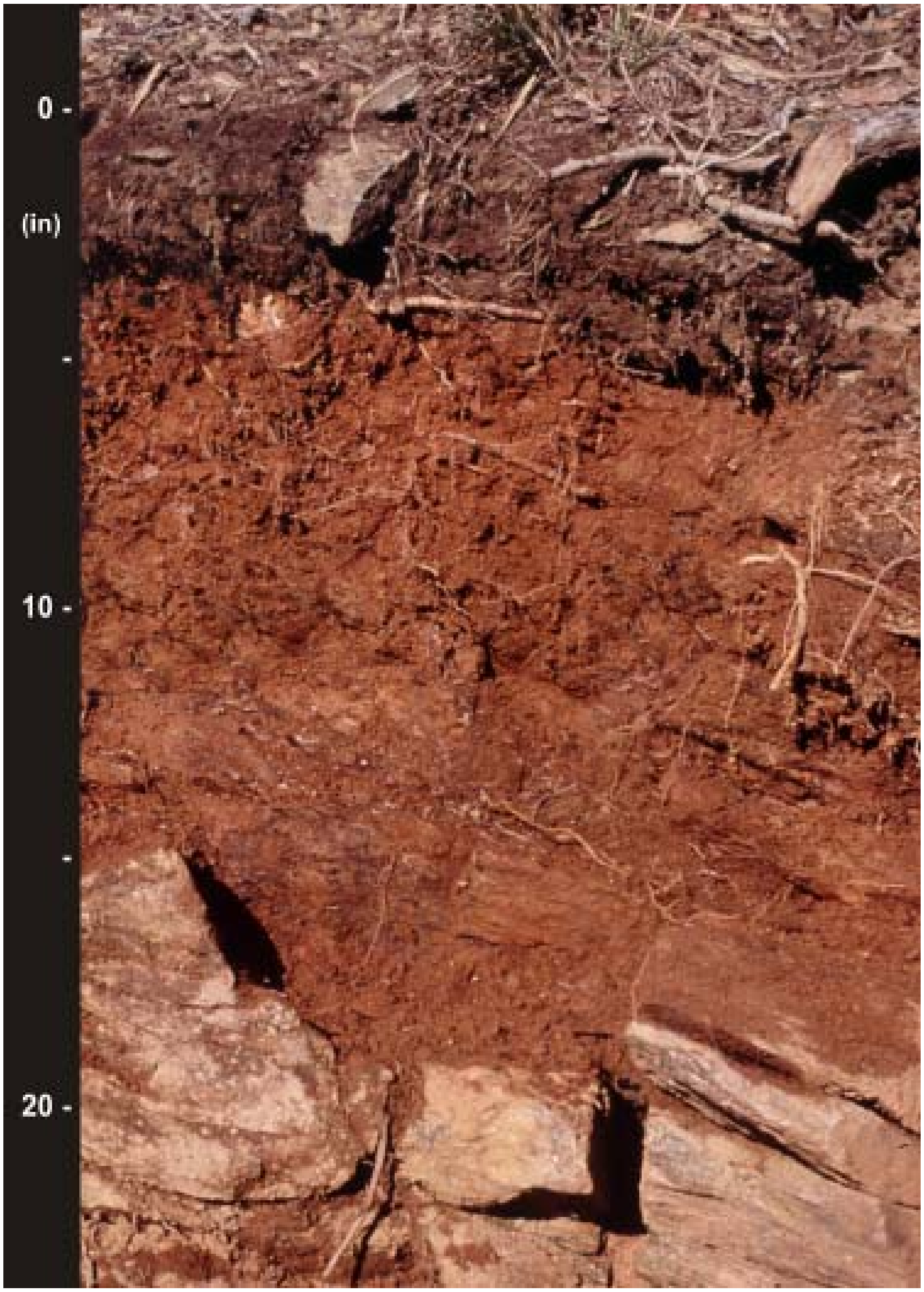

Figure 21.—Profile of the shallow, somewhat excessively drained Cleveland soil.

Typical Pedon

Cleveland gravelly sandy loam in an area of Ashe-Cleveland-Rock outcrop, 30 to 95 percent slopes, extremely bouldery; in Burke County, about 11.2 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 3.7 miles northeast on Secondary Road 1405, about 3.25 miles north on U.S. Forest Service Road 299, about 200 feet north and about 50 feet downslope from bike trail, in woods; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 54 minutes 24 seconds N. and long. 81 degrees 45 minutes 22 seconds W.

Oi—1 inch to 0; fresh and partially decomposed leaf litter.

A—0 to 3 inches; dark brown (10YR 3/3) gravelly sandy loam; weak medium granular structure; very friable; common fine and very fine and few medium and coarse roots; 15 percent, by volume, gravel; moderately acid; abrupt wavy boundary.

Bw—3 to 16 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak medium granular structure; very friable; common fine, medium, and coarse roots; 30 percent, by volume, gravel; strongly acid; abrupt wavy boundary.

R—16 inches; unweathered granite.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: Less than 35 percent, by volume, throughout the profile; mostly gravel and cobbles
Reaction: Very strongly acid to moderately acid

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 to 4
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

R layer:
Type of bedrock—unweathered, felsic high-grade metamorphic or igneous rock

Cliffield Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: South Mountains and Piedmont uplands
Landform: Mountains, spurs, and ridges
Elevation range: 900 to 2,900 feet
Slope range: 8 to 80 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, side slopes, nose slopes, head slopes, and interfluves
Taxonomic classification: Loamy-skeletal, mixed, subactive, mesic Typic Hapludults (fig. 22)

Typical Pedon

Cliffield gravelly sandy loam in an area of Cliffield-Pigeonroost complex, 50 to 80 percent slopes, very stony; in Burke County, about 10.5 miles south of Interstate 40 in Morganton on N.C. Highway 18, about 4.3 miles west on Secondary Road 1913, about 2.6 miles south on Secondary Road 1924, about 1.5 miles southwest on Secondary Road 1901 to entrance of South Mountain Resort, about 1.1 miles southwest on Pine Mountain Drive bearing right up the hill to gate, about 1.2 miles on Pine Mountain Drive, about 0.5 mile southwest on Holly Drive, about 1.6 miles west by southwest on Pine Ridge Drive, about 100 feet north and downslope from road, in woods; Benn Knob USGS topographic quadrangle; lat. 35 degrees 33 minutes 47 seconds N. and long. 81 degrees 38 minutes 32 seconds W.

Figure 22.—Profile of the moderately deep, well drained Cliffield soil.

Oi—4 inches to 0; fresh and partially decomposed hardwood and needle leaf litter.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; few fine flakes of mica; 20 percent, by volume, gravel and 5 percent, by volume, cobbles; extremely acid; clear wavy boundary.

BA—2 to 6 inches; dark yellowish brown (10YR 4/4) very cobbly loam; weak medium subangular blocky structure; friable; many fine and medium and few coarse roots; common fine flakes of mica; 20 percent, by volume, cobbles and 15 percent, by volume, gravel; very strongly acid; gradual wavy boundary.

Bt—6 to 30 inches; dark yellowish brown (10YR 4/4) very cobbly clay loam; weak medium subangular blocky structure; friable; common fine flakes of mica; 27 percent, by volume, gravel and 17 percent, by volume, cobbles; very strongly acid; abrupt irregular boundary.

R—30 inches; unweathered, slightly fractured sillimanite schist.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 15 to 70 percent, by volume, throughout the profile and an average of more than 35 percent, by volume, in the Bt horizon; mostly gravel, cobbles, and stones and occasionally boulders
Reaction: Extremely acid to strongly acid

A horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam

BA horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, loam, sandy clay loam, or clay loam

C horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or multicolored in shades of brown, yellow, and red
Texture (fine-earth fraction)—loamy sand or sandy loam

R layer:
Type of bedrock—unweathered, slightly fractured felsic high-grade metamorphic rock

Cliffside Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 1,080 to 1,260 feet
Slope range: 25 to 60 percent
Hillslope profile position: Backslopes
Geomorphic component: Side slopes
Taxonomic class: Loamy-skeletal, mixed, semiactive thermic Typic Hapludults

Typical Pedon

Cliffside very cobbly sandy loam in an area of Rion-Cliffside complex, 25 to 60 percent slopes, very stony; in Cleveland County, about 4.9 miles south of Boiling Springs on N.C. Highway 150 to Secondary Road 1200, about 0.5 mile east on Secondary Road 1200 to Secondary Road 1199, about 0.4 mile north on Secondary Road 1199 to Secondary Road 1198, about 0.8 mile on Secondary Road 1198 to Secondary Road

1197, about 1.0 mile north on Secondary Road 1197 to unpaved road, about 0.1 mile north on unpaved road, about 240 feet east, in woods; Boiling Springs South USGS topographic quadrangle; lat. 35 degrees 11 minutes 34 seconds N. and long. 81 degrees 37 minutes 54 seconds W.

Oe—2 to 0 inches; partially decomposed leaves and twigs.

A—0 to 7 inches; brown (10YR 4/3) very cobbly sandy loam; weak medium granular structure; very friable; common fine and medium roots; few fine flakes of mica; 20 percent, by volume, gravel and 15 percent, by volume, cobbles; strongly acid; abrupt smooth boundary.

AB—7 to 16 inches; strong brown (7.5YR 4/6) very gravelly sandy loam; moderate medium granular structure; very friable; common fine roots; common fine flakes of mica; 25 percent, by volume, gravel and 10 percent, by volume, cobbles; very strongly acid; clear wavy boundary.

Bt—16 to 30 inches; yellowish red (5YR 4/6) very gravelly sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; common fine flakes of mica; 40 percent, by volume, gravel; very strongly acid; clear wavy boundary.

R—30 to 34 inches; unweathered, fractured mica schist.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 15 to less than 35 percent, by volume, in the A and AB horizons; 35 to less than 60 percent, by volume, in the B horizon; ranging from pebbles to stones
Reaction: Very strongly acid or strongly acid

A horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam

AB or BA horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam

Bt horizon:
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

R layer:
Type of bedrock—unweathered, fractured felsic high-grade metamorphic rock

Colvard Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Recent alluvium
Landscape: Piedmont river valleys
Landform: Flood plains
Elevation range: 950 to 1,200 feet
Slope range: 0 to 3 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads

Taxonomic classification: Coarse-loamy, mixed, active, nonacid, mesic Typic Udifluvents

Typical Pedon

Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded; in Burke County, about 10.5 miles northwest of Morganton on N.C. Highway 181, about 1,000 feet northwest on private road (opposite intersection of Secondary Road 1263), about 40 feet northwest, in field planted in nursery stock; Oak Hill USGS topographic quadrangle; lat. 35 degrees 51 minutes 35 seconds N. and long. 81 degrees 46 minutes 57 seconds W.

Ap—0 to 10 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium granular structure; friable; common fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.

C1—10 to 21 inches; yellowish brown (10YR 5/4) sandy loam; massive; very friable; few very fine roots; few medium prominent yellowish red (5YR 5/8) and common medium distinct brownish yellow (10YR 6/6) masses of oxidized iron in the matrix; common fine flakes of mica; moderately acid; clear wavy boundary.

C2—21 to 44 inches; light yellowish brown (10YR 6/4) sandy loam; massive; very friable; few medium prominent yellowish red (5YR 5/8), common medium distinct dark yellowish brown (10YR 4/4), and common fine prominent brownish yellow (10YR 6/8) masses of oxidized iron in the matrix; common fine flakes of mica; very strongly acid; gradual wavy boundary.

C3—44 to 60 inches; light yellowish brown (10YR 6/4) sandy loam; massive; very friable; common medium prominent brownish yellow (10YR 6/8) masses of oxidized iron and common fine prominent pale brown (10YR 6/3) iron depletions; common fine flakes of mica; strongly acid.

Range in Characteristics

Depth to contrasting soil material: Loamy horizons extend 40 to 60 inches over deposits of stratified sandy, loamy, gravelly, or cobbly sediments
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 0 to 15 percent, by volume, above 40 inches and 0 to 80 percent, by volume, below 40 inches; mostly gravel and cobbles
Reaction: Strongly acid to slightly alkaline

Ap or A horizon:
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam
Redoximorphic features (where present)—masses of oxidized iron in shades of red, brown, and yellow above 40 inches and iron or clay depletions in shades of gray and brown below 40 inches

Cowee Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills

Landform: Mountains, spurs, and ridges
Elevation range: 1,100 to 3,450 feet
Slope range: 8 to 85 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Taxonomic classification: Fine-loamy, parasesquic, mesic Typic Hapludults (fig. 23)

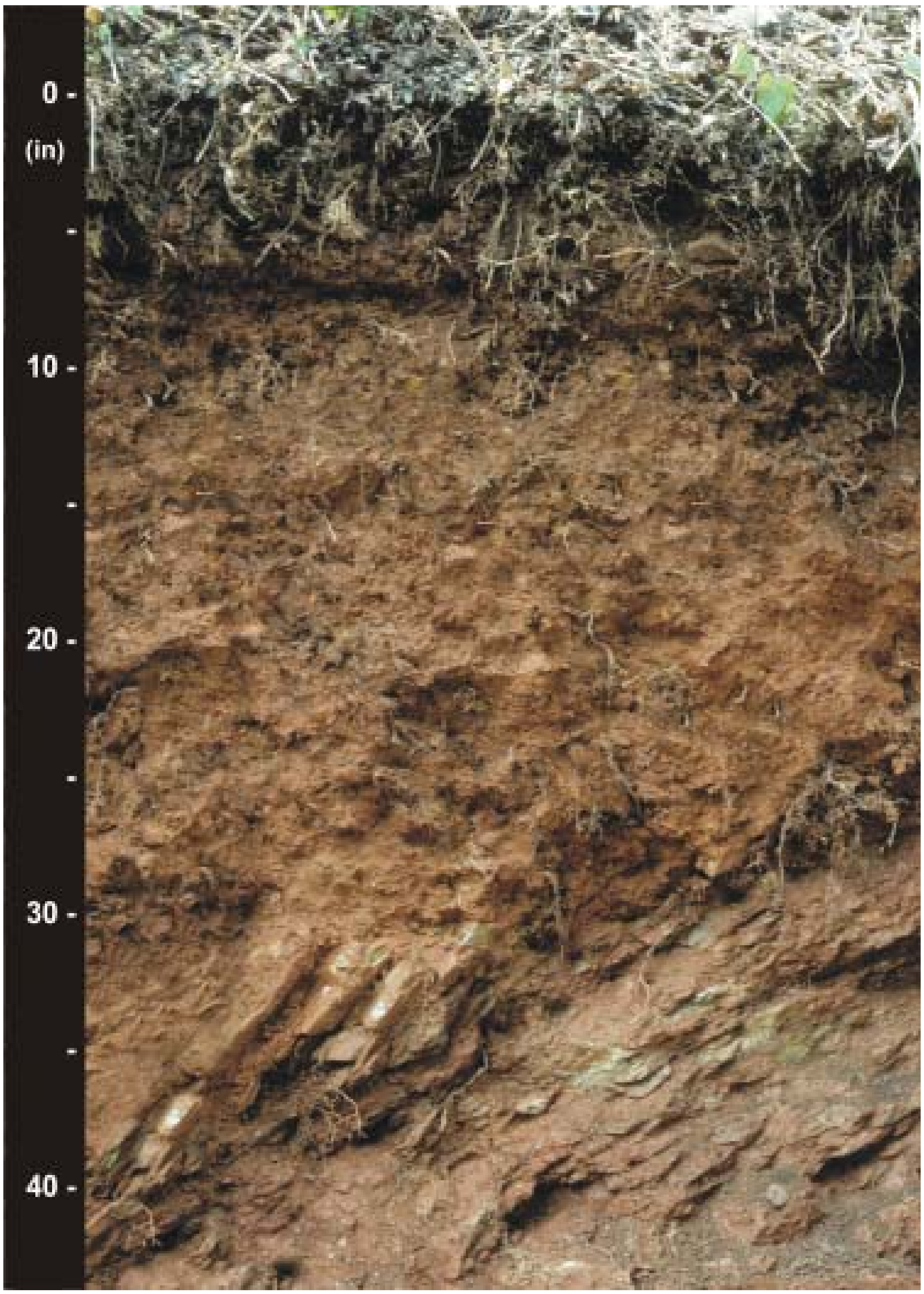

Figure 23.—Profile of the moderately deep, well drained Cowee soil.

Typical Pedon

Cowee gravelly loam in an area of Evard-Cowee complex, 15 to 30 percent slopes, stony; in Burke County, about 10.5 miles south on N.C. Highway 18 from Interstate 40 in Morganton, about 4.3 miles west on Secondary Road 1913, about 2.6 miles south on Secondary Road 1924, about 1.5 miles southwest on Secondary Road 1901 to Pine Mountain Golf Course entrance, about 2.0 miles southwest on Pine Mountain Drive, about 0.05 mile north on dirt road; about 0.1 mile southwest to pit, in road cut; Casar USGS topographic quadrangle; lat. 35 degrees 34 minutes 22 seconds N. and long. 81 degrees 36 minutes 40 seconds W.

Oi—1 inch to 0; fresh and partially decomposed hardwood and pine litter.

A—0 to 3 inches; dark yellowish brown (10YR 3/4) gravelly loam; weak medium granular structure; very friable; many fine and very fine and common medium and coarse roots; 25 percent, by volume, schist gravel; strongly acid; clear wavy boundary.

BA—3 to 7 inches; strong brown (7.5YR 4/6) gravelly loam; weak medium subangular blocky structure; very friable; many very fine and fine and few medium and coarse roots; common fine flakes of mica; 20 percent, by volume, schist gravel; strongly acid; clear wavy boundary.

Bt1—7 to 15 inches; yellowish red (5YR 4/6) gravelly loam; weak medium subangular blocky structure; friable; common very fine and fine and few medium and coarse roots; common fine flakes of mica; 20 percent, by volume, schist gravel; strongly acid; clear wavy boundary.

Bt2—15 to 23 inches; red (2.5YR 4/8) gravelly sandy clay loam; weak medium subangular blocky structure; very friable; few fine, medium, and coarse roots; 20 percent, by volume, schist gravel; strongly acid; clear wavy boundary.

Cr—23 to 45 inches; multicolored, slightly fractured, weathered sillimanite schist that can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 15 to 39 inches

Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Content of mica flakes: Few or common throughout the profile

Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel and cobbles and occasionally stones

Reaction: Extremely acid to moderately acid

A horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6

Texture (fine-earth fraction)—loam

BA horizon:

Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 or 6

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon:

Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8

Texture (fine-earth fraction)—sandy loam, loam, sandy clay loam, or clay loam

C horizon (where present):

Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or multicolored

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Cr horizon:
Type of bedrock—weathered, highly fractured felsic high-grade metamorphic rock that can be dug with difficulty with hand tools

Crossnore Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Landscape: Blue Ridge mountains
Landform: Mountains and spurs
Elevation range: 3,400 to 4,200 feet
Slope range: 30 to 80 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks
Taxonomic classification: Fine-loamy, isotic, mesic Typic Dystrudepts

Typical Pedon

Crossnore gravelly sandy loam in an area of Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony; in Avery County, located about 1.9 miles east of Linville, N.C., on U.S. Highway 221, about 0.5 mile south on Secondary Road 1510, about 50 feet northwest of road, in woods; Grandfather Mountain USGS topographic quadrangle; lat. 36 degrees 04 minutes 45 seconds N. and long. 81 degrees 51 minutes 09 seconds W.

Oi—2 inches to 0; partially decomposed and undecomposed leaf litter.
A—0 to 7 inches; dark brown (10YR 3/3) gravelly sandy loam; weak fine granular structure; very friable; many fine and few medium roots; 20 percent, by volume, gravel; very strongly acid; clear wavy boundary.
Bw—7 to 16 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak medium subangular blocky structure; friable; common fine and few medium roots; 18 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
BC—16 to 22 inches; brownish yellow (10YR 6/6) gravelly sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 18 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
C—22 to 30 inches; gravelly loamy sand saprolite in shades of brown, yellow, and white; massive; friable; few very fine and fine roots; 20 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
Cr—30 to 61 inches; weathered, partially consolidated low-grade metasandstone that can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 15 to 39 inches
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: 15 to 35 percent, by volume, in the A horizon and less than 35 percent, by volume, in the B and C horizons; mostly gravel and cobbles and occasionally channers and stones
Reaction: Extremely acid to moderately acid, except where lime has been applied

A or Ap horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 4
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

BC horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—loamy sand, sandy loam, fine sandy loam, loam, or silt loam saprolite

Cr horizon:
Type of bedrock—weathered, low-grade metasedimentary rock that is partially consolidated but can be dug with difficulty with hand tools

Dillard Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Alluvium derived primarily from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont river valleys
Landform: Low stream terraces
Elevation range: 1,000 to 1,260 feet
Slope range: 2 to 8 percent
Hillslope profile position: Toeslopes
Geomorphic component: Treads
Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Aquic Hapludults

Typical Pedon

Dillard fine sandy loam, 2 to 8 percent slopes, rarely flooded; in Burke County, approximately 3.0 miles west of Glen Alpine on Secondary Road 1223, about 125 feet east on Duckworth Lane, about 75 feet north, in field; Glen Alpine USGS topographic quadrangle; lat. 35 degrees 44 minutes 8.5 seconds N. and long. 81 degrees 49 minutes 44.2 seconds W.

Ap—0 to 9 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; slightly sticky and slightly plastic; many very fine and fine roots; moderately acid; abrupt smooth boundary.
Bt1—9 to 16 inches; light olive brown (2.5Y 5/6) sandy clay loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; common very fine roots; many medium and coarse prominent strong brown (7.5YR 5/8) irregular masses of oxidized iron distributed uniformly throughout the matrix; strongly acid; clear smooth boundary.
Bt2—16 to 24 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine and very fine roots; common fine and medium distinct strong brown (7.5YR 5/8) irregular masses of oxidized iron throughout the matrix and few medium prominent

light yellowish brown (2.5Y 6/3) irregular iron depletions in root channels or pores; very strongly acid; clear wavy boundary.

Bt3—24 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine and very fine roots; common medium and coarse distinct strong brown (7.5YR 5/8) and common medium distinct brownish yellow (10YR 6/8) irregular masses of oxidized iron throughout the matrix, common medium prominent light brownish gray (2.5Y 6/2) iron depletions in the matrix, and few fine prominent light gray (2.5Y 7/2) irregular iron depletions in the lower part of the horizon; common medium prominent yellowish red (5YR 5/8) irregular firm iron-manganese concretions in the lower part of the horizon; very strongly acid; gradual wavy boundary.

C1—42 to 46 inches; yellowish brown (10YR 5/8) sandy loam; massive; friable; many distinct yellowish red (5YR 5/8) masses of oxidized iron; 8 percent, by volume, rounded gravel; very strongly acid; clear wavy boundary.

C2—46 to 60 inches; yellowish brown (10YR 5/8) clay loam; massive; friable; sticky and plastic; common medium and coarse faint yellowish red (5YR 5/8) irregular masses of oxidized iron in the matrix and common medium and coarse prominent light gray (2.5Y 7/2) irregular iron depletions in the matrix; very strongly acid.

Range in Characteristics

Thickness of the solum: 30 inches to more than 60 inches

Depth to bedrock: More than 60 inches to hard bedrock

Content of mica flakes: Few or common

Content and size of rock fragments: 0 to 5 percent, by volume, in the A, Btg, and BCg horizons, 0 to 15 percent, by volume, in the Bt horizon, and 0 to 35 percent, by volume, in the C and Cg horizons; mostly pebbles

Reaction: Strongly acid to moderately acid in the A horizon, except where lime has been applied, and very strongly acid to moderately acid in the B and C horizons

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4

Texture—fine sandy loam

BE or BA horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6

Texture—sandy loam, fine sandy loam, or loam

Bt1 and Bt2 horizons:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture—loam, sandy clay loam, or clay loam

Redoximorphic features—masses of oxidized iron in shades of brown and iron or clay depletions in shades of brown and gray

Bt3 horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8

Texture—loam, sandy clay loam, or clay loam

Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of brown and gray

Btg or BCg horizon (where present):

Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2

Texture—loam, sandy clay loam, clay loam, or clay

Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of gray

C horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8

Texture—variable
Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of gray

Cg horizon (where present):
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2
Texture—variable
Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of gray

Ditney Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,400 to 4,200 feet
Slope range: 8 to 95 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, head slopes, and nose slopes
Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts (fig. 24)

Typical Pedon

Ditney fine sandy loam in an area of Soco-Ditney complex, 50 to 80 percent slopes, very stony; in Burke County, approximately 28.0 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 0.33 mile southwest on Secondary Road 1264, about 0.85 mile south on Secondary Road 1265 to end of pavement, about 2.1 miles south on U.S. Forest Service Road 210, road cut on west of road; Linville Falls USGS topographic quadrangle; lat. 35 degrees 55 minutes 06 seconds N. and long. 81 degrees 53 minutes 00 seconds W.

A1—0 to 5 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine and very fine and common medium and coarse roots; 5 percent, by volume, gravel; very strongly acid; abrupt wavy boundary.
A2—5 to 7 inches; olive brown (2.5Y 4/4) fine sandy loam; weak fine granular structure; very friable; common very fine, fine, medium, and coarse roots; 5 percent, by volume, gravel; very strongly acid; abrupt wavy boundary.
Bw1—7 to 20 inches; brown (10YR 5/3) fine sandy loam; weak fine subangular blocky structure parting to weak fine granular; very friable; common fine and few medium and coarse roots; 3 percent gravel and 10 percent cobbles, by volume; strongly acid; clear wavy boundary.
Bw2—20 to 27 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine subangular blocky structure parting to weak fine granular; very friable; common fine and few medium and coarse roots; 5 percent, by volume, gravel; strongly acid; abrupt wavy boundary.
C—27 to 34 inches; pale yellow (2.5Y 7/4) loamy fine sand saprolite; common medium distinct yellowish brown (10YR 5/4) and many medium distinct pale yellow (2.5Y 8/2) mottles; massive; very friable; few fine and medium roots; slightly acid; abrupt irregular boundary.
R—34 to 60 inches; unweathered arkose.

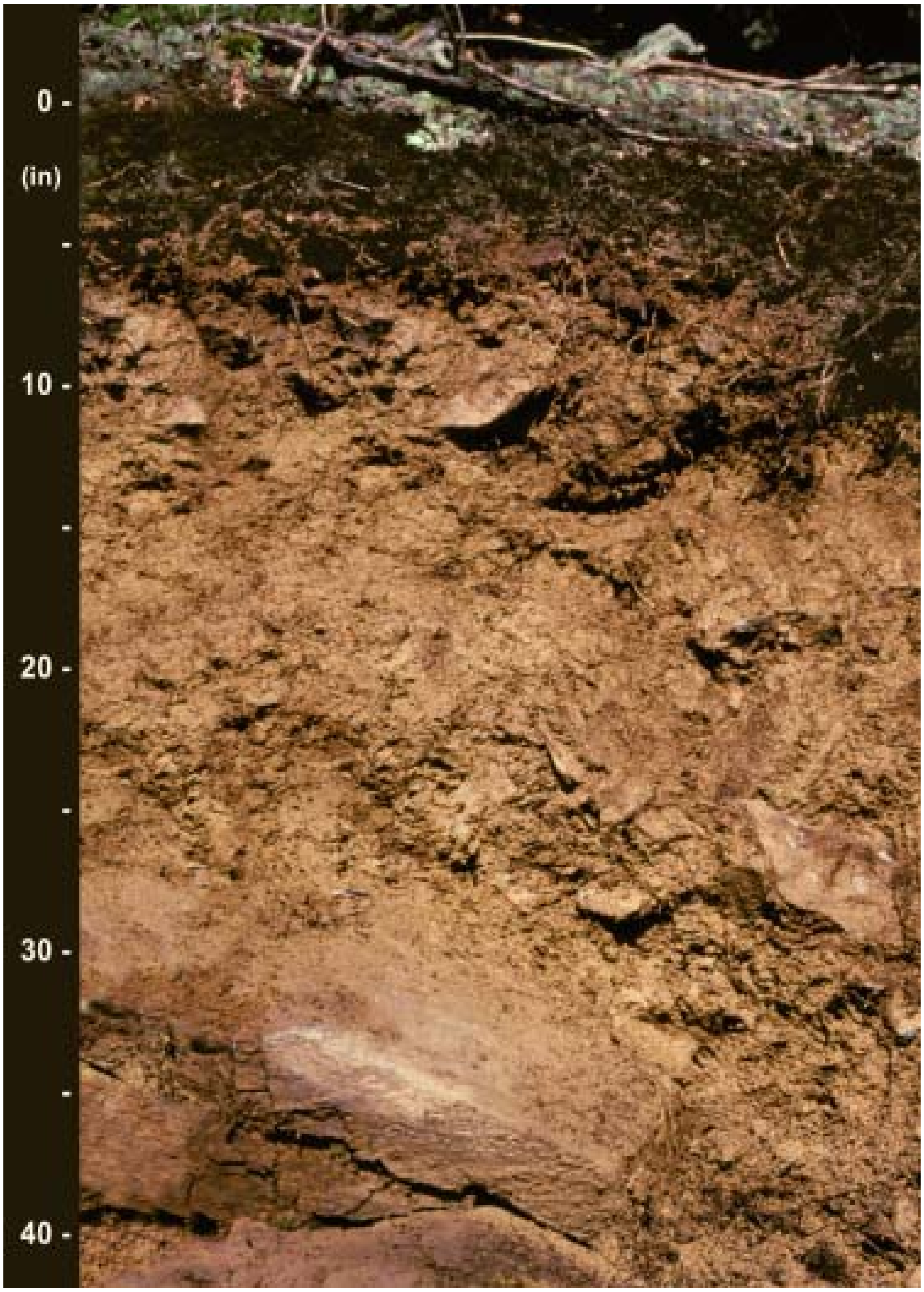

Figure 24.—Profile of the moderately deep, well drained Ditney soil.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: Usually none
Content and size of rock fragments: 5 to 35 percent, by volume, in the A, BE, and Bw horizons and 10 to 40 percent, by volume, in the BC and C horizons; mostly gravel, cobbles, and stones
Reaction: Extremely acid to strongly acid

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4; horizon less than 7 inches thick where value is 3
Texture (fine-earth fraction)—fine sandy loam

BE or Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

BC horizon (where present):
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 6; horizon not redoximorphic where chroma is less than 3
Texture (fine-earth fraction)—loamy sand, loamy fine sand, sandy loam, fine sandy loam, or silt loam

R layer:
Type of bedrock—unweathered, slightly fractured felsic low-grade metasedimentary rock

Edneytown Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,300 to 3,500 feet
Slope range: 8 to 50 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludults (fig. 25)

Typical Pedon

Edneytown loam in an area of Edneytown-Pigeonroost complex, 30 to 50 percent slopes, stony; in Burke County, about 19.9 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 100 feet east, in road cut of logging road; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 57 minutes 05 seconds N. and long. 81 degrees 50 minutes 41 seconds W.

Oi—2 inches to 0; fresh and partially decomposed hardwood and pine litter.
A—0 to 3 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; common very fine and fine and few medium roots; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
E—3 to 13 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; very friable; common very fine and fine and few medium roots; 5 percent gravel and 2 percent cobbles, by volume; moderately acid; clear wavy boundary.
Bt1—13 to 33 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; few fine, medium, and coarse roots; common

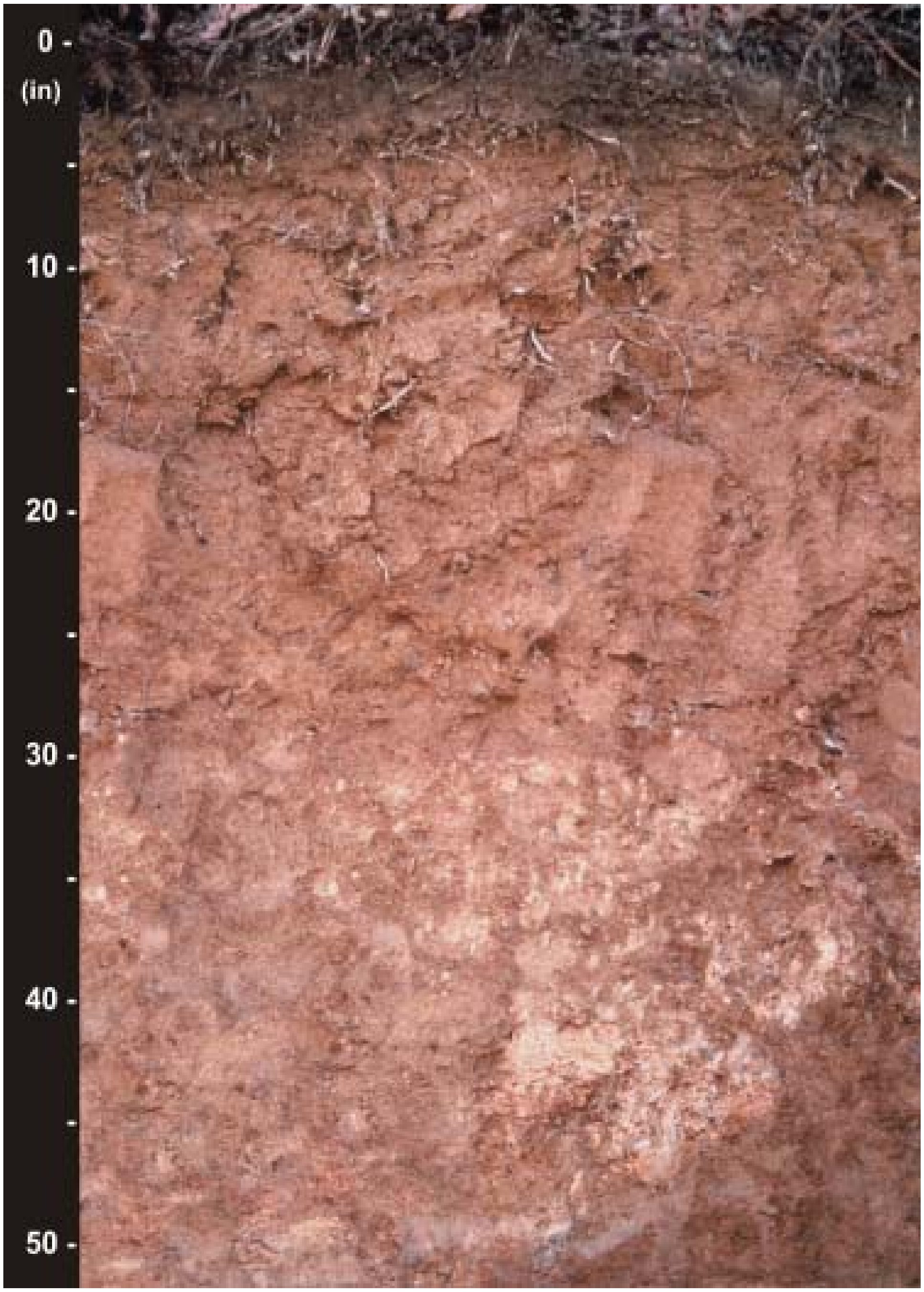

Figure 25.—Profile of the very deep, well drained Edneytown soil.

faint clay films on faces of peds; 5 percent gravel and 2 percent cobbles, by volume; very strongly acid; diffuse wavy boundary.

Bt2—33 to 51 inches; strong brown (7.5YR 5/8) loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; common faint clay films on faces of peds; 5 percent, by volume, gravel; very strongly acid; gradual wavy boundary.

BC—51 to 59 inches; strong brown (7.5YR 5/8) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

C—59 to 63 inches; strong brown (7.5YR 5/8) sandy loam saprolite; massive; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches to soft bedrock
Content of mica flakes: None to common
Content and size of rock fragments: Less than 15 percent, by volume, throughout the profile; mostly gravel and cobbles
Reaction: Very strongly acid to moderately acid in the A and E horizons and very strongly acid or strongly acid in the B and C horizons

A horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 4
Texture (fine-earth fraction)—loam

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 8
Texture (fine-earth fraction)—fine sandy loam, loam, sandy clay loam, or clay loam

BC horizon:
Color—hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 6 or 8
Texture (fine-earth fraction)—sandy loam or loam

C horizon:
Color—hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 3 to 8; or multicolored
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Cr horizon (where present):
Type of bedrock—weathered, felsic high-grade metamorphic or igneous rock that can be dug with difficulty with hand tools

Evard Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,100 to 3,450 feet
Slope range: 8 to 85 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Taxonomic classification: Fine-loamy, parasesquic, mesic Typic Hapludults

Typical Pedon

Evard fine sandy loam in an area of Evard-Cowee complex, 50 to 85 percent slopes, rocky; in Burke County, about 16.5 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 2.5 miles east and north on U.S. Forest Service Road 982, about 500 feet northwest, on wooded side slope; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 56 minutes 02 seconds N. and long. 81 degrees 47 minutes 32 seconds W.

A1—0 to 2 inches; dark brown (7.5YR 3/4) fine sandy loam; weak fine granular structure; very friable; many very fine and fine and few medium roots; very strongly acid; clear wavy boundary.

A2—2 to 6 inches; brown (7.5YR 4/4) fine sandy loam; weak medium granular structure; very friable; common fine and few medium and coarse roots; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bt—6 to 26 inches; red (2.5YR 4/6) clay loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; few faint clay films on faces of peds; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC—26 to 32 inches; red (2.5YR 4/6) loam; weak coarse subangular blocky structure; friable; few fine, medium, and coarse roots; common fine flakes of mica; moderately acid; gradual wavy boundary.

C—32 to 60 inches; yellowish red (5YR 4/6) saprolite that has a sandy loam texture; massive; friable; few fine and medium roots; many fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches or more

Depth to bedrock: More than 60 inches to hard bedrock

Content of mica flakes: None to common in the A, E, and Bt horizons and none to many in the BC and C horizons

Content and size of rock fragments: 0 to 35 percent, by volume, in the A and E horizons and 0 to 15 percent, by volume, in the BA, BE, Bt, and BC horizons; mostly gravel and cobbles

Reaction: Very strongly acid to moderately acid, except where lime has been applied

A horizon:

Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6

Texture (fine-earth fraction)—fine sandy loam

E horizon (where present):

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BA or BE horizon (where present):

Color—hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 4 to 8

Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam; in pedons without a BA horizon, upper part of the Bt horizon has colors and textures described for BA horizon

Bt horizon:

Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 6 or 8

Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

BC horizon:

Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 6 or 8

Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam

Mottles (where present)—non-redoximorphic mottles in shades of red, brown, and yellow

C horizon:

Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or is multicolored saprolite

Texture (fine-earth fraction)—loamy sand, sandy loam, fine sandy loam, or loam

Mottles (where present)—shades of red, brown, and yellow with gray and black relic rock colors in some pedons

Fairview Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 920 to 1,300 feet
Slope range: 2 to 25 percent
Hillslope profile position: Summits, shoulders, backslopes, and footslopes
Geomorphic component: Interfluves, nose slopes, head slopes, and side slopes
Taxonomic classification: Fine, kaolinitic, mesic Typic Kanhapludults (fig. 26)

Typical Pedon

Fairview sandy clay loam, 2 to 8 percent slopes, moderately eroded; in Burke County, approximately 10 miles east of Morganton on Interstate 40 to Icard exit, about 0.4 mile north on Secondary Road 1761 to junction with U.S. Highway 70, about 1.8 miles north on Secondary Road 1618, about 0.3 mile north on Secondary Road 1611, about 0.05 mile northwest on Secondary Road 1614, about 400 feet north on Secondary Road 1617, about 50 feet east, in field; Granite Falls USGS topographic quadrangle; lat. 35 degrees 45 minutes 37 seconds N. and long. 81 degrees 28 minutes 34 seconds W.

Ap—0 to 7 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium granular structure; friable; common fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.
BA—7 to 12 inches; yellowish red (5YR 5/8) clay loam; common fine faint red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; moderately acid; gradual wavy boundary.
Bt—12 to 26 inches; red (2.5YR 4/8) clay; common medium faint yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; common thin clay skins on vertical faces of peds; common fine flakes of mica; strongly acid; gradual wavy boundary.
BC—26 to 38 inches; red (2.5YR 4/8) clay loam; weak medium subangular blocky structure; friable; common fine and few medium flakes of mica; common small feldspar crystals; strongly acid; gradual wavy boundary.
C—38 to 60 inches; multicolored saprolite that has similar colors to those of horizons above and has a loam texture; massive; very friable; common fine and few medium flakes of mica; strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: None to common
Content and size of rock fragments: Generally 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Extremely acid to moderately acid, except where lime has been applied.

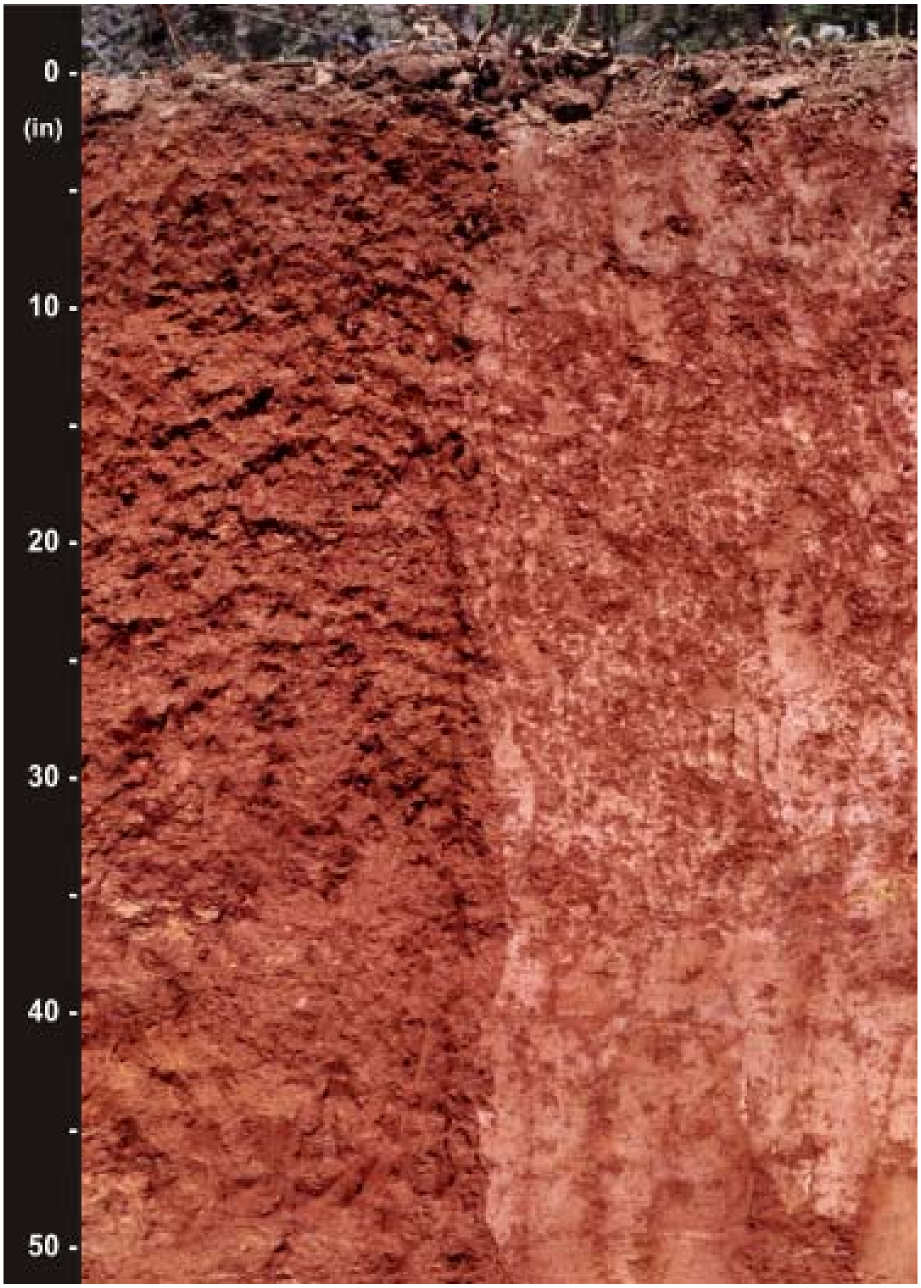

Figure 26.—Profile of the very deep, well drained Fairview soil.

Ap horizon:
Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 to 8
Texture—sandy clay loam

E horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, or loam

BE or BA horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8

Texture—loam, sandy clay loam, or clay loam
Mottles (where present)—shades of red

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8
Texture—clay loam or clay
Mottles (where present)—shades of red

BC horizon:
Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8
Texture—loam, sandy clay loam, or clay loam
Mottles—shades of red, brown, yellow, and white

C horizon:
Colors—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8; or is multicolored saprolite in shades of red, brown, yellow, and white
Texture—sandy loam, fine sandy loam, sandy clay loam, loam, or clay loam

Fluvaquents

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow to moderately rapid
Parent material: Recent alluvium from mixed geologic material
Landscape: Foothills and Piedmont river valleys
Landform: Hills and flood plains
Elevation range: 1,150 to 1,400 feet
Slope range: 0 to 3 percent
Hillslope profile position: Toeslopes
Geomorphic component: Base slopes, risers, and treads
Taxonomic classification: Fluvaquents

Typical Pedon

A typical pedon is not given for these soils because of their variability. These are areas where the natural soil properties and qualities have been greatly altered by excavation, intensive grading, mining, or covered by earthy fill material. Fluvaquents are typically loamy in the upper part and have sand, or a mixture of sand, gravel and cobbles, in the lower part.

Range in Characteristics

Thickness of underlying soil material: 30 to more than 60 inches to sandy or sandy-skeletal material
Depth to contrasting soil material: 20 to 40 inches or more to sandy or sandy-skeletal material
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few to many
Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel
Reaction: Extremely acid to neutral

Fontaflora Series

Depth class: Very deep
Drainage class: Well drained

Permeability: Moderately rapid or rapid
Parent material: Alluvium derived from felsic high-grade metamorphic or igneous rock or low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Flood plains
Elevation range: 1,100 to 3,200 feet
Slope range: 0 to 5 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers, treads, and steps
Taxonomic classification: Sandy, mixed, mesic Typic Udifluvents

Typical Pedon

Fontaflora sandy loam in an area of Fontaflora-Ostin complex, 0 to 5 percent slopes, flooded; in Burke County, about 16.1 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 1.7 miles east northeast on U.S. Forest Service Road 982, about 100 feet northeast, in forested flood plain; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 55 minutes 40 seconds N. and long. 81 degrees 47 minutes 31 seconds W.

A—0 to 5 inches; dark yellowish brown (10YR 3/4) sandy loam; weak fine granular structure; very friable; few fine flakes of mica; common very fine, fine, medium, and coarse roots; 5 percent, by volume, cobbles; moderately acid; clear wavy boundary.
C1—5 to 20 inches; brown (7.5YR 4/4) sandy loam; massive; very friable; common medium and few fine and coarse roots; few fine flakes of mica; 5 percent, by volume, gravel; strongly acid; diffuse wavy boundary.
C2—20 to 36 inches; dark yellowish brown (10YR 4/4) loamy sand; massive; very friable; few medium and coarse roots; few fine flakes of mica; 10 percent, by volume, gravel; moderately acid; clear wavy boundary.
C3—36 to 60 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand; single grained; loose; 50 percent cobbles and 30 percent gravel, by volume; slightly acid.

Range in Characteristics

Depth to contrasting soil material: 20 to 40 inches to more than 35 percent, by volume, rock fragments
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 0 to 35 percent, by volume, in the A horizon and in the upper part of the C horizon and more than 35 percent, by volume, in the C horizon from depths of 20 to 40 inches; mostly gravel and cobbles
Reaction: Very strongly acid to slightly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4
Texture (fine-earth fraction)—sandy loam

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—coarse sand, sand, loamy sand, loamy fine sand, sandy loam, or fine sandy loam in the upper part of the C horizon; coarse sand, sand, or loamy sand in the lower part of the C horizon at depths of more than 20 inches

Greenlee Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Colluvium and alluvium derived from felsic to mafic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Drainageways and coves
Elevation range: 1,200 to 4,100 feet
Slope range: 6 to 50 percent
Hillslope profile position: Backslopes, footslopes, and shoulders
Geomorphic component: Mountain flanks, mountain bases, base slopes, head slopes, and side slopes
Taxonomic classification: Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Greenlee very cobbly sandy loam in an area of Greenlee-Tate-Ostin complex, 1 to 15 percent slopes, extremely stony; in Burke County, about 8.1 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 3.5 miles northwest then southwest on Secondary Road 1240, about 7.5 miles west then north on U.S. Forest Service Road 118, about 50 feet southwest, in wooded area; Oak Hill USGS topographic quadrangle; lat. 35 degrees 51 minutes 57 seconds N. and long. 81 degrees 51 minutes 44 seconds W.

Oi—3 inches to 0; undecomposed and partially decomposed leaf litter.
A—0 to 2 inches; dark brown (10YR 3/3) very cobbly sandy loam; weak fine granular structure; very friable; many very fine and fine and common medium roots; 20 percent gravel and 40 percent cobbles, by volume; very strongly acid; abrupt wavy boundary.
Bw—2 to 60 inches; dark yellowish brown (10YR 4/6) very cobbly sandy loam; weak medium subangular blocky structure; friable; common very fine, fine, and medium and few coarse roots; few fine flakes of mica; 35 percent gravel and 20 percent cobbles, by volume; strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 60 inches or more
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: Commonly 35 to 60 percent, by volume, in the A and B horizons, 35 to 80 percent, by volume, in the C horizon, and an average of more than 35 percent, by volume, from 10 to 40 inches; mostly pebbles, cobbles, and stones
Reaction: Extremely acid to moderately acid

A horizon:
Color—hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 4; horizon less than 7 inches thick where value and chroma are 3 or less
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or sandy clay loam

C horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sand, loamy sand, sandy loam, fine sandy loam, or loam

Hatboro Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Alluvium
Landscape: Piedmont river valleys
Landform: Flood plains
Elevation range: 940 to 1,220 feet
Slope range: 0 to 2 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Fine-loamy, mixed, active, nonacid, mesic Typic Fluvaquents

Typical Pedon

Hatboro sandy loam, 0 to 2 percent slopes, frequently flooded; in Burke County, about 3.8 miles north of Morganton on N.C. Highway 18 from the Catawba River bridge, about 1,600 feet southeast along old road beginning on the north side of Bristol Creek, about 60 feet southwest, in edge of wooded flood plain; Morganton North USGS topographic quadrangle; lat. 35 degrees 48 minutes 44 seconds N. and long. 81 degrees 54 minutes 10 seconds W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable; many very fine and fine roots; strongly acid; clear smooth boundary.

A2—5 to 10 inches; dark grayish brown (2.5Y 4/2) sandy loam; weak medium granular structure; very friable; many very fine and fine roots; few fine prominent dark yellowish brown (10YR 4/6) masses of oxidized iron along root channels; common fine and medium flakes of mica; strongly acid; clear smooth boundary.

A3—10 to 21 inches; dark grayish brown (2.5Y 4/2) coarse sandy loam; weak medium granular structure; very friable; common fine and medium flakes of mica; strongly acid; gradual smooth boundary.

Bg1—21 to 29 inches; dark grayish brown (2.5Y 4/2) sandy clay loam; common medium distinct olive brown (2.5Y 4/4) mottles; moderate medium subangular blocky structure; firm; sticky and plastic; few fine and medium faint gray (2.5Y 5/1) iron depletions; common fine and medium flakes of mica; strongly acid; clear smooth boundary.

Bg2—29 to 34 inches; gray (5Y 5/1) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; many coarse prominent dark yellowish brown (10YR 4/4) masses of oxidized iron along root channels; common fine and medium flakes of mica; moderately acid; gradual smooth boundary.

Bg3—34 to 44 inches; olive gray (5Y 5/2) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky and non-plastic; many prominent yellowish brown (10YR 5/6) masses of oxidized iron; common fine and medium flakes of mica; moderately acid; gradual smooth boundary.

Cg—44 to 48 inches; olive gray (5Y 5/2) sandy clay loam; massive; friable; slightly sticky and non-plastic; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron and few fine faint gray (5Y 6/1) iron depletions; common fine and medium flakes of mica; moderately acid; abrupt smooth boundary.

2C—48 inches; gravel and sand.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to contrasting soil material: More than 40 inches to sand or pebble layer
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Common throughout the profile
Content and size of rock fragments: 0 to 10 percent, by volume, in the A and B horizons and 0 to 80 percent, by volume, in the C horizon; mostly pebbles
Reaction: very strongly acid to neutral from 0 to 30 inches and moderately acid to slightly acid below 30 inches

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4
Texture—sandy loam

Bg horizon:
Color—neutral in hue or hue of 10YR to 5Y; value of 4 to 7 and chroma of 0 to 2
Texture (fine-earth fraction)—loam, silt loam, sandy clay loam, clay loam, or silty clay loam
Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of gray

Cg horizon:
Color—neutral in hue or hue of 10YR to 5Y; value of 4 to 7 and chroma of 0 to 2
Texture (fine-earth fraction)—sandy loam, silt loam, sandy clay loam, clay loam, or silty clay loam in the upper part and stratified sand, silt, clay sediments, or gravel in the lower part
Redoximorphic features—masses of oxidized iron in shades of brown and yellow

2C horizon:
Color—variable
Texture—variable

Iotla Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid
Parent material: Recent alluvium
Landscape: Piedmont and foothill river valleys
Landform: Flood plains
Elevation range: 1,100 to 1,240 feet
Slope range: 0 to 2 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts

Typical Pedon

Iotla sandy loam, 0 to 2 percent slopes, occasionally flooded; in McDowell County, about 3.9 miles northwest of Sugar Hill on Secondary Road 1135, about 0.25 mile north on Secondary Road 1242, about 300 feet west of the road, about 50 feet west of Haw Branch, in pasture; Sugar Hill USGS topographic quadrangle; lat. 35 degrees 36 minutes 54 seconds N. and long. 82 degrees 06 minutes 07 seconds W.

Ap—0 to 12 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; many fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.

C—12 to 21 inches; dark yellowish brown (10YR 4/4) loam; massive; very friable; common fine roots; common medium distinct dark grayish brown (10YR 4/2) iron depletions; common fine flakes of mica; moderately acid; clear smooth boundary.

Cg1—21 to 26 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive; friable; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron and few fine faint dark gray (10YR 4/1) iron depletions in the matrix; common fine flakes of mica; moderately acid; abrupt smooth boundary.

Cg2—26 to 30 inches; mottled light brownish gray (10YR 6/2) and dark gray (10YR 4/1) sand; single grained; loose; many distinct light yellowish brown (10YR 6/4) masses of oxidized iron; common flakes of mica; moderately acid; abrupt smooth boundary.

Ab—30 to 50 inches; very dark gray (10YR 3/1) loam; massive; friable; common flakes of mica; moderately acid; abrupt smooth boundary.

C´g—50 to 60 inches; light brownish gray (10YR 6/2) gravelly sand; single grained; loose; common fine flakes of mica; about 30 percent, by volume, gravel; moderately acid.

Range in Characteristics

Depth to contrasting soil material: Loamy sediments 40 to 60 inches or more thick over deposits of cobbles or gravel stratified with sandy or loamy material

Depth to bedrock: More than 60 inches to soft or hard bedrock

Content of mica flakes: Common or many throughout the profile

Content and size of rock fragments: 0 to 10 percent, by volume, above 40 inches and variable below 40 inches; mostly pebbles

Reaction: Strongly acid to slightly acid in the upper 30 inches, except where lime has been applied, and strongly acid to neutral below 30 inches

A or Ap horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4; horizon less than 6 inches thick where value is 3 and chroma is 2 or 3

Texture—sandy loam

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 3 to 6

Texture—sandy loam, fine sandy loam, or loam above 40 inches; some pedons have thin layers of sand or loamy sand

Redoximorphic features—masses of oxidized iron in shades of brown and yellow and iron or clay depletions in shades of gray and brown

Cg or C´g horizon (below 20 inches):

Color—neutral in hue or hue of 10YR or 2.5Y; value of 3 to 7 and chroma of 1 or 2

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam above 40 inches and loamy or stratified with sand below 40 inches

Redoximorphic features—reduced matrix

Ab horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 4

Texture—sandy loam, fine sandy loam, or loam

Jeffrey Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Landscape: Blue Ridge mountains
Landform: Mountains and spurs
Elevation range: 3,400 to 4,200 feet
Slope range: 30 to 80 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Narrow mountaintops and mountain flanks
Taxonomic classification: Fine-loamy, isotic, mesic Typic Dystrudepts

Typical Pedon

Jeffrey gravelly sandy loam in an area of Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony; in Avery County, about 1.2 miles east of Newland on N.C. Highway 181, about 100 feet north of road, in road cut; Newland USGS topographic quadrangle; lat. 36 degrees 04 minutes 27 seconds N. and long. 81 degrees 54 minutes 44 seconds W.

A1—0 to 5 inches; very dark brown (10YR 2/2) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; 20 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
A2—5 to 9 inches; dark brown (10YR 3/3) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; 20 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
Bw—9 to 20 inches; yellowish brown (10YR 5/6) gravelly loam; weak fine subangular blocky structure; friable; common fine and medium roots; 18 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
C—20 to 31 inches; yellowish brown (10YR 5/6) gravelly sandy loam; massive; friable; few fine and medium roots; 20 percent, by volume, gravel; very strongly acid; gradual wavy boundary.
R—31 to 36 inches; unweathered feldspathic sandstone.

Range in Characteristics

Thickness of the solum: 18 to 35 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: 5 to 30 percent, by volume, in the A horizon and less than 35 percent, by volume, in the B and C horizons; mostly gravel and cobbles and occasionally channers and stones
Reaction: Very strongly acid or strongly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 2 or 3
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BC horizon:(where present)
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 or 6; or multicolored
Texture (fine-earth fraction)—loamy sand, sandy loam, fine sandy loam, or loam

Cr horizon:(where present)
Type of bedrock—weathered, low-grade metasedimentary rock that is partially consolidated but can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered, low-grade metasedimentary rock

Maymead Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Colluvium derived from low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Drainageways, spurs, and hills
Elevation range: 2,300 to 3,100 feet
Slope range: 10 to 25 percent
Hillslope profile position: Summits, shoulders, backslopes, and footslopes
Geomorphic component: Mountain flank benches, mountain bases, head slopes, and side slopes
Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Maymead fine sandy loam, 10 to 25 percent slopes, very stony; in Burke County, approximately 20.0 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 4.2 miles west and south on U.S. Forest Service Road 496, about 200 feet northwest of road; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 55 minutes 15 seconds N. and long. 81 degrees 52 minutes 26 seconds W.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; common very fine, fine, and medium and few coarse roots; 10 percent, by volume, gravel; strongly acid; abrupt smooth boundary.
A2—2 to 4 inches; olive brown (2.5Y 4/4) fine sandy loam; weak fine granular structure; friable; common very fine, fine, and medium and few coarse roots; 10 percent, by volume, gravel; strongly acid; abrupt smooth boundary.
Bw1—4 to 14 inches; yellowish brown (10YR 5/4) gravelly fine sandy loam; weak medium subangular blocky structure; friable; common fine and few medium and coarse roots; 15 percent gravel and 5 percent cobbles, by volume; strongly acid; clear wavy boundary.
Bw2—14 to 18 inches; yellowish brown (10YR 5/4) gravelly fine sandy loam; weak medium subangular blocky structure; friable; few medium and coarse roots; 15 percent gravel and 5 percent cobbles, by volume; strongly acid; clear wavy boundary.
Bw3—18 to 33 inches; yellowish brown (10YR 5/6) cobbly fine sandy loam; weak medium subangular blocky structure; friable; few medium and coarse roots; 15 percent gravel and 15 percent cobbles, by volume; strongly acid; gradual wavy boundary.
C—33 to 56 inches; yellowish brown (10YR 5/6) cobbly fine sandy loam; massive; friable; 10 percent gravel and 20 percent cobbles, by volume; strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches or more
Depth to bedrock: More than 40 inches to hard bedrock
Content of mica flakes: Usually none
Content and size of rock fragments: 10 to 35 percent, by volume, throughout the profile and an average of 15 to 35 percent, by volume, between 10 and 40 inches; mostly gravel, cobbles, and stones and occasionally boulders
Reaction: Strongly acid or very strongly acid

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4; horizon less than 6 inches thick where value is 3
Texture (fine-earth fraction)—fine sandy loam

E horizon (where present):
Color—hue of 10YR, value of 4 or 5, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam; commonly contains larger and a greater number of coarse fragments than the Bw horizon

Meadowfield Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 1, 080 to 1,260 feet
Slope range: 8 to 60 percent
Hillslope profile position: Side slopes
Geomorphic component: Crests and side slopes
Taxonomic class: Loamy-skeletal, mixed, subactive, mesic Typic Hapludults

Typical Pedon

Meadowfield gravelly sandy loam in an area of Meadowfield-Fairview complex, 15 to 25 percent slopes; in Burke County, about 10.0 miles east of Morganton on Interstate 40 to Icard exit, about 0.9 mile south on Secondary Road 1786, about 0.6 mile south on Secondary Road 1789, about 0.3 mile south on Secondary Road 1790 to end of pavement, left at fork at end of pavement, about 0.3 mile to gate, in pasture on south side of road, about 400 feet southeast in woods south of pasture; Longview USGS topographic quadrangle; lat. 35 degrees 41 minutes 22 seconds N. and long. 81 degrees 27 minutes 54 seconds W.

Oe—2 inches to 0; partially decomposed pine and hardwood litter.
A—0 to 4 inches; brown (10YR 4/3) gravelly sandy loam; weak medium granular structure; very friable; common fine and medium roots; 20 percent, by volume, gravel; common fine flakes of mica; moderately acid; clear wavy boundary.

BA—4 to 10 inches; dark yellowish brown (10YR 4/6) gravelly sandy loam; moderate medium granular structure; friable; common fine and few medium roots; 15 percent, by volume, gravel; common fine flakes of mica; strongly acid; gradual wavy boundary.
Bt1—10 to 20 inches; strong brown (7.5YR 5/8) very gravelly sandy clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; 35 percent, by volume, gravel and 5 percent, by volume, cobbles; common fine flakes of mica; strongly acid; gradual wavy boundary.
Bt2—20 to 27 inches; dark yellowish brown (10YR 4/6) very gravelly sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; 40 percent, by volume, gravel and 20 percent, by volume, cobbles; common fine flakes of mica; strongly acid; abrupt wavy boundary.
Cr—27 to 30 inches; weathered sillimanite schist that has dark yellowish brown (10YR 4/6) clay loam in cracks; abrupt irregular boundary.
R—30 to 60 inches; unweathered, slightly fractured sillimanite schist.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to soft or hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 15 to 60 percent in the A and AB horizons and 35 to less than 60 percent in the B horizon; ranging from pebbles to stones
Reaction: Very strongly acid to moderately acid

A horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam

E horizon (where present):
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

AB or BA horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam, loam, or clay loam

Bt horizon:
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

Cr horizon:
Type of bedrock—weathered, slightly to highly fractures felsic high-grade metamorphic rock that has clayey or loamy material in the cracks

R layer:
Type of bedrock—unweathered, slightly fractured to highly fractured felsic high-grade metamorphic rock

Nikwasi Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid
Parent material: Alluvium derived from felsic to mafic, low-grade to high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains
Landform: Flood plains

Elevation range: 2,800 to 4,100 feet
Slope range: 0 to 3 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, mesic Cumulic Humaquepts

Typical Pedon

Nikwasi loam, 0 to 3 percent slopes, frequently flooded; in Avery County, about 5.4 miles south of Minneapolis on U.S. Highway 19E, about 250 feet south of road, in pasture; Carvers Gap USGS topographic quadrangle; lat. 36 degrees 03 minutes 08 seconds N. and long. 82 degrees 00 minutes 54 seconds W.

A1—0 to 10 inches; black (10YR 2/1) loam; weak fine granular structure; very friable; many fine roots; few very fine flakes of mica; 3 percent, by volume, gravel; strongly acid; gradual wavy boundary.
A2—10 to 24 inches; black (N 2.5/0) loam; weak fine granular blocky structure; very friable; many fine roots; common fine flakes of mica; 3 percent, by volume, gravel; strongly acid; gradual wavy boundary.
Cg1—24 to 30 inches; dark gray (10YR 4/1) gravelly sandy loam; massive; friable; common fine and medium roots; many fine and medium flakes of mica; 18 percent, by volume, gravel; strongly acid; clear wavy boundary.
Cg2—30 to 62 inches; dark gray (10YR 4/1) very gravelly sand; massive; friable; few fine roots; many fine and medium flakes of mica; 35 percent gravel and 15 percent cobbles, by volume; strongly acid.

Range in Characteristics

Depth to contrasting material: 24 to 40 inches to a sandy horizon that has more than 35 percent, by volume, coarse fragments
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: None to many
Content and size of rock fragments: Less than 15 percent, by volume, in the A horizon, less than 35 percent, by volume, in the upper part of the Cg horizon, and more than 35 percent, by volume, in the lower part of the Cg horizon; mostly gravel and cobbles
Reaction: Very strongly acid to slightly acid, except where lime has been applied

A or Ap horizon:
Color—neutral in hue or hue of 10YR or 2.5Y; value of 2 or 3 and chroma of 1 to 3
Texture (fine-earth fraction)—loam
Redoximorphic features—masses of oxidized iron in shades of red, brown, yellow, and olive and iron or clay depletions in shades of brown, yellow, olive, and gray

AC horizon (where present):
Color—neutral in hue or hue of 10YR or 2.5Y; value of 2 or 3 and chroma of 1 to 3
Texture (fine-earth fraction)—sand, loamy coarse sand, loamy sand, or loamy fine sand
Redoximorphic features—masses of oxidized iron in shades of red, brown, yellow, and olive and iron or clay depletions in shades of brown, yellow, olive, and gray

Cg horizon:
Color—neutral in hue or hue of 10YR or 2.5Y; value of 4 to 7 and chroma of 1 or 2
Texture (fine-earth fraction)—sandy loam or loam in the upper part of the Cg horizon and sand, loamy coarse sand, or loamy sand in the lower part of the Cg horizon

Redoximorphic features—masses of oxidized iron in shades of red, brown, yellow, and olive and iron or clay depletions in shades of brown, yellow, olive, and gray

Northcove Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Colluvium derived from low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Drainageways, coves, and structural benches
Elevation range: 1,400 to 4,200 feet
Slope range: 15 to 50 percent
Hillslope profile position: Shoulders, backslopes, and footslopes
Geomorphic component: Mountain flanks, mountain bases, head slopes, and base slopes
Taxonomic classification: Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Northcove very cobbly loam, 30 to 50 percent slopes, rubbly; in Burke County, about 26.0 miles north of Morganton on N.C. Highway 181 from Catawba River bridge, about 0.33 mile southwest on Secondary Road 1264, about 0.85 mile south on Secondary Road 1265 to end of pavement and beginning of U.S. Forest Service Road 210, about 0.5 mile south on U.S. Forest Service Road 210, about 1,100 feet upslope, in cove; Linville Falls USGS topographic quadrangle; lat. 35 degrees 56 minutes 04 seconds N. and long. 81 degrees 53 minutes 21 seconds W.

A1—0 to 6 inches; very dark brown (10YR 2/2) very cobbly loam; weak medium granular structure; very friable; many fine and medium roots; 35 percent, by volume, gravel, cobbles and stones; extremely acid; clear smooth boundary.

A2—6 to 9 inches; very dark grayish brown (10YR 3/2) very cobbly loam; moderate medium subangular blocky structure; friable; common very fine and fine and few medium roots; 40 percent, by volume, gravel and cobbles; very strongly acid; gradual wavy boundary.

Bw—9 to 60 inches; yellowish brown (10YR 5/6) very cobbly loam; moderate medium subangular blocky structure; friable; few fine roots; 40 percent, by volume, gravel, cobbles, and stones; very strongly acid.

Range in Characteristics

Thickness of the solum: 35 to 60 inches or more
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: Usually none
Content and size of rock fragments: 35 to 60 percent, by volume, throughout the profile; mostly gravel, cobbles, stones, and boulders
Reaction: Extremely acid to moderately acid

A horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 2 to 4
Texture (fine-earth fraction)—loam

Bw horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

Ostin Series

Depth class: Very deep
Drainage class: Well drained or moderately well drained
Permeability: Very rapid
Parent material: Alluvium derived from felsic high-grade metamorphic or igneous rock or low-grade metasedimentary rock
Landscape: Blue Ridge mountains, foothills, and river valleys
Landform: Flood plains
Elevation range: 1,100 to 3,200 feet
Slope range: 0 to 5 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Sandy-skeletal, mixed, mesic Typic Udifluvents

Typical Pedon

Ostin very cobbly loamy sand in an area of Fontaflora-Ostin complex, 0 to 5 percent slopes, flooded; in Burke County, about 16.1 miles north of Morganton on N.C. Highway 181 from Catawba River bridge, about 1.7 miles northeast on U.S. Forest Service Road 982, about 100 feet southeast; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 55 minutes 39 seconds N. and long. 81 degrees 47 minutes 30 seconds W.

A—0 to 6 inches; dark brown (10YR 3/3) very cobbly loamy sand; weak medium granular structure; very friable; common very fine and fine and few medium roots; common fine flakes of mica; 40 percent, by volume, cobbles; very strongly acid; gradual smooth boundary.
C—6 to 35 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand; loose; very friable; few very fine, fine, medium, and coarse roots; 30 percent gravel, 35 percent cobbles, and 10 percent stones, by volume; strongly acid; abrupt smooth boundary.
Ab—35 to 44 inches; very dark gray (10YR 3/1) sandy loam; massive; very friable; common fine flakes of mica; abrupt smooth boundary.
C´—44 to 50 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand; loose; very friable.

Range in Characteristics

Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few to many
Content and size of rock fragments: 5 to 50 percent, by volume, in the A horizon, 5 to 80 percent, by volume, in C horizon, and an average of more than 35 percent, by volume, between 10 and 40 inches; mostly gravel and cobbles and occasionally stones
Reaction: Very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 to 3; horizon less than 7 inches thick where value is 3
Texture (fine-earth fraction)—loamy sand

C horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6; or multicolored
Texture (fine-earth fraction)—coarse sand, sand, or loamy sand
Redoximorphic features (where present)—iron or clay depletions that have chroma of 2 or less below a depth of 24 inches

Ab horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 to 3
Texture (fine-earth fraction)—sand, loamy sand, or sandy loam

C´ horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—same as C horizon

Pacolet Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 1,060 to 1,300 feet
Slope range: 8 to 25 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves and side slopes
Taxonomic classification: Fine, kaolinitic, thermic Typic Kanhapludults (fig. 27)

Typical Pedon

Pacolet sandy clay loam, 8 to 15 percent slopes, moderately eroded; in Cleveland County, about 1.0 mile north of Fallston on Secondary Road 1650 to Secondary Road 1637, about 2.8 miles on Secondary Road 1637, about 200 feet southwest, in field; Lawndale USGS topographic quadrangle; lat. 35 degrees 26 minutes 58 seconds N. and long. 81 degrees 33 minutes 11 seconds W.

Ap—0 to 7 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium granular structure; friable; many fine roots; few fine flakes of mica; slightly acid; clear smooth boundary.
Bt—7 to 28 inches; red (2.5YR 4/6) clay; few fine distinct reddish yellow (5YR 6/8) mottles; moderate medium subangular blocky structure; firm; sticky and plastic; few fine roots; common distinct clay films on faces of peds; common fine flakes of mica; moderately acid; gradual wavy boundary.
BC—28 to 44 inches; red (2.5YR 5/6) clay loam; common fine distinct reddish yellow (5YR 6/8) and common fine prominent pink (5YR 8/3) mottles; weak moderately subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; common fine flakes of mica; strongly acid; gradual wavy boundary.
C1—44 to 60 inches; yellowish red (5YR 5/8) sandy loam saprolite; few fine faint reddish yellow (5YR 6/8) and few fine prominent dark reddish brown (5YR 3/3) mottles; massive; very friable; many fine flakes of mica; strongly acid.
C2—60 to 72 inches; yellowish red (5YR 5/8) sandy loam saprolite; many medium faint reddish yellow (5YR 6/8), many medium prominent dark reddish brown (5YR 3/3), and many medium faint reddish yellow (5YR 7/8) mottles; massive; very friable; many fine flakes of mica; strongly acid.

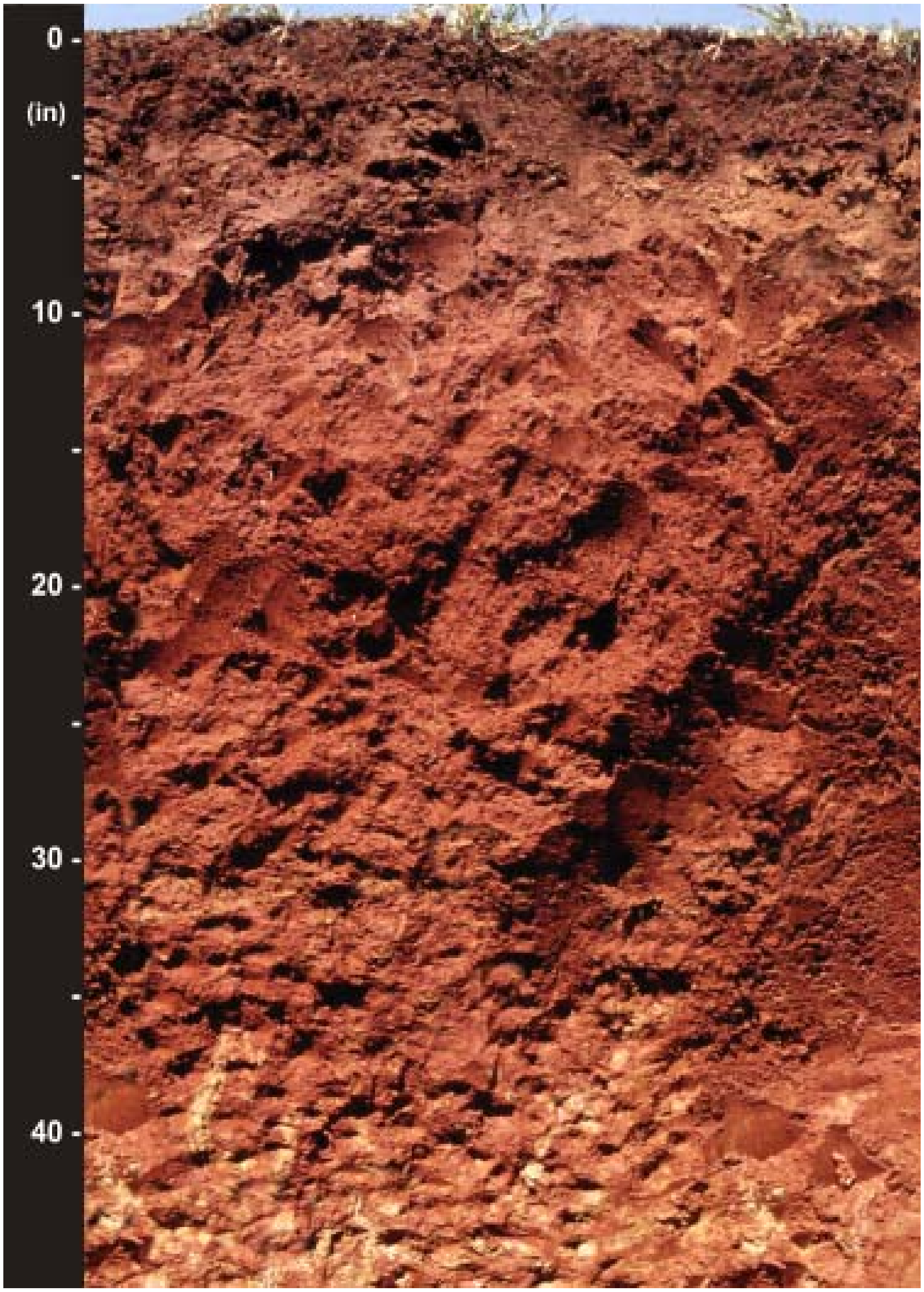

Figure 27.—Profile of the very deep, well drained Pacolet soil.

Range in Characteristics

Thickness of the solum: 20 to more than 40 inches
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: Few or common in the A and B horizons and common or many in the C horizon
Content and size of rock fragments: Less than 35 percent, by volume, in the A horizon and less than 15 percent, by volume, in the B and C horizons; mostly gravel
Reaction: Very strongly acid to slightly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Texture—clay
Mottles (where present)—shades of yellow and brown

BC horizon:
Color—hue of 10R to 5YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay loam or clay loam
Mottles—shades of yellow and brown

C horizon:
Color—hue of 10R to 5YR, value of 4 or 5, and chroma of 6 or 8; or multicolored in shades of red, yellow, and brown
Texture—sandy loam or loam

Pigeonroost Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Blue Ridge mountains, South Mountains, and Blue Ridge foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,200 to 3,500 feet
Slope range: 8 to 80 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Pigeonroost fine sandy loam in an area of Edneytown-Pigeonroost complex, 8 to 15 percent slopes, stony; in Burke County, about 16.5 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 4.4 miles east and north on U.S. Forest Service Road 982, about 1.3 miles northwest on U.S. Forest Service Road 198, right of road, in road cut; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 57 minutes 02 seconds N. and long. 81 degrees 48 minutes 02 seconds W.

Oi—2 inches to 0; fresh and partially decomposed hardwood and pine litter.
A1—0 to 1 inch; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; very friable; common very fine and fine and few medium and coarse roots; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
A2—1 to 4 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; common very fine and fine and few medium and coarse roots; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
Bt1—4 to 13 inches; brownish yellow (10YR 6/6) loam; weak medium subangular blocky structure; friable; common fine and few medium and coarse roots; few faint clay films on faces of peds; 5 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bt2—13 to 27 inches; reddish yellow (7.5YR 6/8) loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; few faint clay films on faces of peds; 5 percent, by volume, gravel; strongly acid; abrupt irregular boundary.

Cr—27 to 40 inches; weathered gneiss in shades of white, yellow, and olive that is partially consolidated but can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 15 to 40 inches
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: Less than 15 percent, by volume, throughout the profile; gravel and some stones in the A horizon and gravel in the B and C horizons
Reaction: Very strongly acid to moderately acid, except where lime has been applied

A horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4; horizon less than 6 inches thick where value is 3
Texture (fine-earth fraction)—fine sandy loam

BA or BE horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

C horizon (where present):
Color—hue of 5YR to 10YR, value of 3 to 8, and chroma of 3 to 8; or is multicolored
Texture (fine-earth fraction)—coarse sandy loam or sandy loam
Mottles—shades of red, brown, and yellow

Cr horizon:
Type of bedrock—weathered, felsic high-grade metamorphic or igneous rock that is partially consolidated but can be dug with difficulty with hand tools

Pineola Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from low-grade metasedimentary rock and affected by soil creep in the upper part
Landscape: Blue Ridge mountains
Landform: Mountains and mountain slopes
Elevation range: 3,600 to 4,000 feet
Slope range: 8 to 30 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops and mountain flanks
Taxonomic classification: Fine-loamy, mixed, active, mesic Humic Hapludults

Typical Pedon

Pineola gravelly loam, 8 to 15 percent slopes, stony; in Avery County, about 1.9 miles east of Linville on U.S. Highway 221, about 1.2 miles south on Secondary Road 1510, about 200 feet southeast on logging road, about 30 feet east of road, in woods; Grandfather Mountain USGS topographic quadrangle; lat. 36 degrees 04 minutes 25 seconds N. and long. 81 degrees 51 minutes 34 seconds W.

Oe—1 inch to 0; partially decomposed leaf litter.

A—0 to 7 inches; dark brown (10YR 3/3) gravelly loam; weak fine granular structure; very friable; many fine and few medium roots; 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

Bt—7 to 20 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common fine and few medium roots; 8 percent, by volume, gravel; very strongly acid; gradual wavy boundary.

BC—20 to 26 inches; brownish yellow (10YR 6/6) loam; weak medium subangular blocky structure; friable; few fine and medium roots; 10 percent, by volume, gravel; strongly acid; gradual wavy boundary.

C—26 to 32 inches; brownish yellow (10YR 6/6) and very pale brown (10YR 7/4) gravelly loam saprolite; massive; friable; few very fine and fine roots; 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

Cr—32 to 61 inches; multicolored, weathered, partially consolidated low-grade metasiltstone that can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 15 to 39 inches

Depth to bedrock: 20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock

Content of mica flakes: None or few

Content and size of rock fragments: 15 to 35 percent, by volume, in the A horizon, less than 35 percent, by volume, in the B horizon, and less than 50 percent, by volume, in the C horizon; mostly gravel and channers and occasionally cobbles and stones

Reaction: Extremely acid to moderately acid, except where lime has been applied

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 4

Texture (fine-earth fraction)—loam

AB or BA horizon (where present):

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 6

Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

Bt horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture (fine-earth fraction)—clay loam, sandy clay loam, loam, or silty clay loam

Mottles (where present)—shades of yellow and brown

BC horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8; or multicolored in shades of red, brown, yellow, black, and white

Texture (fine-earth fraction)—coarse sandy loam, sandy loam, fine sandy loam, loam, or silt loam

C horizon:

Color—hue of 5YR to 2.5Y, value of 3 to 8, and chroma of 1 to 8; or multicolored in shades of red, brown, yellow, black, and white

Texture (fine-earth fraction)—loamy coarse sand, loamy sand, loamy fine sand, coarse sandy loam, sandy loam, fine sandy loam, loam, or silt loam

Cr horizon:
Type of bedrock—weathered, multicolored low-grade metasedimentary rock that is partially consolidated but can be dug with difficulty with hand tools

Rhodhiss Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 950 to 1,300 feet
Slope range: 15 to 50 percent
Hillslope profile position: Shoulders and backslopes
Geomorphic component: Side slopes, nose slopes, and head slopes
Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Typic Hapludults (fig. 28)

Typical Pedon

Rhodhiss sandy loam, 25 to 45 percent slopes; in Burke County, about 3.2 miles north of Morganton on N.C. Highway 18 from Catawba River bridge, about 0.1 mile northwest on Secondary Road 1430, about 1.6 miles northwest on Secondary Road 1426, about 1.1 miles southwest on Secondary Road 1435 to farm house at end of road, about 600 feet south on farm road from cabled gate, about 100 feet up the side slope, in forest; Morganton North USGS topographic quadrangle; lat. 35 degrees 48 minutes 30 seconds N. and long. 81 degrees 41 minutes 46 seconds W.

Oi—1 inch to 0; partially decomposed hardwood litter.
A—0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable; common fine roots; few fine flakes of mica; slightly acid; clear wavy boundary.
E—3 to 8 inches; dark yellowish brown (10YR 4/6) sandy loam; weak medium granular structure; very friable; common fine and medium roots; common fine flakes of mica; slightly acid; gradual wavy boundary.
Bt1—8 to 14 inches; strong brown (7.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; common fine flakes of mica; moderately acid; gradual wavy boundary.
Bt2—14 to 25 inches; yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine clay films on faces of peds; common faint flakes of mica; moderately acid; gradual wavy boundary.
BC—25 to 30 inches; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine flakes of mica; strongly acid; clear wavy boundary.
C1—30 to 49 inches; mottled yellow (10YR 7/8), strong brown (7.5YR 5/8), and olive (5Y 4/3) saprolite that has a sandy loam texture; massive; very friable; common fine flakes of mica; strongly acid; clear wavy boundary.
C2—49 to 60 inches; mottled reddish yellow (7.5YR 7/6), dark gray (2.5Y 4/1), and olive gray (5Y 4/2) saprolite that has a sandy loam texture; massive; very friable; common fine flakes of mica; strongly acid.

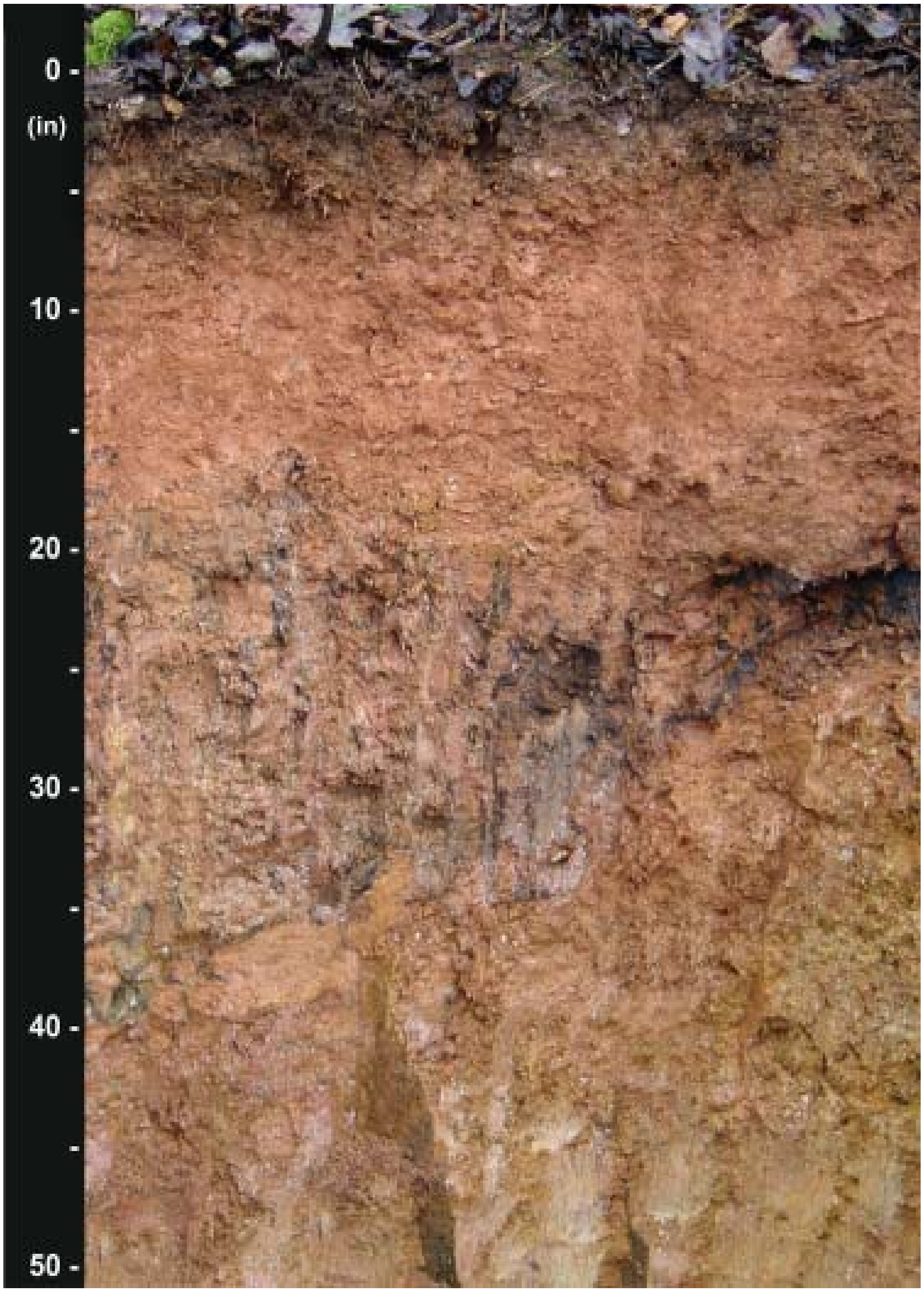

Figure 28.—Profile of the very deep, well drained Rhodhiss soil.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Typically none to common but ranges to many in some C horizons below 40 inches
Content and size of rock fragments: 0 to 10 percent, by volume, throughout the profile; mostly gravel
Reaction: Very strongly acid to slightly acid

A horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 to 6; horizon less than 6 inches thick where value is 3
Texture (fine-earth fraction)—sandy loam

E horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam or fine sandy loam

BA horizon (where present):
Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, loam, or sandy clay loam

Bt horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy clay loam or clay loam
Mottles—shades of brown, red, yellow, and gray

BC horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, sandy clay loam, or clay loam
Mottles—shades of red, brown, yellow, gray, and white

C horizon:
Color—multicolored or mottled in shades of red, yellow, brown, olive, gray, and white
Texture—saprolite that is loamy sand, coarse sandy loam, sandy loam, fine sandy loam, loam, or sandy clay loam

Rion Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 1,080 to 1,260 feet
Slope range: 25 to 60 percent
Hillslope profile position: Backslopes
Geomorphic component: Side slopes
Taxonomic classification: Fine-loamy, mixed, semiactive, thermic Typic Hapludults

Typical Pedon

Rion gravelly loamy sand in an area of Rion-Cliffside complex, 25 to 60 percent slopes, very stony; in Cleveland County, about 0.1 mile south of the Broad River on N.C. Highway 150, about 600 feet east on N.C. Highway 150, about 180 feet south, in woods; Boiling Springs South USGS topographic quadrangle; lat. 35 degrees 11 minutes 56 seconds N. and long. 81 degrees 39 minutes 54 seconds W.

Oe—2 inches to 0; partially decomposed leaves and twigs.
A—0 to 8 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand; weak fine granular structure; very friable; many fine and medium and few coarse roots; common fine flakes of mica; 20 percent, by volume, gravel; strongly acid; abrupt smooth boundary.

Bt1—8 to 22 inches; brown (7.5YR 5/4) gravelly sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine flakes of mica; 18 percent, by volume, gravel; very strongly acid; clear wavy boundary.

Bt2—22 to 34 inches; yellowish red (5YR 5/6) gravelly sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; 15 percent, by volume, gravel; very strongly acid; clear wavy boundary.

BC—34 to 44 inches; strong brown (7.5YR 5/6) gravelly clay loam; few fine distinct reddish yellow (7.5YR 7/8) mottles; weak medium subangular blocky structure; friable; common fine flakes of mica; 15 percent, by volume, gravel; very strongly acid; gradual wavy boundary.

C—44 to 60 inches; strong brown (7.5YR 5/8) gravelly sandy loam; common fine distinct reddish yellow (7.5YR 7/8) mottles; massive; very friable; common fine flakes of mica; 15 percent, by volume, gravel; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: Commonly 0 to 12 percent, by volume, but ranges to 35 percent, by volume, throughout the profile; mostly pebbles and cobbles
Reaction: Very strongly acid or strongly acid, except where lime has been applied

A horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—loamy sand

AB or BA horizon (where present):
Color—hue of 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—loamy sand or sandy loam

Bt horizon:
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy clay loam or clay loam
Mottles (where present)—shades of red, yellow, and brown

BC horizon:
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy clay loam, clay loam, or sandy loam
Mottles (where present)—shades of red, yellow, and brown

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam
Mottles—shades of red, yellow, and brown

Soco Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,400 to 4,200 feet
Slope range: 8 to 80 percent

Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, nose slopes, and head slopes
Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Soco fine sandy loam in an area of Soco-Ditney complex, 15 to 30 percent slopes, very stony; in Burke County, about 0.6 mile south on N.C. Highway 183 from Linville Falls community and U.S. Highway 221, about 3.5 miles south on Secondary Road 1238 to pit, in road cut on east side of road, at drainage cutout; Linville Falls USGS topographic quadrangle; lat. 35 degrees 54 minutes 36 seconds N. and long. 81 degrees 54 minutes 44 seconds W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine, common medium, and few coarse roots; very strongly acid; abrupt wavy boundary.
BA—5 to 10 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine, fine, and coarse roots; strongly acid; gradual wavy boundary.
Bw1—10 to 27 inches; yellowish brown (10YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; 15 percent, by volume, gravel; very strongly acid; gradual irregular boundary.
Bw2—27 to 34 inches; yellowish brown (10YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; few fine and coarse and common medium roots; 30 percent, by volume, gravel; very strongly acid; abrupt irregular boundary.
Cr—34 to 48 inches; weathered quartzite that can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 20 to 39 inches
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly channers and flagstones and occasionally gravel, cobbles, and stones
Reaction: Extremely acid to strongly acid, except where lime has been applied

A horizon:
Color—hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 1 to 6; horizon less than 7 inches thick where value and chroma are 3 or less
Texture (fine-earth fraction)—fine sandy loam

BA horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—loam, fine sandy loam, sandy loam, very fine sandy loam, or silt loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—loam, fine sandy loam, sandy loam, very fine sandy loam, or silt loam

C horizon (where present):
Color—multicolored saprolite in shades of white, gray, brown, and yellow
Texture (fine-earth fraction)—loamy fine sand, loamy sand, sandy loam, fine sandy loam, loam, or silt loam

Cr horizon:
Color—multicolored in shades of white, gray, brown, and yellow
Type of bedrock—weathered, low-grade metasedimentary rock that is partially consolidated but can be dug with difficulty with hand tools

Stecoah Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Mountains, spurs, and ridges
Elevation range: 1,600 to 3,920 feet
Slope range: 8 to 50 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Mountaintops, mountain flanks, interfluves, side slopes, and nose slopes
Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic, Typic Dystrudepts

Typical Pedon

Stecoah fine sandy loam in an area of Stecoah-Soco complex, 15 to 30 percent slopes, stony; in Burke County, about 20 miles north of Morganton on N.C. Highway 181 from the Catawba River bridge, about 3.1 miles west and south on U.S. Forest Service Road 496, about 900 feet northeast on U.S. Forest Service Road 4060 to ridge nose, about 1,000 feet northwest; Chestnut Mountain USGS topographic quadrangle; lat. 35 degrees 55 minutes 41 seconds N. and long. 81 degrees 51 minutes 52 seconds W.

A—0 to 2 inches; very dark brown (10YR 2/2) fine sandy loam; weak fine granular structure; very friable; common very fine and fine and few medium roots; very strongly acid; abrupt wavy boundary.
Bw1—2 to 14 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak fine granular structure; very friable; few very fine, fine, and medium roots; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
Bw2—14 to 27 inches; brownish yellow (10YR 6/6) fine sandy loam; weak medium subangular blocky structure; friable; few very fine, fine, medium, and coarse roots; 5 percent, by volume, gravel; strongly acid; gradual wavy boundary.
Bw3—27 to 40 inches; brownish yellow (10YR 6/6) loam; weak medium subangular blocky structure; friable; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
C—40 to 49 inches; light gray (10YR 7/2) silt loam; massive; very friable; strongly acid; gradual wavy boundary.
Cr—49 to 60 inches; weathered arkose that is partially consolidated but can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 24 to 50 inches
Depth to bedrock: 40 to 60 inches to soft bedrock and more than 60 inches to hard bedrock
Content of mica flakes: Few or common throughout the profile
Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel and cobbles
Reaction: Very strongly acid or strongly acid, except where lime has been applied

A horizon:
Color—hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 2 to 6
Texture (fine-earth fraction)—fine sandy loam

E horizon (where present):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4
Texture (fine-earth fraction)—sandy loam or loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, silt loam, fine sandy loam, or sandy loam

C horizon:
Color—multicolored saprolite in shades of white, light gray, and very pale brown
Texture (fine-earth fraction)—loam, silt loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand

Cr horizon:
Color—multicolored in shades of white, light gray, and very pale brown
Type of bedrock—weathered, low-grade metasedimentary rock that is partially consolidated but can be dug with difficulty with hand tools

Tate Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium and colluvium derived from felsic high-grade metamorphic rock
Landscape: Blue Ridge mountains, South Mountains, Piedmont river valleys, and Blue Ridge foothills
Landform: Drainageways, coves, stream terraces, and hills
Elevation range: 1,200 to 4,100 feet
Slope range: 1 to 50 percent
Hillslope profile position: Footslopes and toeslopes
Geomorphic component: Mountain bases, risers, treads, and base slopes
Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Tate fine sandy loam in an area of Greenlee-Tate complex, 15 to 30 percent slopes, extremely stony; in Burke County, approximately 15.0 miles west of Morganton on N.C. Highway 126 to Longtown, about 2.5 miles northwest on Secondary Road 1238, about 0.9 mile north on U.S. Forest Service Road 117, about 600 feet west of road; Ashford USGS topographic quadrangle; lat. 35 degrees 48 minutes 34 seconds N. and long. 81 degrees 55 minutes 50 seconds W.

A—0 to 3 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many very fine, common fine, and few medium roots; very strongly acid; clear wavy boundary.
E—3 to 6 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; few very fine, fine, and coarse and common medium roots; very strongly acid; clear wavy boundary.
Bt1—6 to 15 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common very fine and fine and few medium and coarse roots; 5 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bt2—15 to 26 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; friable; common very fine and fine and few medium roots; few fine flakes of mica; 5 percent, by volume, gravel; strongly acid; clear wavy boundary.

Bt3—26 to 50 inches; strong brown (7.5YR 5/6) gravelly sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; 15 percent gravel and 5 percent cobbles, by volume; strongly acid; clear irregular boundary.

BC—50 to 60 inches; strong brown (7.5YR 5/6) gravelly fine sandy loam; weak medium subangular blocky structure; friable; 20 percent gravel and 10 percent cobbles, by volume; strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches or more
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: 0 to 35 percent, by volume, in the A and Bt horizons and 5 to 60 percent, by volume, in the BC and C horizons; mostly gravel, cobbles, and stones in the A horizon, mostly gravel in the Bt horizon, and mostly gravel and cobbles in the BC and C horizons
Reaction: Very strongly acid to slightly acid, except where lime has been applied

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4
Texture (fine-earth fraction)—fine sandy loam

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BE horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or sandy clay loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam
Mottles—shades of red and brown, usually at 30 to 50 inches

BC horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam

C horizon (where present):
Color—colluvial or alluvial material in shades of red, brown, white, and yellow
Texture (fine-earth fraction)—loamy; sandy textures can occur below 40 inches

Toast Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic or igneous rock
Landscape: Piedmont uplands
Landform: Ridges

Elevation range: 1,080 to 1,500 feet
Slope range: 2 to 15 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves and upper side slopes
Taxonomic classification: Fine, kaolinitic, mesic Typic Kanhapludults

Typical Pedon

Toast sandy loam, 2 to 8 percent slopes; in Burke County, approximately 9.7 miles west on Interstate 40 from Morganton, about 2.0 miles south on Secondary Road 1129, about 125 feet west, in field; Glen Alpine USGS topographic quadrangle; lat. 35 degrees 39 minutes 52 seconds N. and long. 81 degrees 54 minutes 26 seconds W.

Ap—0 to 6 inches; olive brown (2.5Y 4/4) sandy loam; moderate fine granular structure; very friable; common fine and very fine roots; strongly acid; clear smooth boundary.

E—6 to 12 inches; light olive brown (2.5Y 5/6) sandy loam; weak fine granular structure; very friable; few fine and very fine roots; moderately acid; gradual wavy boundary.

Bt1—12 to 22 inches; yellowish brown (10YR 5/8) sandy clay; weak medium subangular blocky structure; friable; sticky and slightly plastic; few fine and very fine roots; strongly acid; clear wavy boundary.

Bt2—22 to 30 inches; strong brown (7.5YR 5/8) clay; common medium distinct red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine flakes of mica; strongly acid; clear wavy boundary.

BC—30 to 37 inches; strong brown (7.5YR 5/8) and red (2.5YR 4/8) sandy clay; weak medium subangular blocky structure; friable; slightly sticky and non-plastic; few fine flakes of mica; very strongly acid; abrupt wavy boundary.

C1—37 to 42 inches; brownish yellow (10YR 6/6) and yellowish red (5YR 5/8) sandy clay loam saprolite; common medium distinct red (2.5YR 4/6) clay loam bodies; very friable; common fine flakes of mica; very strongly acid; gradual wavy boundary.

C2—42 to 55 inches; yellowish red (5YR 5/8) and brownish yellow (10YR 6/6) sandy loam saprolite; common medium distinct red (2.5YR 4/6) mottles; massive; very friable; few fine flakes of mica; very strongly acid; clear wavy boundary.

C3—55 to 60 inches; reddish yellow (5YR 6/6) sandy loam saprolite; common medium distinct red (2.5YR 4/6) and few medium prominent pinkish white (5YR 8/2) mottles; massive; very friable; few fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: None to common in the A horizon and in the upper part of the B horizon and few to many in the lower part of the B horizon and in the BC and C horizons
Content and size of rock fragments: Less than 10 percent, by volume, throughout the profile; mostly gravel
Reaction: Extremely acid to strongly acid, except where lime has been applied

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 8
Texture—sandy loam

E horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 6
Texture—sandy loam or loam

BE horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 7, and chroma of 3 to 8
Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy clay loam, clay loam, sandy clay, or clay
Mottles—shades of red, brown, and yellow

BC horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 4 to 8
Texture—loam, sandy clay loam, clay loam, or sandy clay
Mottles—shades of red, brown, and yellow

C horizon:
Color—multicolored in shades of red, brown, and yellow
Texture—coarse sandy loam, sandy loam, loam, or sandy clay loam

Udifluvents

Depth class: Very deep
Drainage class: Moderately well drained or well drained
Permeability: Moderately rapid or rapid
Parent material: Recent alluvium from mixed geologic material
Landscape: Foothills and Piedmont river valleys
Landform: Hills and flood plains
Elevation range: 1,150 to 1,400 feet
Slope range: 0 to 3 percent
Hillslope profile position: Toeslopes
Geomorphic component: Base slopes, risers, and treads
Taxonomic classification: Udifluvents

Typical Pedon

A typical pedon is not given for these soils because of their variability. These are areas where the natural soil properties and qualities have been greatly altered by excavation, intensive grading or mining, or covered by earthy fill material. Udifluvents are typically sandy in the upper part, have sand, gravel, and cobbles in the lower part, or have sand, gravel, and cobbles throughout the profile.

Range in Characteristics

Thickness of underlying soil material: 40 to 60 inches or more
Depth to contrasting soil material: 0 to 60 inches or more to material containing more than 35 percent, by volume, rock fragments
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: Few to many
Content and size of rock fragments: 0 to 50 percent, by volume, throughout the profile; mostly gravel and cobbles and rarely stones
Reaction: Extremely acid to neutral

Udorthents

Depth class: Deep or very deep
Drainage class: Variable, but mostly well drained
Permeability: Moderate to slow

Parent material: Fill areas—mixtures of natural soils; excavated areas—variable, depending on the type of underlying bedrock
Landscape: Piedmont uplands, foothills, and river valleys
Landform: Ridges, hills, and stream terraces
Elevation range: 900 to 1,260 feet
Slope range: 0 to 10 percent
Hillslope profile position: Summits, shoulders, backslopes, and footslopes
Geomorphic component: Interfluves, side slopes, base slopes, and treads
Taxonomic classification: Udorthents

Typical Pedon

A typical pedon is not given due to the variable nature of the soil. Fill areas have at least 2 feet of fill material placed over the natural soil, and excavated areas have had at least 2 feet of original soil material removed. These are areas such as highway interchanges, landfills, school yards that have athletic fields, or broad flats in urban areas.

Range in Characteristics

Thickness of underlying soil material: 30 to more than 60 inches
Depth to bedrock: Fill areas—40 to more than 60 inches; excavated areas—variable, but bedrock is commonly exposed at the soil surface
Content of mica flakes: None to many
Content and size of rock fragments: Variable, but commonly 5 to 35 percent, by volume, throughout the profile; mostly gravel, cobbles, and stones
Reaction: Extremely acid to moderately acid, except where lime has been applied

Fill areas:
Color—hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 2 to 8
Texture (fine-earth fraction)—variable, mostly loamy

Excavated areas:
Color—hue of 2.5YR to 5Y, value of 4 to 7, and chroma of 2 to 8
Texture (fine-earth fraction)—variable, mostly loamy

Unicoi Series

Depth class: Shallow
Drainage class: Excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic low-grade metasedimentary rock
Landscape: Blue Ridge mountains and foothills
Landform: Mountain slopes and ridges
Elevation range: 1,500 to 4,200 feet
Slope range: 25 to 95 percent
Hillslope profile position: Backslopes
Geomorphic component: Mountain flanks and side slopes
Taxonomic classification: Loamy-skeletal, mixed, semiactive, mesic Lithic Dystrudepts (fig. 29)

Typical Pedon

Unicoi gravelly fine sandy loam in an area of Ditney-Unicoi-Rock outcrop complex, 25 to 95 percent slopes; in Burke County, approximately 15.0 miles west of Morganton on N.C. Highway 126 to Longtown, about 12.0 miles north on Secondary Road 1238, approximately 0.2 mile east to Wiseman's View parking area, about 500 feet north and east on walkway to overlook, about 225 feet south of walkway; Linville Falls USGS

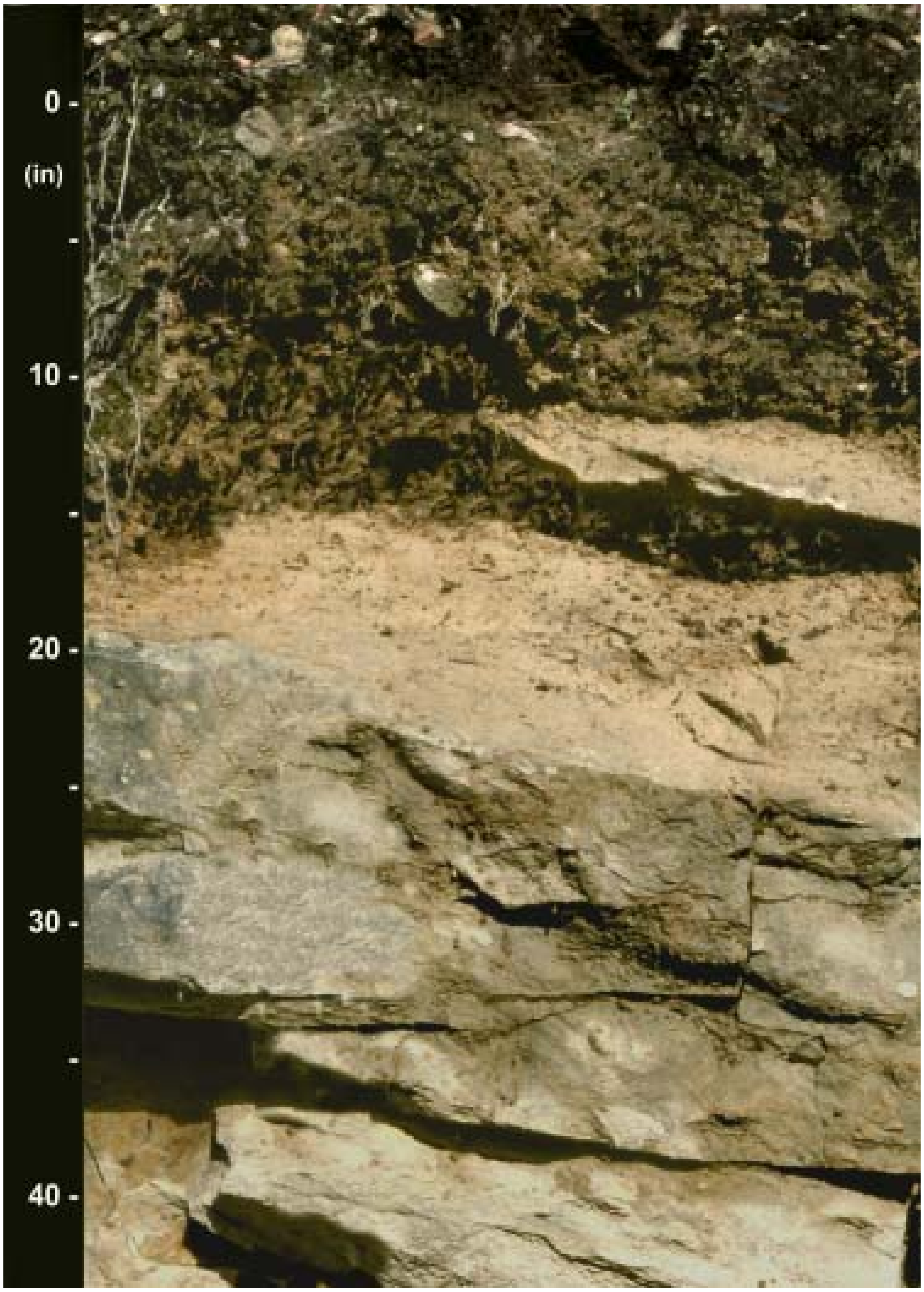

Figure 29.—Profile of the shallow, excessively drained Unicoi soil.

topographic quadrangle; lat. 35 degrees 54 minutes 12 seconds N. and long. 81 degrees 54 minutes 20 seconds W.

Oi—1 inch to 0; partially decomposed pine and hardwood litter.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly fine sandy loam; many coarse faint brown (10YR 4/3) mottles; weak fine granular structure; very friable; many fine and medium and few coarse roots; 15 percent, by volume, gravel; very strongly acid; clear wavy boundary.

Bw—4 to 18 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam; weak fine subangular blocky structure; very friable; common fine, medium, and coarse roots; 25 percent gravel and 25 percent cobbles, by volume; very strongly acid; abrupt irregular boundary.

R—18 inches; unweathered quartzite.

Range in Characteristics

Thickness of the solum: 7 to 20 inches
Depth to bedrock: 7 to 20 inches to hard bedrock
Content of mica flakes: None
Content and size of rock fragments: 35 to 65 percent, by volume, throughout the profile, but some surface horizons may have as little as 15 percent, by volume; mostly gravel, cobbles and stones
Reaction: Extremely acid to strongly acid

A horizon:
Color—hue of 10YR, value of 3 to 6, and chroma of 1 to 4; horizon less than 7 inches thick where value is 3
Texture (fine-earth fraction)—fine sandy loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, fine sandy loam, or sandy loam

R layer:
Type of bedrock—unweathered, low-grade metasedimentary rock

Unison Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Old alluvium
Landscape: Piedmont river valleys
Landform: High stream terraces
Elevation range: 950 to 1,300 feet
Slope range: 2 to 25 percent
Hillslope profile position: Toeslopes
Geomorphic component: Risers and treads
Taxonomic classification: Fine, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Unison fine sandy loam, 2 to 8 percent slopes; in Burke County, about 0.7 mile north on Secondary Road 1443 (Sanford Drive) in Morganton from intersection with N.C. Highway 181 (Green Street), about 800 feet northwest on entrance road to the N.C. Forest Service's Ralph Edwards Nursery, about 250 feet west on drive to private residence, about 250 feet west, in seed pine plantation; Morganton North USGS topographic quadrangle; lat. 35 degrees 45 minutes 11 seconds N. and long. 81 degrees 42 minutes 22 seconds W.

Ap—0 to 4 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; friable; common fine and medium roots; few fine flakes of mica; moderately acid; clear smooth boundary.

BA—4 to 10 inches; strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; few fine flakes of mica; slightly acid; gradual wavy boundary.

Bt—10 to 50 inches; strong brown (7.5YR 5/8) clay loam; few medium distinct yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

BC—50 to 60 inches; reddish yellow (7.5YR 6/8) clay loam; common medium distinct yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches or more
Depth to bedrock: More than 60 inches to hard bedrock
Content of mica flakes: None to common throughout the profile
Content and size of rock fragments: 0 to 50 percent, by volume, in the A, Ap, E, BA, and BE horizons, 0 to 35 percent, by volume, in the Bt horizon, and 0 to 75 percent, by volume, in the BC and C horizons; mostly gravel and cobbles
Reaction: Very strongly acid to moderately acid, except where lime has been applied.

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6; eroded areas may have hue of 5YR
Texture (fine-earth fraction)—fine sandy loam

E horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—fine sandy loam, loam, or silt loam

BA or BE horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture (fine-earth fraction)—silt loam, clay loam, or silty clay loam

Bt horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—clay loam, silty clay loam, or clay
Mottles—shades of red

BC horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—loam, sandy clay loam, clay loam, or clay
Mottles—shades of brown and red

C horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 to 8, and chroma of 3 to 6
Texture (fine-earth fraction)—loam, silt loam, clay loam, silty clay loam, or clay; some pedons have sandy, gravelly, or cobbly substrata

Whiteoak Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Colluvium derived from felsic to mafic low-grade metasedimentary rock
Landscape: Blue Ridge mountains
Landform: Coves, colluvial fans, and drainageways
Elevation range: 3,200 to 3,800 feet
Slope range: 8 to 30 percent
Hillslope profile position: Shoulders, footslopes, toeslopes, and backslopes

Geomorphic component: Mountain flanks and mountain bases
**Taxonomic classification:* Fine-loamy, mixed, mesic Humic Hapludults

Typical Pedon

Whiteoak fine sandy loam, 15 to 30 percent slopes, very stony; in Avery County, about 0.5 mile east of Newland on N.C. Highway 181, about 150 feet north of school parking lot; Newland USGS topographic quadrangle; lat. 36 degrees 04 minutes 59 seconds N. and long. 81 degrees 55 minutes 19 seconds W.

A—0 to 9 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 8 percent, by volume, gravel; slightly acid; clear smooth boundary.
BA—9 to 12 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; friable; common fine and medium roots; 8 percent, by volume, gravel; moderately acid; clear smooth boundary.
Bt1—12 to 30 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; 5 percent, by volume, gravel; moderately acid; gradual irregular boundary.
Bt2—30 to 55 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine roots; 8 percent, by volume, gravel; very strongly acid; gradual irregular boundary.
BC—55 to 62 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent, by volume, gravel; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches to soft or hard bedrock
Content of mica flakes: None to common
Content and size of rock fragments: Less than 15 percent, by volume, in the A horizon, less than 35 percent, by volume, in the Bt horizon, and less than 60 percent, by volume, in the BC and C horizons; mostly gravel, cobbles, channers, flagstone, and stones
Reaction: Very strongly acid to moderately acid, except where lime has been applied

A or Ap horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 4
Texture (fine-earth fraction)—fine sandy loam

BA horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—loam, silt loam, or fine sandy loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, silt loam, clay loam, or sandy clay loam

BC horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

C horizon:(where present)
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

*There is a sufficient enough clay increase from the surface horizon to the subsurface horizon to meet the criteria for an argillic horizon. Whiteoak soils are typically Fine-loamy, isotic, mesic Typic Dystrudepts.

Woolwine Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic high-grade metamorphic rock
Landscape: Piedmont uplands
Landform: Ridges
Elevation range: 950 to 1,280 feet
Slope range: 2 to 25 percent
Hillslope profile position: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, side slopes, and nose slopes
Taxonomic classification: Fine, kaolinitic, mesic Typic Kanhapludults

Typical Pedon

Woolwine gravelly loam in an area of Woolwine-Fairview complex, 2 to 8 percent slopes, moderately eroded; in Burke County, approximately 1.7 miles north of Rutherford College from U.S. Highway 70 on Secondary Road 1001, about 0.5 mile northeast on Secondary Road 1600 to end of pavement, northeast on private road between chicken houses to property line, about 200 feet bearing 60 degrees, about 15 feet north; Drexel USGS topographic quadrangle; lat. 35 degrees 46 minutes 17 seconds N. and long. 81 degrees 30 minutes 39 seconds W.

Ap—0 to 4 inches; dark brown (10YR 3/3) gravelly loam; moderate fine granular structure; very friable; common very fine and fine and few medium roots; few fine flakes of mica; 20 percent, by volume, sillimanite schist gravel; extremely acid; abrupt smooth boundary.

A—4 to 8 inches; yellowish brown (10YR 5/4) gravelly loam; weak fine granular structure; very friable; common fine and few medium roots; few fine flakes of mica; 20 percent, by volume, sillimanite schist gravel; very strongly acid; abrupt smooth boundary.

BA—8 to 12 inches; yellowish brown (10YR 5/6) clay loam; weak fine granular primary structure and weak medium subangular blocky secondary structure; friable; common fine and few medium roots; few fine flakes of mica; 5 percent, by volume, sillimanite schist gravel; very strongly acid; clear wavy boundary.

Bt1—12 to 18 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; slightly sticky and plastic; few fine roots; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt2—18 to 31 inches; red (2.5YR 4/8) clay that has few medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; slightly sticky and plastic; few fine flakes of mica; strongly acid; gradual irregular boundary.

Cr—31 to 60 inches; multicolored, weathered sillimanite schist that is partially consolidated but can be dug with difficulty with hand tools.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content of mica flakes: Few to many throughout the profile
Content and size of rock fragments: 0 to 35 percent, by volume, throughout the profile
Reaction: Extremely acid to moderately acid, except where lime has been applied

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6
Texture (fine-earth fraction)—loam

E horizon (where present):
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam or loam

BA or BE horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 6 or 8
Texture (fine-earth fraction)—clay loam or clay
Mottles (where present)—shades of red

BC horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—fine sandy loam, loam, sandy clay loam, or clay loam

C horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 to 7, and chroma of 4 to 8; or multicolored
Texture (fine-earth fraction)—sandy loam, loam, or silt loam

Cr horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 to 7, and chroma of 4 to 8; or multicolored
Type of bedrock—weathered, felsic high-grade metamorphic rock that is partially consolidated but can be dug with difficulty with hand tools

Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in the survey area. It also discusses the morphology of the soils and the process of horizon differentiation.

Factors of Soil Formation

Soils are formed by processes of the environment acting upon geologic materials, such as metamorphic, igneous, and sedimentary rocks, and fluvial stream sediments. The characteristics of a soil are determined by the combined influence of parent material, climate, plant and animal life, relief, and time. These five factors are responsible for the profile development and chemical properties that differentiate soils (Buol and others, 1980).

Parent Material

Parent material is the material in which soils form. It influences the mineral and chemical composition of the soils and, to a large extent, the rate at which soil formation takes place. Residual material, colluvial material, and alluvial sediments are the three major types of parent material in Burke County.

Residual material is earthy material derived from the weathering of rocks. It is often referred to as saprolite or residuum. Saprolite underlies the soils in the uplands, which make up most of the land area in the county. The saprolite may be several feet thick in some places and only a few inches thick in other places. Gneiss and schist are the two major rock types in the county.

Colluvial material is soil material or rock fragments, or commonly both, that have been moved by the forces of gravity, such as by creep, slide, or local wash, and deposited at the base of steep slopes. Colluvial deposits can be very thick in some places.

Alluvial sediments come from material that has been eroded from upland soils and deposited on flood plains along streams and rivers. Recent deposits are composed of sand, silt, clay, and, in some places, gravel and cobbles. The deposits are generally more than 5 feet thick. In some places the alluvial sediments are much older than the typical sediments on high stream terraces that formerly were flood plains.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. It influences the rate at which rocks weather and organic matter decomposes. The amount of leaching in a soil is related to the amount of rainfall and the movement of water through the soil. The effects of climate also control the kinds of plants and animals living in and on the soil. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Because of a warm, humid climate, the soils in Burke County have been subject to strong weathering and leaching. The county occupies a piedmont region ranging in elevation from about 930 to 1,300 feet and a foothill and mountain region ranging in elevation from about 1,200 to just over 4,000 feet. Variations in the climate of the county are relatively small within each physiographic region but can be dramatically different between the two regions. These climatic differences help to cause the physical and chemical differences in the soils between each region.

The county's climate favors rapid chemical processes, which are reflected in the soils. In the Piedmont, very little humified organic matter accumulates in the topsoil because of oxidation and consumption by soil microbes. In higher mountain areas, especially on the cooler north-facing slopes, thicker and darker humus-rich topsoil can result because the lower temperatures generally slow down oxidation and microbial consumption. Moderate rainfall throughout the years causes bases to be leached away, leaving soils generally acid and the natural supply of plant nutrients low.

Climate also affects the physical differences in soils. Soil material weathered from rocks has developed to considerable depths in most areas because it has been exposed to climatic forces for a long period of time. The materials that are not deeply or strongly weathered, such as the material on some steep slopes, are either highly resistant to weathering or have been exposed to weathering for only a relatively short time. Seasonal temperature changes and precipitation help to break down rocks and minerals into smaller particles. In the warmer, more humid climates of the Piedmont region, the small weathered clay particles move downward in the profile of the older soils and accumulate in the subsoil. Alternating periods of wetting and drying as well as freezing and thawing have resulted in the blocky structure of a clay-enriched subsoil. In the steeper areas of the mountains and foothills, erosion may keep soils from accumulating a great deal of clay in the subsoil and from developing to a great depth.

For more information on the climate in the survey area, see the section "General Nature of the Survey Area."

Plant and Animal Life

Plants and animals influence the formation and differentiation of soil horizons. The type and number of organisms in and on the soil are determined in part by climate and in part by the nature of the soil material, the relief, and the age of the soil. Bacteria, fungi, and other micro-organisms aid in the weathering of rocks and in the decomposition of organic matter. The plants and animals that live on a soil are the primary source of organic material.

Plants largely determine the kinds and amounts of organic matter that are added to a soil under normal conditions and the way in which the organic matter is added. Plants also are important for the changes of base status and for the leaching process of a soil through the nutrient cycle. Under the native forest of this county, not enough bases are brought to the surface by plants to counteract the effects of leaching.

Generally, the soils of the county developed under a hardwood forest. Trees took up elements from the subsoil and added organic matter to the soil by depositing leaves, roots, twigs, and other plant remains on the surface. The material deposited on the surface was acted upon by organisms and underwent chemical reactions that helped to break down the litter into fine dark particles of humus. The humus worked its way down into the soil, giving surface horizons a darker color and supplying nutrients back to the trees and other plants.

Animals convert complex compounds into simpler forms, add organic matter to the soil, and modify certain chemical and physical properties of the soil. In Burke County, most of the organic material accumulates on the surface and is acted upon by micro-organisms, fungi, earthworms, and other forms of life and by direct chemical reaction. Organic material is mixed with the uppermost mineral part of the soil by the activities of earthworms and other small invertebrates. Mixing of organic matter in the surface layer affects soil structure, helping to make the soil open and porous.

Organic material decomposes rapidly in the county because of the moderate temperature, the abundant moisture supply, and the character of the organic material. As a result, little organic material accumulates in the soil.

Relief

Relief causes differences in free drainage, surface runoff, soil temperature, and the extent of geologic erosion. Relief in Burke County is largely determined by the kind of underlying bedrock, the geology of the area, the lifting and folding of the landscape, and the extent to which the landscape is dissected by streams.

Relief affects the percolation of water through the profile. Water movement through the profile is important in soil development because it aids chemical reactions and is necessary for leaching.

Slopes in the county range from 0 to 95 percent. The upland soils that have slopes of less than 15 percent generally have deeper, better defined profiles than the steeper soils. Examples are the well developed Fairview and Pacolet soils. Relief affects the depth of soils. On some soils that have slopes of 25 percent, geologic erosion removes soil material almost as fast as it forms. As a result, most of the steep or very steep soils have a thin solum. Examples are Chestnut, Ashe, and Cleveland soils. These soils are not so deep nor so well developed as the less sloping soils.

Relief also affects drainage. On the steeper upland soils, surface water is removed more rapidly than in less sloping areas. Generally, internal drainage also is better in the more sloping areas. These soils are well drained and are deeper to a water table than the less sloping soils.

Soils at the lower elevations can be less sloping and receive surface runoff and internal seepage from the adjacent higher areas. This runoff tends to accumulate in the nearly level to slightly concave areas; a higher water table results. The somewhat poorly drained Arkaqua soils and the poorly drained Hatboro soils on flood plains are in these areas.

Time

The length of time that soil material has been exposed to the soil-forming processes accounts for some differences between soils. The formation of a well defined profile, however, also depends on other factors. Less time is required for a profile to develop in coarse textured material than in similar but finer textured material, even if the environment is the same for both materials. Less time is required for a profile to develop in an area in Burke County, which is warm and humid and has a dense plant cover, than in a cold, dry area that has a sparse plant cover.

Soils vary considerably in age. The length of time that a soil has been forming is generally reflected in the profile. Old soils generally have better defined horizons than young soils. In Burke County, the effects of time as a soil-forming factor are more apparent in the older soils that are in the broader parts of the uplands. Examples are Fairview, Evard, and Pacolet soils. These soils have well defined horizons. In contrast, young soils, such as Colvard, Biltmore, and Fontaflora soils, formed in recent alluvium on flood plains and have not been in place long enough to develop distinct horizons apart from depositional stratification.

Processes of Horizon Differentiation

The results of the soil-forming processes are evidenced by the different layers, or soil horizons, in a profile. The soil profile extends from the surface down to materials that are little altered by the soil-forming processes.

Most soils have three major horizons—the A, B, and C horizons. Some soils, particularly those in forests, also have an O (organic) horizon at the surface. This horizon is an accumulation of organic material, such as twigs and leaves, or of humified organic material that has little admixture of mineral material. The major horizons can be subdivided to indicate differences within the horizon. For example, the Bt horizon has an accumulation of clay from overlying horizons and represents the best developed part of a B horizon. Fairview soils, for example, have a Bt horizon.

The A horizon is a mineral surface layer. It commonly is darkened by humified organic matter. An Ap horizon is a plow layer commonly darkened by organic matter. The maximum extent of leaching or eluviation of clay and iron occurs in the A horizon. If uneroded or plowed and mixed with material from lower horizons, the A horizon commonly has a granular structure. In an E horizon, considerable leaching has occurred and organic matter has not darkened the soil material. The E horizon, where it occurs, commonly is the lightest colored horizon in the profile and is most likely between the A and B horizons.

The B horizon commonly underlies the A horizon and is called the subsoil. The maximum extent of accumulation, or illuviation, of clay, iron, aluminum, or other compounds leached from the surface layer occurs in this horizon. The B horizon commonly has a blocky structure. It generally is firmer and lighter colored than the A horizon, but it is darker than the C or E horizons.

The C horizon underlies the A and B horizons. It consists of materials that are little altered by the soil-forming processes, but it may be modified by weathering. The C horizon generally is presumed to be the parent material in which the A and B horizons above it have formed. Young soils, such as those that formed in recent alluvium or in manmade deposits of fill materials, may have a C horizon that extends nearly to the surface. In such cases, there may not be a B horizon.

The R layer is continuous, hard bedrock and generally is below the other horizons. It is commonly the parent rock in which the overlying layer or horizon was formed.

One or more soil-forming processes are involved in the formation of soil horizons. These processes are the accumulation of organic matter; the leaching of carbonates and other soluble material; the chemical weathering, mainly by hydrolysis, of primary minerals into silicate clay minerals; the translocation of silicate clay and some silt-sized particles from one horizon to another; and the reduction and transfer of iron.

These processes have been active in the formation of most of the soils in Burke County. The interaction of the first four processes is indicated by the strongly expressed horizons in Fairview and Evard soils. All five processes have probably been active in the formation of the moderately well drained Banister soils.

Some organic matter has accumulated in all of the soils in the survey area. Most of the soils contain moderate amounts of organic matter in the surface layer. The content of organic matter ranges from low, as in Fairview soils, to high, as in Nikwasi soils.

Most of the soils in the survey area are acid in the upper layers, unless the surface layer has been limed, because the bases released during the weathering of the soil and saprolite have been leached.

The translocation of clay minerals is an important process in the development of many soils in the survey area. As clay minerals are removed from the A horizon, they accumulate as clay films on the faces of peds, in pores, and in root channels in the B horizon.

As silicate clay forms from primary minerals, some iron is commonly released as hydrated oxides. These oxides are generally red. Even if they occur in small amounts, they give the soil material a reddish or brownish color. These colors are best expressed in the subsoil.

The reduction and transfer of iron has occurred in all of the soils that are not characterized by good natural drainage. This process, known as gleying, is evidenced by a gray matrix color and by iron or clay depletions. Some of the iron may be reoxidized and segregated and thus form yellow, brown, red, or other brightly colored masses of iron accumulation in an essentially gray matrix in the subsoil. Nodules or concretions of iron ore or manganese also commonly form as a result of this process. Soil features associated with chemically reduced iron are referred to as redoximorphic features (Vepraskas, 1992).

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Glossary

Access road. A road constructed to facilitate the use and management of the land. Access roads are designed for limited traffic and typically consist of a cut slope, a roadbed, and a fill outslope.
Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.
Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.
Amphibolite. A metamorphic rock consisting mainly of amphibole and plagioclase with little or no quartz. As the content of quartz increases, the rock grades into hornblende plagioclase gneiss.
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.
Aquifer. A water-bearing bed or stratum of permeable rock, sand, or gravel capable of fielding considerable quantities of water to wells or springs.
Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.
Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.
Arkose. A sandstone containing 25 percent or more of feldspar generally derived from the disintegration of felsic igneous rock.
Aspect. The direction in which a slope faces. Generally, cool aspects are north- to east-facing and warm aspects are south- to west-facing.
Atterberg limits. Atterberg limits are measured for soil materials passing the No. 40 sieve. They include the liquid limit (LL), which is the moisture content at which the soil passes from a plastic to a liquid state, and the plasticity index (PI), which is the water content corresponding to an arbitrary limit between the plastic and semisolid states of consistency of a soil.
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

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Ball and burlap harvest. A method of harvesting nursery plants in which burlap is wrapped around a ball of soil that is attached to the root system.

Bare-root harvest. A method of harvesting in which nursery plants are removed from the soil with their roots bare and are packed in moist shipping material.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

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.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Biotite. A common rock-forming mineral consisting primarily of ferromagnesian silicate minerals. Color ranges from dark brown to green in thin section. Biotite is commonly referred to as “black mica” because of the natural black color.

Borrow pit. An open excavation from which the soil and underlying material have been removed, generally for use in road construction. Borrow pits support few or no plants without major reclamation. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

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

Bouldery spot. An area where 0.01 to 0.1 percent of the surface is covered by rock fragments larger than 24 inches in diameter. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

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.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

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. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey. A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

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.

Clod. See Aggregate, soil.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse-loamy. According to family level criteria in the soil taxonomic system, soil containing less than 18 percent clay, by weight, and 15 percent or more fine sand or coarser textured material.

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.

Colluvial fan. A fan-shaped area of soils deposited by mass-wasting (direct gravitational action) and local unconcentrated runoff on and at the base of steeper side slopes.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

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.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cove. The steep or very steep, concave colluvial area at the head of drainageways in Piedmont and mountainous areas. Coves commonly have higher tree site indexes than surrounding slopes.

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.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crust. A thin, hard layer of soil material that forms on the surface in cultivated areas as a result of fine soil material settling during ponding.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dbh (diameter at breast height). The diameter of a tree at 4.5 feet above the ground level on the uphill side.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delineation. The process of drawing or plotting features on a map with lines and symbols.

Denitrification. The biochemical reduction of nitrate or nitrite to gaseous nitrogen either as molecular nitrogen or as an oxide of nitrogen.

Depression (depressional area). A portion of land surrounded on all sides by higher land. These areas generally do not have outlets for drainage.

Depth class. Refers to the depth to a root-restricting layer. Unless otherwise stated, this layer is understood to be consolidated bedrock. The depth classes in this survey are:

Very shallow	less than 10 inches
Shallow	10 to 20 inches
Moderately deep	20 to 40 inches
Deep	40 to 60 inches
Very deep	more than 60 inches

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of 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.

Drainageway. A narrow, gently sloping to very steep, concave colluvial area along an intermittent or perennial stream.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

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.

Engineering index test data. Laboratory test and mechanical analysis of selected soils in the county.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Eroded (soil phase). Because of erosion, the soil has lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.

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.

Erosion classes. Classes based on estimates of past erosion. The classes are as follows:

Class 1.—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most areas, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

Class 2.—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

Class 3.—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). In most cultivated areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

Class 4.—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick) plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

Erosion hazard. A term describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in metric tons per hectare (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per hectare	none
Less than 2.5 tons per hectare	slight
2.5 to 10 tons per hectare	moderate
10 to 25 tons per hectare	severe
More than 25 tons per hectare	very severe

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. Synonym: scarp.

Evapotranspiration. The combined loss of water from a given area through surface evaporation and through transpiration by plants during a specified period.

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

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.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fault. A surface of rock rupture along which there has been differential movement.

Felsic rock. A general term for light-colored igneous rock and some metamorphic crystalline rock that have an abundance of quartz, feldspars, feldspathoids, and muscovite mica.

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.

Field border. A strip of perennial vegetation (trees, shrubs, or herbaceous plants) established on the edge of a field to control erosion, provide travel lanes for farm machinery, control competition from adjacent woodland, or provide food and cover for wildlife.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine-loamy. According to family level criteria in the soil taxonomic system, soil containing 18 to 35 percent clay, by weight, and 15 percent or more fine sand or coarser material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flooding. The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly.0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). The duration of flooding is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. 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.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Gap. A concave, lower area between ridge crests that generally has lesser slope.

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.

Geomorphic component. Three-dimensional piece or area of a geomorphic landform that has unique properties that influence drainage, sedimentation, and soil development. Examples are interfluve, nose slope, and side slope.

Geomorphic surface. A part of the surface of the land that represents an episode of landscape development and consists of one or more landforms. It is a mappable part of the land surface that is defined in terms of morphology (relief, slope, aspect, etc.); origin (erosional, constructional, etc.); age (absolute or relative); and stability of component landforms.

Gneiss. A coarse-grained metamorphic rock in which bands rich in granular minerals alternate with bands that are predominantly schistose minerals. It is commonly formed by the metamorphism of granite.

Granite. A coarse-grained igneous rock dominated by light-colored minerals, consisting of about 50 percent orthoclase and 25 percent quartz with the balance being plagioclase feldspars and ferromagnesian silicates. Granites and granodiorites comprise 95 percent of all intrusive rocks.

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.

Gravelly spot. An area of soils where the content of rock fragments generally less than 3 inches in diameter is more than 15 percent, by volume, in the surface layer, occurring in a map unit in which the surface layer of the dominant soil or soils has less than 15 percent gravel. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

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 miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

High-grade metamorphic rocks. Highly metamorphosed rocks, such as gneiss and schist.

High stream terrace. A terrace, commonly high enough in elevation from the adjacent flood plain that prevents its being flooded.

High water table (seasonal). The highest level of a saturated zone in the soil (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Hillslope profile position. Two-dimensional slope segments found along a transect line that runs up and down the slope. Examples are the summit, shoulder, and backslope.

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.

Hydric soil. Soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the profile.

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.

Hydroseeding. Applying seed, fertilizer, and mulch to steep areas by spraying a mixture of those ingredients and water under pressure from a truck.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

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

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermediate mountains. The part of the landscape that ranges from about 3,000 to 4,800 feet in elevation. It is dominated by mesic soil temperatures.

Intermediate rock. Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Intermountain hills. Low hills that are in valleys between mountain ranges. They are dominated by mesic soil temperatures.

Interstream divide (or interstream area). The nearly level land between drainageways in relatively undissected parts of the Coastal Plain. It is in areas on uplands, low marine terraces, and stream terraces. Soils in these areas are generally poorly drained or very poorly drained.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

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.

Kaolinite. An aluminosilicate clay mineral with a 1:1 layer structure; that is, a silicon tetrahedral sheet alternating with an aluminum octahedral sheet. Little or no expansion occurs when water mixes with the clay.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landfill. An area of accumulated wastes produced by human activities. These areas can be above or below the natural ground level. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Landform. Any physical, recognizable form or feature on the earth's surface, having a characteristic shape and range in composition, and produced by natural causes. Examples are flood plain, stream terrace, mountain slope, and ridge.

Landscape. A collection of related, natural landforms; generally the land surface that can be seen in a single view. Examples are mountain, upland, foothills, and river valley.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

Levees. Small dikes, generally less than 50 feet wide and several hundred feet in length, used to prevent intrusions of brackish water or to retain fresh water. Areas identified on the detailed soil maps by a special symbol typically are 5 to 20 acres in size.

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.

Loamy. A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer textured material that contains less than 35 percent clay, by weight, within the control section. The content of rock fragments is less-than 35 percent, by volume.

Low mountains. The part of the landscape that ranges from about 2,500 to 3,500 feet in elevation. It is dominated by mesic soil temperatures.

Low stream terrace. A terrace in an area that floods, commonly 3 to 10 feet higher in elevation than the adjacent flood plain.

Low strength. The soil is not strong enough to support loads.

Mafic rock. A dark rock composed predominantly of magnesium silicates. It can contain small amounts of quartz, feldspar, or muscovite mica.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Metasedimentary.rock. Metamorphosed sedimentary rocks, such as phyllite, metasandstone, and conglomerate.

Micas. A group of silicate minerals characterized by sheet or scale cleavage. Biotite is the ferromagnesian black mica. Muscovite is the potassic white mica.

Microrelief. The concave to convex changes in the land surface occurring over a relatively short distance or within a small area, such as 1 acre.

Mine or quarry (map symbol). An open excavation from which the soil and underlying material have been removed, exposing bedrock; or the surface opening to underground mines. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

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

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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

Mottling, soil (mottles). 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).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

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.

Muscovite. A nonferromagnesian rock-forming silicate mineral that has tetrahedra arranged in sheets. Commonly called “white mica” and sometimes called potassic mica.

Native pasture. Pasture that has seeded naturally in native grasses. It is on slopes too steep to manage with modern machinery.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

No-till planting. A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

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

Overstory. The portion of the trees in a forest stand forming the upper crown cover.

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

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

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.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Perennial stream. A stream, or reach of a stream, that flows continuously throughout the year.

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:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 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

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont The physiographic region of central North Carolina characterized by rolling landscapes formed from the weathering of residual rock material.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Pluton. A body of igneous rock that is formed beneath the surface of the earth by consolidation from magma. Sometimes extended to include bodies formed beneath the surface of the earth by the metasomatic replacement of older rock.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

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.

Potential, soil. Relative terms are assigned to classes to indicate the potential of a soil for a particular use as compared with that of other soils in the area. The rating classes do not identify the most profitable soil use or imply a recommendation for a particular use. The following class terms and definitions are used nationwide:

Very high.—Production or performance is at or above local standards because soil conditions are exceptionally favorable, installation or management costs are low, and soil limitations are insufficient.

High.—Production or performance is at or above the level of locally established standards, the costs of measures for overcoming soil limitations are judged locally to be favorable in relation to the expected performance or yields, and soil limitations that continue after corrective measures are installed do not detract appreciably from environmental quality or economic returns.

Medium.—Production or performance is somewhat below locally established standards, the costs of measures for overcoming soil limitations are high, or soil limitations that continue after corrective measures are installed detract from environmental quality or economic returns.

Low.—Production or performance is significantly below local standards, measures that are required to overcome soil limitations are very costly, or soil limitations that continue after corrective measures are installed detract appreciably from environmental quality or economic returns.

Very low.—Production or performance is much below locally established standards, severe soil limitations exist for which economically feasible measures are unavailable, or soil limitations that continue after corrective measures are installed seriously detract from environmental quality or economic returns.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The 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. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation. Descriptive terms for concentrations and depletions 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).

Reforestation. The process in which tree seedlings are planted or become naturally established in an area that was once forested.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

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

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Ridge. A long, narrow elevation of the land surface, usually having a sharp crest and steep sides.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Rippable bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Riser. See Terrace.

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.

Rock outcrop. An area of exposed bedrock in a map unit that has less than 0.1 percent exposed bedrock. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Runoff class (surface). Refers to the rate at which water flows away from the soil over the surface without infiltrating. Six classes of rate of runoff are recognized:

Ponded.—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level and nearly level soils in depressions. The water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very porous.

Slow.—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level to gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

Very rapid.—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

Saddle. A localized concave dip in a main ridge where intermittent drainage commences on the adjacent side slope.

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.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy. A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Sandy spot. An area where the surface layer is sandy (loamy sand or sand), occurring in a map unit in which the dominant soil or soils have a loamy, silty, or clayey surface layer. Excluded are areas where the textural classes are adjoining, such as an area of loamy sand occurring in a map unit in which the dominant soil or soils have a surface layer of sandy loam. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

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.

Schist. A metamorphic rock that is dominantly fibrous or platy minerals. It has schistose cleavage and is a product of regional metamorphism.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seep. A small area where water oozing through the soil causes the surface to remain wet, but water does not flow on the surface.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

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.

Short, steep slope. An area of soils that are at least two slope classes steeper than the named soils in the surrounding map unit. Areas identified on the detailed soil maps by a special symbol typically are long, narrow bands that are less than 2 acres in size. (See Slope.)

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots. (See Linear extensibility.)

Shrink-swell potential. The potential for volume change in a soil with a loss or gain in moisture. Shrink-swell potential classes are based on the linear extensibility of the soil. If the soil has a linear extensibility of less than 3 percent, the shrink-swell potential is low; 3 to 6 percent, the shrink-swell potential is moderate; 6 to 9 percent, the shrink-swell potential is high; and more than 9 percent, the shrink-swell potential is very high.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

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.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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.

Skeletal, soil. Soil material having 35 percent or more, by volume, rock fragments.

Skidding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most systems involve pulling the trees with wire cables attached to a bulldozer car a rubber-tired tractor. Generally, felled trees are skidded or pulled with one end lifted to reduce friction and soil disturbance.

Skid trails. The paths left by skidding logs and the bulldozer or tractor used to pull them.

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:

In the Piedmont.

Nearly level	0 to 3 percent
Gently sloping	2 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 50 percent
Very steep	50 percent and higher

In the mountains.

Nearly level	0 to 3 percent
Gently sloping	2 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil compaction. An alteration of soil structure that ultimately can affect the biological and chemical properties of the soil. Compaction decreases the extent of voids and increases bulk density.

Soil creep. The slow mass movement of soil and soil materials downslope, primarily under the influence of gravity, facilitated by water saturation and by alternating periods of freezing and thawing.

Soil map unit. A kind of soil or miscellaneous area, or a combination of two or more soils, or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. Soil map units generally are designed to reflect significant differences in use and management among the soils of a survey area.

Soil puddling. This condition occurs in certain soils if they are driven on when they are wet. Exertion of mechanical force destroys the soil structure by compressing and shearing and results in the rearrangement of the soil particles to a massive or nonstructural state.

Soil sample site (map symbol). The location of a typifying pedon in the survey.

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

Soil strength. The load-supporting capacity of a soil at specific moisture and density conditions.

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.

Spur ridge. A sharply convex portion of a mountain side slope extending from the main ridge to some point at a lower elevation.

Stand density. The degree to which an area is covered with living trees. It is usually expressed in units of basal areas per acre, number of trees per acre, or the percentage of ground covered by the tree canopy as viewed from above.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot. An area where 0.01 to 0.1 percent of surface is covered by rock fragments larger than 10 inches in diameter. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

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.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Suited or moderately suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

Very poorly suited, not suited, or unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

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.

Taxonomy, soil. A system by which a soil’s morphological, chemical, mineralogical, physical, and biological properties are categorized and classified.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. 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 (geologic). A step-like surface, generally bordering a lower valley floor, that represents the former position of a flood plain. The term is usually applied to both the relatively flat summit surface (tread), cut or built by stream action, and the steeper descending slope (scarp or riser), grading 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.” The textural classes are defined as follows:

Sands (coarse sand, sand, fine sand, and very fine sand).—Soil material in which the content of sand is 85 percent or more and the percentage of silt plus $1^1/_2$ times the percentage of clay does not exceed 15.

Loamy sands (loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand).—Soil material in which, at the upper limit, the content of sand is 85 to 90 percent and the percentage of silt plus $1^1/_2$ times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

Sandy loams (coarse sandy loam, sandy loam, fine sandy loam, and very fine sandy loam).—Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more; or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

Loam.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Silt loam.—Soil material that contains 50 percent or more silt and 1 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

Silt.—Soil material that contains 80 percent or more silt and less than 12 percent clay.

Sandy clay loam.—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand.

Clay loam.—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.

Silty clay loam.—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.

Sandy clay.—Soil material that contains 35 percent or more clay and 45 percent or more sand.

Silty clay.—Soil material that contains 40 percent or more clay and 40 percent or more silt.

Clay.—Soil material that contains 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

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.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topography. The relative positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

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.

Tread. See Terrace.

Underlying material. Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

Understory. The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Very stony spot. An area where 0.1 to 3.0 percent of the surface is covered by rock fragments larger than 10 inches in diameter. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Watershed. The land that water flows across or under on its way to a stream, river, or lake.

Water table (apparent). A thick zone of free water in the soil. The apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table (perched). A saturated zone of water in the soil standing above an unsaturated zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wetness. A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

Wet spot. An area of somewhat poorly drained to very poorly drained soils that are at least two drainage classes wetter than the named soils in the surrounding map unit. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size. (See Drainage class.)

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.

Yield (forest land). The volume of wood fiber from trees harvested in a certain unit of area. Yield is usually measured in board feet or cubic feet per acre.

Tables

Temperature and Precipitation

(Recorded in the period 1961-90 at Morganton, NC)

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-----	50.2	26.4	38.3	72	1	15	3.81	2.19	5.25	7	4.3
February----	54.2	28.9	41.5	76	8	26	4.28	1.92	6.30	6	2.4
March-------	63.8	36.4	50.1	83	15	109	4.72	2.70	6.52	7	1.4
April-------	72.7	44.0	58.3	90	25	268	3.68	1.75	5.34	6	0.1
May---------	79.6	52.5	66.0	91	32	496	4.84	3.09	6.43	7	0.0
June--------	85.6	60.4	73.0	96	44	690	4.79	2.82	6.55	7	0.0
July--------	88.3	64.5	76.4	99	51	812	4.34	2.25	6.16	8	0.0
August------	87.3	63.6	75.5	97	49	789	3.98	2.09	5.63	6	0.0
September---	81.3	57.2	69.2	93	37	577	4.27	1.38	6.63	5	0.0
October-----	72.2	45.1	58.6	86	25	284	4.26	1.42	6.59	5	0.0
November----	62.4	36.6	49.5	81	15	94	3.70	2.16	5.07	5	0.1
December----	53.0	29.5	41.3	73	7	28	3.74	1.56	5.58	6	0.6
Yearly:											
Average---	70.9	45.4	58.2	---	---	---	---	---	---	---	---
Extreme---	104	-9	---	100	0	---	---	---	---	---	---
Total-----	---	---	---	---	---	4188	50.39	43.91	56.65	75	9.0

* 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 (50 degrees F).

Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Morganton, NC)

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--	Apr. 9	Apr. 20	May 7
2 year in 10 later than--	Apr. 1	Apr. 14	May 2
5 year in 10 later than--	Mar. 18	Apr. 4	Apr. 21
First freezing temperature in fall:			
1 yr in 10 earlier than--	Oct. 29	Oct. 15	Oct. 4
2 yr in 10 earlier than--	Nov. 3	Oct. 20	Oct. 8
5 yr in 10 earlier than--	Nov. 13	Oct. 30	Oct. 15

Growing Season

(Recorded for the period 1961-90 at Morganton, NC)

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	214	185	158
8 years in 10	222	192	164
5 years in 10	239	207	176
2 years in 10	255	222	188
1 year in 10	264	230	195

Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AaA	Arkaqua loam, 0 to 2 percent slopes, occasionally flooded	4,624	1.4
AbE	Ashe-Chestnut-Buladean complex, 30 to 50 percent slopes, very stony	1,668	0.5
AcF	Ashe-Chestnut-Buladean complex, 50 to 95 percent slopes, extremely stony	8,810	2.7
AsF	Ashe-Cleveland-Rock outcrop complex, 30 to 95 percent slopes, extremely bouldery	5,444	1.7
BaB	Banister loam, 1 to 6 percent slopes, rarely flooded	450	0.1
BoB	Biltmore loamy sand, 0 to 5 percent slopes, occasionally flooded	1,536	0.5
BrD	Braddock fine sandy loam, 15 to 30 percent slopes	323	*
BvB	Brevard fine sandy loam, 1 to 6 percent slopes, rarely flooded	475	0.1
CaB2	Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded	136	*
CeD	Chestnut-Ashe complex, 15 to 30 percent slopes, very rocky	415	0.1
CeE	Chestnut-Ashe complex, 30 to 50 percent slopes, very rocky	77	*
ChC	Chestnut-Buladean complex, 8 to 15 percent slopes, rocky	198	*
ChD	Chestnut-Buladean complex, 15 to 30 percent slopes, rocky	597	0.2
CkE	Chestnut-Buladean complex, 30 to 50 percent slopes, stony	1,469	0.4
CkF	Chestnut-Buladean complex, 50 to 95 percent slopes, stony	3,366	1.0
CmA	Chewacla loam, 0 to 2 percent slopes, frequently flooded	1	*
CpD	Cliffield-Pigeonroost complex, 15 to 30 percent slopes, very stony	3,241	1.0
CpE	Cliffield-Pigeonroost complex, 30 to 50 percent slopes, very stony	8,791	2.7
CpF	Cliffield-Pigeonroost complex, 50 to 80 percent slopes, very stony	9,331	2.8
CvA	Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded	9,046	2.7
CyE	Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony	1,212	0.4
CyF	Crossnore-Jeffrey complex, 50 to 80 percent slopes, very stony	79	*
DaB	Dillard fine sandy loam, 2 to 8 percent slopes, rarely flooded	303	*
DrF	Ditney-Unicoi-Rock outcrop complex, 25 to 95 percent slopes	4,719	1.4
EdC	Edneytown-Pigeonroost complex, 8 to 15 percent slopes, stony	157	*
EdD	Edneytown-Pigeonroost complex, 15 to 30 percent slopes, stony	1,088	0.3
EdE	Edneytown-Pigeonroost complex, 30 to 50 percent slopes, stony	4,622	1.4
EuF	Evard-Cowee complex, 50 to 85 percent slopes, rocky	3,898	1.2
EvC	Evard-Cowee complex, 8 to 15 percent slopes, stony	1,487	0.5
EvD	Evard-Cowee complex, 15 to 30 percent slopes, stony	8,634	2.6
EvE	Evard-Cowee complex, 30 to 50 percent slopes, stony	20,802	6.3
FaB2	Fairview sandy clay loam, 2 to 8 percent slopes, moderately eroded	17,988	5.5
FaC2	Fairview sandy clay loam, 8 to 15 percent slopes, moderately eroded	59,443	18.0
FaD2	Fairview sandy clay loam, 15 to 25 percent slopes, moderately eroded	36,573	11.1
FeB	Fairview-Urban land complex, 2 to 8 percent slopes	776	0.2
FeC	Fairview-Urban land complex, 8 to 15 percent slopes	842	0.3
FnA	Fluvaquents-Udifluvents complex, 0 to 3 percent slopes, mounded, occasionally flooded	212	*
FoB	Fontaflora-Ostin complex, 0 to 5 percent slopes, flooded	2,407	0.7
GcD	Greenlee very cobbly sandy loam, 15 to 30 percent slopes, extremely bouldery	117	*
GrD	Greenlee-Tate complex, 15 to 30 percent slopes, extremely stony	1,330	0.4
GrE	Greenlee-Tate complex, 30 to 50 percent slopes, extremely stony	782	0.2
GtC	Greenlee-Tate-Ostin complex, 1 to 15 percent slopes, extremely stony	645	0.2
HaA	Hatboro sandy loam, 0 to 2 percent slopes, frequently flooded	351	0.1
IoA	Iotla sandy loam, 0 to 2 percent slopes, occasionally flooded	232	*
MaD	Maymead fine sandy loam, 10 to 25 percent slopes, very stony	290	*
MeD	Meadowfield-Fairview complex, 15 to 25 percent slopes	2,248	0.7
MoE	Meadowfield-Rhodhiss complex, 25 to 60 percent slopes, very stony	9,294	2.8
MwC	Meadowfield-Woolwine complex, 8 to 15 percent slopes	1,062	0.3
NkA	Nikwasi loam, 0 to 3 percent slopes, frequently flooded	265	*
NnD	Northcove very cobbly loam, 15 to 30 percent slopes, rubbly	421	0.1
NnE	Northcove very cobbly loam, 30 to 50 percent slopes, rubbly	354	0.1
PaC2	Pacolet sandy clay loam, 8 to 15 percent slopes, moderately eroded	363	0.1
PaD2	Pacolet sandy clay loam, 15 to 25 percent slopes, moderately eroded	245	*
PnC	Pineola gravelly loam, 8 to 15 percent slopes, stony	326	*
PnD	Pineola gravelly loam, 15 to 30 percent slopes, stony	402	0.1
Qu	Pits, quarry	68	*
RhD	Rhodhiss sandy loam, 15 to 25 percent slopes	6,291	1.9
RhE	Rhodhiss sandy loam, 25 to 45 percent slopes	29,021	8.8
RoE	Rhodhiss-Bannertown complex, 25 to 50 percent slopes	1,189	0.4

See footnote at end of table.

Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
RsE	Rion-Cliffside complex, 25 to 60 percent slopes, very stony	160	*
SoC	Soco-Ditney complex, 8 to 15 percent slopes, very stony	595	0.2
SoD	Soco-Ditney complex, 15 to 30 percent slopes, very stony	2,143	0.6
SoE	Soco-Ditney complex, 30 to 50 percent slopes, very stony	5,899	1.8
SoF	Soco-Ditney complex, 50 to 80 percent slopes, very stony	2,489	0.8
SsC	Stecoah-Soco complex, 8 to 15 percent slopes, stony	440	0.1
SsD	Stecoah-Soco complex, 15 to 30 percent slopes, stony	757	0.2
SsE	Stecoah-Soco complex, 30 to 50 percent slopes, stony	1,181	0.4
TaC	Tate fine sandy loam, 8 to 15 percent slopes	249	*
TeB	Tate fine sandy loam, 2 to 8 percent slopes, very stony	384	0.1
ToB	Toast sandy loam, 2 to 8 percent slopes	229	*
ToC	Toast sandy loam, 8 to 15 percent slopes	692	0.2
Ud	Udorthents, loamy	2,091	0.6
UnB	Unison fine sandy loam, 2 to 8 percent slopes	2,926	0.9
UnC	Unison fine sandy loam, 8 to 15 percent slopes	1,782	0.5
UnD	Unison fine sandy loam, 15 to 25 percent slopes	157	*
Ur	Urban land	1,188	0.4
W	Water	6,244	1.9
WeC	Whiteoak fine sandy loam, 8 to 15 percent slopes, stony	257	*
WhD	Whiteoak fine sandy loam, 15 to 30 percent slopes, very stony	240	*
WoB2	Woolwine-Fairview complex, 2 to 8 percent slopes, moderately eroded	2,480	0.8
WoC2	Woolwine-Fairview complex, 8 to 15 percent slopes, moderately eroded	9,365	2.8
WoD2	Woolwine-Fairview complex, 15 to 25 percent slopes, moderately eroded	6,682	2.0
WwB	Woolwine-Fairview-Urban land complex, 2 to 8 percent slopes	70	*
WwC	Woolwine-Fairview-Urban land complex, 8 to 15 percent slopes	460	0.1
	Total	329,696	100.0

* Less than 0.1 percent.

Land Capability and Yields per Acre of Crops

(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	Corn	Corn silage	Wheat
		Bu	Tons	Bu
AaA:				
Arkaqua	3w	130.00	22.00	---
AbE, AcF:				
Ashe	7s	---	---	---
Chestnut	7e	---	---	---
Buladean	7e	---	---	---
AsF:				
Ashe	7s	---	---	---
Cleveland	7e	---	---	---
Rock outcrop	8s	---	---	---
BaB:				
Banister	2e	115.00	20.00	55.00
BoB:				
Biltmore	3s	80.00	16.00	---
BrD:				
Braddock	4e	---	---	---
BvB:				
Brevard	2e	105.00	---	65.00
CaB2:				
Cecil	3e	108.00	20.00	52.00
CeD, CeE				
Chestnut	7s	---	---	---
Ashe	7s	---	---	---
ChC:				
Chestnut	6s	---	---	---
Buladean	4e	---	---	---
ChD:				
Chestnut	7s	---	---	---
Buladean	6e	---	---	---
CkE:				
Chestnut	7s	---	---	---
Buladean	7e	---	---	---
CkF:				
Chestnut	7e	---	---	---
Buladean	7e	---	---	---
CmA:				
Chewacla	4w	150.00	28.00	65.00

Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Wheat
		Bu	Tons	Bu
CpD:				
Cliffield	6s	---	---	---
Pigeonroost	6e	---	---	---
CpE, CpF:				
Cliffield	7s	---	---	---
Pigeonroost	7e	---	---	---
CvA:				
Colvard	2w	155.00	24.00	40.00
CyE, CyF:				
Crossnore	7e	---	---	---
Jeffrey	7e	---	---	---
DaB:				
Dillard	2w	172.00	27.40	59.00
DrF:				
Ditney	7e	---	---	---
Unicoi	7s	---	---	---
Rock outcrop	8s	---	---	---
EdC:				
Edneytown	4e	---	---	---
Pigeonroost	4e	---	---	---
EdD:				
Edneytown	6e	---	---	---
Pigeonroost	6e	---	---	---
EdE:				
Edneytown	7e	---	---	---
Pigeonroost	7e	---	---	---
EuF:				
Evard	7e	---	---	---
Cowee	7e	---	---	---
EvC:				
Evard	4e	---	---	---
Cowee	4e	---	---	---
EvD:				
Evard	6e	---	---	---
Cowee	6e	---	---	---
EvE:				
Evard	7e	---	---	---
Cowee	7e	---	---	---

Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Wheat
		Bu	Tons	Bu
FaB2:				
Fairview	3e	100.00	18.00	45.00
FaC2:				
Fairview	3e	90.00	18.00	40.00
FaD2:				
Fairview	7e	---	---	---
FeB:				
Fairview	3e	---	---	---
Urban land	8s	---	---	---
FeC:				
Fairview	6e	---	---	---
Urban land	8s	---	---	---
FnA:				
Fluvaquents	5w	---	---	---
Udifluvents	3s	---	---	---
FoB:				
Fontaflora	2w	75.00	---	---
Ostin	6s	---	---	---
GcD:				
Greenlee	7s	---	---	---
GrD:				
Greenlee	7s	---	---	---
Tate	6e	---	---	---
GrE:				
Greenlee	7s	---	---	---
Tate	7e	---	---	---
GtC:				
Greenlee	7s	---	---	---
Tate	4e	---	---	---
Ostin	6s	---	---	---
HaA:				
Hatboro	6w	---	---	---
IoA:				
Iotla	2w	125.00	25.00	---
MaD:				
Maymead	4e	---	---	---
MeD:				
Meadowfield	6s	---	---	---
Fairview	7e	---	---	---

Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Wheat
		Bu	Tons	Bu
MoE:				
Meadowfield	7s	---	---	---
Rhodhiss	7e	---	---	---
MwC:				
Meadowfield	6s	---	---	---
Woolwine	4e	60.00	12.00	---
NkA:				
Nikwasi	6w	---	---	---
NnD:				
Northcove	7s	---	---	---
NnE:				
Northcove	7s	---	---	---
PaC2:				
Pacolet	6e	80.00	12.00	45.00
PaD2:				
Pacolet	7e	---	---	---
PnC:				
Pineola	4e	---	---	---
PnD:				
Pineola	6e	---	---	---
Qu:				
Pits	8s	---	---	---
RhD:				
Rhodhiss	6e	---	---	---
RhE:				
Rhodhiss	7e	---	---	---
RoE:				
Rhodhiss	7e	---	---	---
Bannertown	7e	---	---	---
RsE:				
Rion	7e	---	---	---
Cliffside	7s	---	---	---
SoC:				
Soco	4e	---	---	---
Ditney	4e	---	---	---
SoD:				
Soco	6e	---	---	---
Ditney	6e	---	---	---
SoE, SoF:				
Soco	7e	---	---	---

Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Wheat
		Bu	Tons	Bu
Ditney	7e	---	---	---
SsC:				
Stecoah	4e	---	---	---
Soco	4e	---	---	---
SsD:				
Stecoah	6e	---	---	---
Soco	6e	---	---	---
SsE:				
Stecoah	7e	---	---	---
Soco	7e	---	---	---
TaC:				
Tate	4e	90.00	18.00	---
TeB:				
Tate	3e	100.00	18.00	---
ToB:				
Toast	2e	90.00	18.00	---
ToC:				
Toast	4e	80.00	16.00	---
Ud:				
Udorthents	7e	---	---	---
UnB:				
Unison	2e	130.00	25.00	---
UnC:				
Unison	3e	130.00	23.00	---
UnD:				
Unison	4e	---	---	---
Ur:				
Urban land	8s	---	---	---
Udorthents	7e	---	---	---
WeC:				
Whiteoak	4e	---	---	---
WhD:				
Whiteoak	6e	---	---	---
WoB2:				
Woolwine	3e	75.00	15.00	---
Fairview	3e	100.00	18.00	45.00
WoC2:				
Woolwine	4e	60.00	12.00	---
Fairview	6e	90.00	18.00	40.00

Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Wheat
		Bu	Tons	Bu
WoD2:				
Woolwine	6e	---	---	---
Fairview	7e	---	---	---
WwB:				
Woolwine	3e	---	---	---
Fairview	3e	---	---	---
Urban land	8s	---	---	---
WwC:				
Woolwine	4e	---	---	---
Fairview	6e	---	---	---
Urban land	8s	---	---	---

Land Capability and Yields per Acre of Pasture

(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	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
AaA:				
Arkaqua	3w	4.00	---	7.00
AbE, AcF:				
Ashe	7s	---	---	---
Chestnut	7e	---	---	---
Buladean	7e	---	---	---
AsF:				
Ashe	7s	---	---	---
Cleveland	7e	---	---	---
Rock outcrop	8s	---	---	---
BaB:				
Banister	2e	4.00	---	7.00
BoB:				
Biltmore	3s	---	---	5.00
BrD:				
Braddock	4e	3.00	---	---
BvB:				
Brevard	2e	---	3.80	---
CaB2:				
Cecil	3e	3.75	6.00	---
CeD, CeE:				
Chestnut	7s	---	---	---
Ashe	7s	---	---	---
ChC:				
Chestnut	6s	---	---	---
Buladean	4e	---	---	---
ChD:				
Chestnut	7s	---	---	---
Buladean	6e	---	---	---
CkE:				
Chestnut	7s	---	---	---
Buladean	7e	---	---	---
CkF:				
Chestnut	7e	---	---	---
Buladean	7e	---	---	---
CmA:				
Chewacla	4w	4.00	---	7.00

Land Capability and Yields per Acre of Pasture—Continued

Map symbol and soil name	Land capability	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
CpD:				
Cliffield	6s	---	---	---
Pigeonroost	6e	---	---	---
CpE, CpF:				
Cliffield	7s	---	---	---
Pigeonroost	7e	---	---	---
CvA:				
Colvard	2w	---	---	---
CyE:				
Crossnore	7e	---	---	---
Jeffrey	7e	---	---	---
CyF:				
Crossnore	7e	---	---	4.00
Jeffrey	7e	---	---	---
DaB:				
Dillard	2w	3.50	5.00	6.00
DrF:				
Ditney	7e	---	---	---
Unicoi	7s	---	---	---
Rock outcrop	8s	---	---	---
EdC:				
Edneytown	4e	---	---	4.50
Pigeonroost	4e	---	---	---
EdD:				
Edneytown	6e	---	---	---
Pigeonroost	6e	---	---	---
EdE:				
Edneytown	7e	---	---	---
Pigeonroost	7e	---	---	---
EuF:				
Evard	7e	---	---	---
Cowee	7e	---	---	---
EvC:				
Evard	4e	---	---	4.50
Cowee	4e	---	---	3.00
EvD:				
Evard	6e	---	---	4.00
Cowee	6e	---	---	3.00

Land Capability and Yields per Acre of Pasture—Continued

Map symbol and soil name	Land capability	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
EvE:				
Evard	7e	---	---	---
Cowee	7e	---	---	---
FaB2:				
Fairview	3e	3.00	4.50	5.00
FaC2:				
Fairview	3e	2.50	4.00	4.50
FaD2:				
Fairview	7e	---	---	---
FeB:				
Fairview	3e	---	---	---
Urban land	8s	---	---	---
FeC:				
Fairview	6e	---	---	---
Urban land	8s	---	---	---
FnA:				
Fluvaquents	5w	---	---	---
Udifluvents	3s	---	---	---
FoB:				
Fontaflora	2w	---	---	---
Ostin	6s	---	---	---
GcD:				
Greenlee	7s	---	---	---
GrD:				
Greenlee	7s	---	---	---
Tate	6e	---	---	---
GrE:				
Greenlee	7s	---	---	---
Tate	7e	---	---	---
GtC:				
Greenlee	7s	---	---	---
Tate	4e	---	---	---
Ostin	6s	---	---	---
HaA:				
Hatboro	6w	---	---	---
IoA:				
Iotla	2w	4.00	---	7.00
MaD:				
Maymead	4e	---	---	---

Land Capability and Yields per Acre of Pasture—Continued

Map symbol and soil name	Land capability	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
MeD:				
Meadowfield	6s	---	---	---
Fairview	7e	---	---	---
MoE:				
Meadowfield	7s	---	---	---
Rhodhiss	7e	---	---	---
MwC:				
Meadowfield	6s	---	---	---
Woolwine	4e	2.50	---	4.50
NkA:				
Nikwasi	6w	---	---	---
NnD, NnE:				
Northcove	7s	---	---	---
PaC2:				
Pacolet	6e	3.25	4.50	---
PaD2:				
Pacolet	7e	2.75	---	---
PnC:				
Pineola	4e	---	---	4.50
PnD:				
Pineola	6e	---	---	4.00
Qu:				
Pits	8s	---	---	---
RhD:				
Rhodhiss	6e	---	---	3.50
RhE:				
Rhodhiss	7e	---	---	---
RoE:				
Rhodhiss	7e	---	---	---
Bannertown	7e	---	---	---
RsE:				
Rion	7e	---	---	4.50
Cliffside	7s	---	---	3.00
SoC:				
Soco	4e	---	---	3.50
Ditney	4e	---	---	---
SoD:				
Soco	6e	---	---	---
Ditney	6e	---	---	---

Land Capability and Yields per Acre of Pasture—Continued

Map symbol and soil name	Land capability	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
SoE, SoF:				
Soco	7e	---	---	---
Ditney	7e	---	---	---
SsC:				
Stecoah	4e	---	---	6.00
Soco	4e	---	---	5.50
SsD:				
Stecoah	6e	---	---	5.50
Soco	6e	---	---	4.50
SsE:				
Stecoah	7e	---	---	5.00
Soco	7e	---	---	3.50
TaC:				
Tate	4e	---	---	6.00
TeB:				
Tate	3e	---	---	6.00
ToB:				
Toast	2e	3.50	---	6.00
ToC:				
Toast	4e	3.00	---	5.00
Ud:				
Udorthents	7e	---	---	4.50
UnB:				
Unison	2e	4.00	6.00	7.00
UnC:				
Unison	3e	3.50	5.00	6.00
UnD:				
Unison	4e	3.50	---	6.00
Ur:				
Urban land	8s	---	---	---
Udorthents	7e	---	---	4.50
WeC:				
Whiteoak	4e	---	---	---
WhD:				
Whiteoak	6e	---	---	---
WoB2:				
Woolwine	3e	3.00	---	5.00
Fairview	3e	3.00	4.50	5.00
WoC2:				
Woolwine	4e	2.50	---	4.50

Land Capability and Yields per Acre of Pasture—Continued

Map symbol and soil name	Land capability	Grass hay	Legume hay	Pasture
		Tons	Tons	AUM
Fairview-----------------	6e	2.50	4.00	4.50
WoD2:				
Woolwine-----------------	6e	---	---	---
Fairview-----------------	7e	---	---	---
WwB:				
Woolwine-----------------	3e	---	---	---
Fairview-----------------	3e	---	---	---
Urban land---------------	8s	---	---	---
WwC:				
Woolwine-----------------	4e	---	---	---
Fairview-----------------	6e	---	---	---
Urban land---------------	8s	---	---	---

Prime Farmland and other Important Farmlands

(Only the soils considered prime or important farmland are listed. Urban or built-up areas of the soils listed are not considered prime or important farmland. If a soil is prime or important farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Map unit name	Farmland Classification
BaB	Banister loam, 1 to 6 percent slopes, rarely flooded	Prime farmland in all areas
BvB	Brevard fine sandy loam, 1 to 6 percent slopes, rarely flooded	Prime farmland in all areas
CaB2	Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded	Prime farmland in all areas
CvA	Colvard sandy loam, 0 to 3 percent slopes, occasionally flooded	Prime farmland in all areas
DaB	Dillard fine sandy loam, 2 to 8 percent slopes, rarely flooded	Prime farmland in all areas
FaB2	Fairview sandy clay loam, 2 to 8 percent slopes, moderately eroded	Prime farmland in all areas
ToB	Toast sandy loam, 2 to 8 percent slopes	Prime farmland in all areas
UnB	Unison fine sandy loam, 2 to 8 percent slopes	Prime farmland in all areas
FaC2	Fairview sandy clay loam, 8 to 15 percent slopes, moderately eroded	Farmland of statewide importance
PaC2	Pacolet sandy clay loam, 8 to 15 percent slopes, moderately eroded	Farmland of statewide importance
TaC	Tate fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
ToC	Toast sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
UnC	Unison fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
WoB2	Woolwine-Fairview complex, 2 to 8 percent slopes, moderately eroded	Farmland of statewide importance
WoC2	Woolwine-Fairview complex, 8 to 15 percent slopes, moderately eroded	Farmland of statewide importance
AaA	Arkaqua loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
CmA	Chewacla loam, 0 to 2 percent slopes, frequently flooded	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
HaA	Hatboro sandy loam, 0 to 2 percent slopes, frequently flooded	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
IoA	Iotla sandy loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

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
AaA:				
Arkaqua	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.60	Flooding	1.00
	Too acid	0.22	Low adsorption	1.00
AbE:				
Ashe	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Large stones on the surface	0.92	Too acid	1.00
Chestnut	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Too Stony	0.76	Too acid	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	0.76	Slope	1.00
	Too acid	0.62	Too acid	1.00
AcF:				
Ashe	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	1.00	Slope	1.00
	Droughty	0.99	Too acid	1.00
Chestnut	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	1.00	Slope	1.00
	Droughty	0.99	Too acid	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	1.00	Slope	1.00
	Too acid	0.62	Too acid	1.00
AsF:				
Ashe	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	1.00	Slope	1.00
	Droughty	0.99	Too acid	1.00
Cleveland	Very limited		Very limited	
	Slope	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Low adsorption	1.00
Rock outcrop	Not rated		Not rated	

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
BaB:				
Banister	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.78	Too acid	1.00
	Restricted permeability	0.30	Flooding	0.40
BoB:				
Biltmore	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Filtering capacity	0.99
	Leaching	0.45	Droughty	0.24
BrD:				
Braddock	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.73	Too acid	1.00
BvB:				
Brevard	Somewhat limited		Very limited	
	Low adsorption	0.38	Low adsorption	1.00
	Too acid	0.32	Too acid	0.91
	Droughty	0.05	Flooding	0.40
CaB2:				
Cecil	Somewhat limited		Somewhat limited	
	Low adsorption	0.66	Too acid	0.77
	Too acid	0.22	Low adsorption	0.60
CeD, CeE:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Too acid	0.62	Too acid	1.00
Ashe	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Large stones on the surface	0.92	Too acid	1.00
ChC:				
Chestnut	Somewhat limited		Very limited	
	Droughty	0.99	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.99
Buladean	Somewhat limited		Very limited	
	Slope	0.63	Low adsorption	1.00
	Too acid	0.62	Too acid	1.00
			Slope	0.63
ChD, CkE, CkF:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Too acid	0.62	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
Buladean	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too acid	0.62	Slope	1.00
			Too acid	1.00
CmA:				
Chewacla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
	Too acid	0.22	Too acid	0.77
CpD, CpE, CpF:				
Cliffield	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.95	Slope	1.00
	Too acid	0.78	Too acid	1.00
Pigeonroost	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too Stony	0.76	Slope	1.00
	Droughty	0.67	Too acid	1.00
CvA:				
Colvard	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Filtering capacity	0.99
CyE, CyF:				
Crossnore	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Too Stony	0.76	Too acid	1.00
Jeffrey	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.78	Slope	1.00
	Too Stony	0.76	Too acid	1.00
DaB:				
Dillard	Very limited		Very limited	
	Depth to saturated zone	0.99	Low adsorption	1.00
	Too acid	0.18	Depth to saturated zone	0.99
	Droughty	0.01	Too acid	0.67
DrF:				
Ditney	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.82	Slope	1.00
	Too acid	0.73	Too acid	1.00
Unicoi	Very limited		Very limited	
	Slope	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Low adsorption	1.00
Rock outcrop	Not rated		Not rated	

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
EdC:				
Edneytown-----------	Somewhat limited		Somewhat limited	
	Slope	0.63	Too acid	0.91
	Too acid	0.32	Slope	0.63
Pigeonroost---------	Somewhat limited		Very limited	
	Droughty	0.67	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.67
EdD, EdE:				
Edneytown-----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.32	Too acid	0.91
Pigeonroost---------	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.67	Slope	1.00
	Too acid	0.62	Too acid	1.00
EuF:				
Evard---------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.32	Too acid	0.91
	Low adsorption	0.18		
Cowee---------------	Very limited		Very limited	
	Slope	1.00	Droughty	1.00
	Droughty	1.00	Low adsorption	1.00
	Filtering capacity	0.99	Slope	1.00
EvC:				
Evard---------------	Somewhat limited		Somewhat limited	
	Slope	0.63	Too acid	0.91
	Too acid	0.32	Slope	0.63
	Low adsorption	0.18		
Cowee---------------	Very limited		Very limited	
	Droughty	1.00	Droughty	1.00
	Filtering capacity	0.99	Low adsorption	1.00
			Too acid	1.00
	Slope	0.63		
EvD, EvE:				
Evard---------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.32	Too acid	0.91
	Low adsorption	0.18		
Cowee---------------	Very limited		Very limited	
	Slope	1.00	Droughty	1.00
	Droughty	1.00	Low adsorption	1.00
	Filtering capacity	0.99	Slope	1.00
FaB2:				
Fairview------------	Somewhat limited		Somewhat limited	
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14

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
FaC2:				
Fairview	Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
FaD2:				
Fairview	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
FeB:				
Fairview	Somewhat limited		Somewhat limited	
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
Urban land	Not rated		Not rated	
FeC:				
Fairview	Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
Urban land	Not rated		Not rated	
FnA:				
Fluvaquents	Not rated		Not rated	
Udifluvents	Not rated		Not rated	
FoB:				
Fontaflora	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Filtering capacity	0.99
	Depth to saturated zone	0.46	Too acid	0.77
Ostin	Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.99
GcD:				
Greenlee	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too acid	1.00
	Cobble content	1.00	Cobble content	1.00
GrD, GrE:				
Greenlee	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too acid	1.00
	Cobble content	1.00	Cobble content	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
Tate	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too acid	0.77
	Too acid	0.22		
GtC:				
Greenlee	Very limited		Very limited	
	Too Stony	1.00	Too acid	1.00
	Cobble content	1.00	Cobble content	1.00
	Slope	0.63	Slope	0.63
Tate	Very limited		Somewhat limited	
	Too Stony	1.00	Too acid	0.77
	Slope	0.63	Slope	0.63
	Too acid	0.22	Flooding	0.40
Ostin	Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00
	Too Stony	1.00	Depth to saturated zone	0.99
HaA:				
Hatboro	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
	Runoff	0.40	Low adsorption	1.00
IoA:				
Iotla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Filtering capacity	0.99
MaD:				
Maymead	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too acid	0.99
	Too acid	0.50		
MeD:				
Meadowfield	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.95	Slope	1.00
	Too acid	0.78	Too acid	1.00
Fairview	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
MoE:				
Meadowfield	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.95	Slope	1.00
	Too acid	0.78	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
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too acid	0.77
	Too acid	0.22		
MwC:				
Meadowfield	Somewhat limited		Very limited	
	Droughty	0.95	Low adsorption	1.00
	Too acid	0.78	Too acid	1.00
	Slope	0.63	Droughty	0.95
Woolwine	Somewhat limited		Very limited	
	Droughty	0.66	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.66
NkA:				
Nikwasi	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00
	Filtering capacity	0.99	Filtering capacity	0.99
NnD, NnE:				
Northcove	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	1.00	Cobble content	1.00
	Cobble content	1.00	Too acid	1.00
PaC2:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.63	Too acid	0.77
	Low adsorption	0.60	Slope	0.63
	Too acid	0.22	Low adsorption	0.56
PaD2:				
Pacolet	Very limited		Very limited	
	Low adsorption	0.60	Too acid	0.77
	Too acid	0.22	Low adsorption	0.56
PnC:				
Pineola	Somewhat limited		Very limited	
	Droughty	0.70	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.70
PnD:				
Pineola	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.70	Slope	1.00
	Too acid	0.62	Too acid	1.00
Qu:				
Pits	Not rated		Not rated	
RhD, RhE:				
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.22	Too acid	0.77

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
RoE:				
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.22	Too acid	0.77
Bannertown	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	1.00	Slope	1.00
	Depth to bedrock	0.42	Droughty	1.00
RsE:				
Rion	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too acid	0.77
	Too acid	0.22		
Cliffside	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.99	Slope	1.00
	Too Stony	0.76	Too acid	0.99
SoC:				
Soco	Somewhat limited		Very limited	
	Too acid	0.78	Low adsorption	1.00
	Too Stony	0.76	Too acid	1.00
	Droughty	0.68	Droughty	0.68
Ditney	Somewhat limited		Very limited	
	Droughty	0.82	Low adsorption	1.00
	Too Stony	0.76	Too acid	1.00
	Too acid	0.73	Droughty	0.82
SoD, SoE, SoF:				
Soco	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too acid	0.78	Slope	1.00
	Too Stony	0.76	Too acid	1.00
Ditney	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.82	Slope	1.00
	Too Stony	0.76	Too acid	1.00
SsC:				
Stecoah	Somewhat limited		Very limited	
	Too acid	0.78	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
			Slope	0.63
Soco	Somewhat limited		Very limited	
	Too acid	0.78	Low adsorption	1.00
	Droughty	0.68	Too acid	1.00
	Slope	0.63	Droughty	0.68
SsD, SsE:				
Stecoah	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too acid	0.78	Slope	1.00
			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
Soco----------------	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Too acid	0.78	Slope	1.00
	Droughty	0.68	Too acid	1.00
TaC:				
Tate----------------	Somewhat limited		Somewhat limited	
	Slope	0.63	Too acid	0.77
	Too acid	0.22	Slope	0.63
TeB:				
Tate----------------	Somewhat limited		Somewhat limited	
	Too Stony	0.76	Too acid	0.77
	Too acid	0.22		
ToB:				
Toast---------------	Somewhat limited		Very limited	
	Too acid	0.73	Too acid	1.00
ToC:				
Toast---------------	Somewhat limited		Very limited	
	Too acid	0.73	Too acid	1.00
	Slope	0.63	Slope	0.63
Ud:				
Udorthents----------	Not rated		Not rated	
UnB:				
Unison--------------	Somewhat limited		Somewhat limited	
	Too acid	0.22	Too acid	0.77
UnC:				
Unison--------------	Somewhat limited		Somewhat limited	
	Slope	0.37	Too acid	0.77
	Too acid	0.22	Slope	0.37
UnD:				
Unison--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too acid	0.22	Too acid	0.77
Ur:				
Urban land----------	Not rated		Not rated	
Udorthents----------	Not rated		Not rated	
WeC:				
Whiteoak------------	Somewhat limited		Somewhat limited	
	Slope	0.63	Too acid	0.91
	Too acid	0.32	Slope	0.63
WhD:				
Whiteoak------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too acid	0.91
	Too acid	0.32		

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
WoB2:				
Woolwine------------	Somewhat limited		Very limited	
	Droughty	0.66	Low adsorption	1.00
	Too acid	0.62	Too acid	1.00
	Depth to bedrock	0.42	Droughty	0.66
Fairview------------	Somewhat limited		Somewhat limited	
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
WoC2:				
Woolwine------------	Somewhat limited		Very limited	
	Droughty	0.66	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.66
Fairview------------	Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
WoD2:				
Woolwine------------	Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00
	Droughty	0.66	Slope	1.00
	Too acid	0.62	Too acid	1.00
Fairview------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
WwB:				
Woolwine------------	Somewhat limited		Very limited	
	Droughty	0.66	Low adsorption	1.00
	Too acid	0.62	Too acid	1.00
	Depth to bedrock	0.42	Droughty	0.66
Fairview------------	Somewhat limited		Somewhat limited	
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
Urban land----------	Not rated		Not rated	
WwC:				
Woolwine------------	Somewhat limited		Very limited	
	Droughty	0.66	Low adsorption	1.00
	Slope	0.63	Too acid	1.00
	Too acid	0.62	Droughty	0.66
Fairview------------	Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63
	Low adsorption	0.59	Low adsorption	0.56
	Too acid	0.03	Too acid	0.14
Urban land----------	Not rated		Not rated	

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		Overland flow of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AaA:				
Arkaqua	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Too acid	0.77	Depth to saturated zone	1.00
	Flooding	0.60	Seepage	1.00
AbE:				
Ashe	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Chestnut	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Buladean	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
				1.00
AcF:				
Ashe	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Chestnut	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	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
Buladean------------	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
AsF:				
Ashe----------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Cleveland-----------	Very limited		Very limited	
	Droughty	1.00	Seepage	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too steep for surface application	1.00	Too steep for surface application	1.00
Rock outcrop--------	Not rated		Not rated	
BaB:				
Banister------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	1.00	Seepage	1.00
	Restricted permeability	0.22	Too acid	1.00
BoB:				
Biltmore------------	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Seepage	1.00
	Droughty	0.24	Depth to saturated zone	0.09
BrD:				
Braddock------------	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
BvB:				
Brevard-------------	Somewhat limited		Very limited	
	Too acid	0.91	Seepage	1.00
	Low adsorption	0.38	Too acid	0.91
	Too steep for surface application	0.08	Flooding	0.40

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
CaB2:				
Cecil				
	Too acid	0.77	Seepage	1.00
	Low adsorption	0.66	Too acid	0.77
	Too steep for surface application	0.32	Low adsorption	0.66
CeD, CeE:				
Chestnut	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
			Depth to bedrock	1.00
			Too steep for surface application	1.00
	Too steep for sprinkler application	1.00		
	Too acid	1.00		
Ashe	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
			Depth to bedrock	1.00
			Too steep for surface application	1.00
	Too steep for sprinkler application	1.00		
	Too acid	1.00		
ChC:				
Chestnut	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
			Depth to bedrock	1.00
			Too steep for surface application	1.00
	Too acid	1.00		
	Droughty	0.99		
Buladean	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
			Too steep for surface application	1.00
	Too acid	1.00		
	Too steep for sprinkler application	0.78	Too acid	1.00
ChD, CkE, CkF:				
Chestnut	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
			Depth to bedrock	1.00
			Too steep for surface application	1.00
	Too steep for sprinkler application	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
Buladean------------	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
CmA:				
Chewacla------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Too acid	0.77	Seepage	1.00
CpD, CpE, CpF:				
Cliffield-----------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Pigeonroost---------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
CvA:				
Colvard-------------	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Flooding	0.60	Seepage	1.00
CyE, CyF:				
Crossnore-----------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Jeffrey-------------	Very limited		Very limited	
	Too steep for surface application	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	1.00	Too steep for surface application	1.00
	Too acid	1.00	Seepage	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
DaB:				
Dillard	Very limited		Very limited	
	Depth to saturated zone	0.99	Seepage	1.00
	Too acid	0.67	Depth to saturated zone	0.99
	Too steep for surface application	0.32	Too acid	0.67
DrF:				
Ditney	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Unicoi	Very limited		Very limited	
	Droughty	1.00	Seepage	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too steep for surface application	1.00	Too steep for surface application	1.00
Rock outcrop	Not rated		Not rated	
EdC:				
Edneytown	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	0.91	Too steep for surface application	1.00
	Too steep for sprinkler application	0.78	Too acid	0.91
Pigeonroost	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
EdD, EdE:				
Edneytown	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	0.91	Too steep for surface application	1.00
			Too acid	0.91

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
Pigeonroost	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
EuF:				
Evard	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	0.91	Too acid	0.91
Cowee	Very limited		Very limited	
	Droughty	1.00	Seepage	1.00
	Too steep for surface application	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	1.00	Too steep for surface application	1.00
EvC:				
Evard	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	0.91	Too steep for surface application	1.00
	Too steep for sprinkler application	0.78	Too acid	0.91
Cowee	Very limited		Very limited	
	Droughty	1.00	Seepage	1.00
	Too steep for surface application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
EvD, EvE:				
Evard	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	0.91	Too acid	0.91

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
Cowee	Very limited		Very limited	
	Droughty	1.00	Seepage	1.00
	Too steep for surface application	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	1.00	Too steep for surface application	1.00
FaB2:				
Fairview	Somewhat limited		Very limited	
	Low adsorption	0.59	Seepage	1.00
	Too steep for surface application	0.32	Low adsorption	0.59
	Too acid	0.14	Too acid	0.14
FaC2:				
Fairview	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Low adsorption	0.59	Low adsorption	0.59
FaD2:				
Fairview	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Low adsorption	0.59	Low adsorption	0.59
FeB:				
Fairview	Somewhat limited		Very limited	
	Low adsorption	0.59	Seepage	1.00
	Too steep for surface application	0.32	Low adsorption	0.59
	Too acid	0.14	Too acid	0.14
Urban land	Not rated		Not rated	
FeC:				
Fairview	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Low adsorption	0.59	Low adsorption	0.59
Urban land	Not rated		Not rated	

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
FnA:				
Fluvaquents	Not rated		Not rated	
Udifluvents	Not rated		Not rated	
FoB:				
Fontaflora	Very limited		Very limited	
	Filtering capacity	0.99	Flooding	1.00
	Too acid	0.77	Seepage	1.00
	Flooding	0.60	Too acid	0.77
Ostin	Very limited		Very limited	
	Filtering capacity	1.00	Flooding	1.00
	Flooding	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Cobble content	1.00
GcD:				
Greenlee	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
GrD, GrE:				
Greenlee	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
Tate	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	0.77	Too acid	0.77
GtC:				
Greenlee	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
	Cobble content	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		Overland flow of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Tate	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Too acid	0.77	Too acid	0.77
Ostin	Very limited		Very limited	
	Filtering capacity	1.00	Flooding	1.00
	Flooding	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Cobble content	1.00
HaA:				
Hatboro	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Too acid	0.31	Seepage	1.00
IoA:				
Iotla	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	0.99	Seepage	1.00
	Flooding	0.60	Depth to saturated zone	1.00
MaD:				
Maymead	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	0.99	Too acid	0.99
MeD:				
Meadowfield	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Fairview	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Low adsorption	0.59	Low adsorption	0.59

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
MoE:				
Meadowfield	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Rhodhiss	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	0.77	Too acid	0.77
MwC:				
Meadowfield	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Droughty	0.95	Too acid	1.00
Woolwine	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
NkA:				
Nikwasi	Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Seepage	1.00
	Filtering capacity	0.99	Depth to saturated zone	1.00
NnD, NnE:				
Northcove	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
	Cobble content	1.00	Stone content	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
PaC2:				
Pacolet-------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Too acid	0.77	Too acid	0.77
PaD2:				
Pacolet-------------	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Too acid	0.77	Too acid	0.77
PnC:				
Pineola-------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
PnD:				
Pineola-------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Qu:				
Pits----------------	Not rated		Not rated	
RhD, RhE:				
Rhodhiss------------	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	0.77	Too acid	0.77

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
RoE:				
Rhodhiss	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	0.77	Too acid	0.77
Bannertown	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Droughty	1.00	Too steep for surface application	1.00
RsE:				
Rion	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	0.77	Too acid	0.77
Cliffside	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	0.99	Too steep for surface application	1.00
SoC:				
Soco	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too acid	1.00
Ditney	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Droughty	0.82	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
SoD, SoE, SoF:				
Soco	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Ditney	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
SsC:				
Stecoah	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
Soco	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too acid	1.00
SsD, SsE:				
Stecoah	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
Soco	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	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
TaC:				
Tate	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Too acid	0.77	Too acid	0.77
TeB:				
Tate	Somewhat limited		Very limited	
	Too acid	0.77	Seepage	1.00
	Too steep for surface application	0.68	Too acid	0.77
ToB:				
Toast	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Too steep for surface application	0.32	Too acid	1.00
ToC:				
Toast	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Too acid	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
Ud:				
Udorthents	Not rated		Not rated	
UnB:				
Unison	Somewhat limited		Very limited	
	Too acid	0.77	Seepage	1.00
	Too steep for surface application	0.32	Too acid	0.77
UnC:				
Unison	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	0.77	Too steep for surface application	0.94
	Too steep for sprinkler application	0.60	Too acid	0.77

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
UnD:				
Unison	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Too acid	0.77	Too acid	0.77
Ur:				
Urban land	Not rated		Not rated	
Udorthents	Not rated		Not rated	
WeC:				
Whiteoak	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	0.91	Too steep for surface application	1.00
	Too steep for sprinkler application	0.78	Too acid	0.91
WhD:				
Whiteoak	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	0.91	Too acid	0.91
WoB2:				
Woolwine	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Droughty	0.66	Depth to bedrock	1.00
	Depth to bedrock	0.42	Too acid	1.00
Fairview	Somewhat limited		Very limited	
	Low adsorption	0.59	Seepage	1.00
	Too steep for surface application	0.32	Low adsorption	0.59
	Too acid	0.14	Too acid	0.14
WoC2:				
Woolwine	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	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
Fairview------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Low adsorption	0.59	Low adsorption	0.59
WoD2:				
Woolwine------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	1.00	Depth to bedrock	1.00
	Too acid	1.00	Too steep for surface application	1.00
Fairview------------	Very limited		Very limited	
	Too steep for surface application	1.00	Too steep for surface application	1.00
	Too steep for sprinkler application	1.00	Seepage	1.00
	Low adsorption	0.59	Low adsorption	0.59
WwB:				
Woolwine------------	Very limited		Very limited	
	Too acid	1.00	Seepage	1.00
	Droughty	0.66	Depth to bedrock	1.00
	Depth to bedrock	0.42	Too acid	1.00
Fairview------------	Somewhat limited		Very limited	
	Low adsorption	0.59	Seepage	1.00
	Too steep for surface application	0.32	Low adsorption	0.59
	Too acid	0.14	Too acid	0.14
Urban land----------	Not rated		Not rated	
WwC:				
Woolwine------------	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too acid	1.00	Depth to bedrock	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application surface	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
Fairview	Very limited		Very limited	
	Too steep for surface application	1.00	Seepage	1.00
	Too steep for sprinkler application	0.78	Too steep for surface application	1.00
	Low adsorption	0.59	Low adsorption	0.59
Urban land	Not rated		Not rated	

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
AaA:				
Arkaqua	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Too acid	0.77
	Flooding	0.60	Flooding	0.60
AbE:				
Ashe	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
AcF:				
Ashe	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	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
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
AsF:				
Ashe	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Cleveland	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Rock outcrop	Not rated		Not rated	
BaB:				
Banister	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Too acid	1.00
	Too acid	0.21	Restricted permeability	0.15
BoB:				
Biltmore	Very limited		Very limited	
	Depth to saturated zone	1.00	Filtering capacity	0.99
	Flooding	0.60	Flooding	0.60
			Depth to saturated zone	0.09
BrD:				
Braddock	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.14	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		Slow rate treatment of wastewater	
	Rating class and limiting features	Value	Rating class and limiting features	Value
BvB:				
Brevard	Very limited		Somewhat limited	
	Restricted permeability	1.00	Too acid	0.91
			Low adsorption	0.38
			Too steep for surface application	0.08
CaB2:				
Cecil	Very limited		Somewhat limited	
	Restricted permeability	1.00	Too acid	0.77
			Low adsorption	0.66
	Slope	0.12	Too steep for surface application	0.32
CeD:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32		
			Too steep for sprinkler application	1.00
Ashe	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32		
			Too steep for sprinkler application	1.00
CeE:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32		
			Too steep for sprinkler application	1.00
Ashe	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32		
			Too steep for sprinkler application	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
ChC:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
ChD:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
CkE:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	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
CkF:				
Chestnut	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
CmA:				
Chewacla	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	1.00	Too acid	0.77
CpD:				
Cliffield	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Pigeonroost	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
CpE:				
Cliffield	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	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
Pigeonroost----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
CpF:				
Cliffield------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Pigeonroost----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
CvA:				
Colvard--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Filtering capacity	0.99
	Flooding	0.60	Flooding	0.60
	Restricted permeability	0.32		
CyE:				
Crossnore------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Jeffrey--------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	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
CyF:				
Crossnore	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Jeffrey	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
DaB:				
Dillard	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Restricted permeability	1.00	Too acid	0.67
	Slope	0.12	Too steep for surface application	0.32
DrF:				
Ditney	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Unicoi	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Stone content	0.85	Too steep for sprinkler application	1.00
Rock outcrop	Not rated		Not rated	
EdC:				
Edneytown	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91

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
Pigeonroost----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EdD:				
Edneytown------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91
Pigeonroost----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EdE:				
Edneytown------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91
Pigeonroost----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EuF:				
Evard----------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91

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
Cowee	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EvC:				
Evard	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91
Cowee	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EvD:				
Evard	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91
Cowee	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
EvE:				
Evard	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91

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
Cowee----------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00		
			Too steep for sprinkler application	1.00
FaB2:				
Fairview-------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Low adsorption	0.59
			Too steep for surface application	0.32
	Slope	0.12		
	Too acid	0.07		
			Too acid	0.14
FaC2:				
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00		
	Too acid	0.07	Too steep for sprinkler application	1.00
			Low adsorption	0.59
FaD2:				
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00		
	Too acid	0.07	Too steep for sprinkler application	1.00
			Low adsorption	0.59
FeB:				
Fairview-------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Low adsorption	0.59
			Too steep for surface application	
	Slope	0.12		
	Too acid	0.07		
			Too acid	0.14
Urban land-----------	Not rated		Not rated	
FeC:				
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00		
	Too acid	0.07	Too steep for sprinkler application	1.00
			Low adsorption	0.59
Urban land-----------	Not rated		Not rated	
FnA:				
Fluvaquents----------	Not rated		Not rated	

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
Udifluvents----------	Not rated		Not rated	
FoB:				
Fontaflora-----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Filtering capacity	0.99
	Flooding	0.60	Too acid	0.77
	Restricted permeability	0.32	Flooding	0.60
Ostin----------------	Very limited		Very limited	
	Flooding	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Cobble content	1.00	Depth to saturated zone	0.99
GcD:				
Greenlee-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	0.98	Too acid	1.00
GrD:				
Greenlee-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	0.98	Too acid	1.00
Tate-----------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
GrE:				
Greenlee-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	0.98	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
Tate	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
GtC:				
Greenlee	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	0.98	Too acid	1.00
Tate	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
Ostin	Very limited		Very limited	
	Flooding	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Cobble content	1.00	Depth to saturated zone	0.99
HaA:				
Hatboro	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	1.00	Too acid	0.31
IoA:				
Iotla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.60	Filtering capacity	0.99
	Restricted permeability	0.32	Flooding	0.60
MaD:				
Maymead	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.03	Too acid	0.99

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
MeD:				
Meadowfield----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.07	Low adsorption	0.59
MoE:				
Meadowfield----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Rhodhiss-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
MwC:				
Meadowfield----------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too acid	1.00
Woolwine-------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	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
NkA:				
Nikwasi	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	1.00	Filtering capacity	0.99
NnD:				
Northcove	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	1.00	Cobble content	1.00
NnE:				
Northcove	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Stone content	1.00	Too steep for sprinkler application	1.00
	Cobble content	1.00	Cobble content	1.00
PaC2:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
PaD2:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
PnC:				
Pineola	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	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
PnD:				
Pineola	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Qu:				
Pits	Not rated		Not rated	
RhD:				
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
RhE:				
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
RoE:				
Rhodhiss	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
Bannertown	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
RsE:				
Rion	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77

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
Cliffside	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
SoC:				
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too acid	1.00
Ditney	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too acid	1.00
SoD:				
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Ditney	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
SoE:				
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	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
Ditney	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
SoF:				
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Ditney	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
SsC:				
Stecoah	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too acid	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too acid	1.00
SsD:				
Stecoah	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	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
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
SsE:				
Stecoah	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.32	Too acid	1.00
Soco	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	0.32	Too steep for sprinkler application	1.00
TaC:				
Tate	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
TeB:				
Tate	Very limited		Somewhat limited	
	Restricted permeability	1.00	Too acid	0.77
	Slope	0.50	Too steep for surface application	0.68
ToB:				
Toast	Very limited		Very limited	
	Restricted permeability	1.00	Too acid	1.00
	Too acid	0.14	Too steep for surface application	0.32
	Slope	0.12		
ToC:				
Toast	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too acid	1.00
	Too acid	0.14	Too steep for sprinkler application	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
Ud:				
Udorthents	Not rated		Not rated	
UnB:				
Unison	Very limited		Somewhat limited	
	Restricted permeability	1.00	Too acid	0.77
	Slope	0.12	Too steep for surface application	0.32
UnC:				
Unison	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	0.94
			Too acid	0.77
UnD:				
Unison	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.77
Ur:				
Urban land	Not rated		Not rated	
Udorthents	Not rated		Not rated	
WeC:				
Whiteoak	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91
WhD:				
Whiteoak	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
			Too acid	0.91

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
WoB2:				
Woolwine-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Too acid	1.00
	Slope	0.12	Too steep for surface application	0.32
Fairview-------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Low adsorption	0.59
	Slope	0.12	Too steep for surface application	0.32
	Too acid	0.07	Too acid	0.14
WoC2:				
Woolwine-------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.07	Low adsorption	0.59
WoD2:				
Woolwine-------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Restricted	1.00	Low adsorption	0.59
	Too acid	0.07		
WwB:				
Woolwine-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Too acid	1.00
	Slope	0.12	Too steep for surface application	0.32

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
Fairview-------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Low adsorption	0.59
	Slope	0.12	Too steep for surface application	0.32
	Too acid	0.07	Too acid	0.14
Urban land-----------	Not rated		Not rated	
WwC:				
Woolwine-------------	Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.07	Low adsorption	0.59
Urban land-----------	Not rated		Not rated	

Forestland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
AaA:				
Arkaqua	yellow-poplar	96	100	yellow-poplar, black walnut, eastern white pine, northern red oak, shortleaf pine
	Virginia pine	---	---	
	black walnut	---	---	
	eastern white pine	96	178	
	shortleaf pine	78	126	
AbE, AcF:				
Ashe	chestnut oak	57	40	eastern white pine, shortleaf pine
	eastern white pine	80	144	
	shortleaf pine	57	82	
	Virginia pine	62	95	
	pitch pine	---	---	
	scarlet oak	---	---	
	northern red oak	---	---	
Chestnut	eastern white pine	78	139	eastern white pine, yellow-poplar, shortleaf pine
	yellow-poplar	97	102	
	scarlet oak	---	---	
	white oak	70	52	
	black oak	71	53	
	chestnut oak	69	51	
	shortleaf pine	---	---	
Buladean	eastern white pine	97	180	eastern white pine, yellow-poplar, chestnut oak, white oak, scarlet oak
	chestnut oak	---	---	
	white oak	---	---	
	scarlet oak	---	---	
	black oak	---	---	
	yellow-poplar	97	102	
	red maple	---	---	
	hickory	---	---	
	black locust	---	---	
	sourwood	---	---	
AsF:				
Ashe	chestnut oak	57	40	eastern white pine, shortleaf pine
	eastern white pine	80	144	
	shortleaf pine	57	82	
	Virginia pine	62	95	
	pitch pine	---	---	
	scarlet oak	---	---	
	northern red oak	---	---	
Cleveland	chestnut oak	---	---	eastern white pine, white oak, chestnut oak
	eastern white pine	---	---	
	yellow-poplar	---	---	
	scarlet oak	---	---	
	white oak	---	---	
	black oak	---	---	
	shortleaf pine	---	---	
	pitch pine	---	---	
Rock outcrop	---	---	---	---

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
BaB:				
Banister	yellow-poplar	93	95	eastern white pine, yellow-poplar
	loblolly pine	90	131	
	southern red oak	80	62	
	sweetgum	90	106	
	white oak	80	62	
BoB:				
Biltmore	yellow-poplar	106	117	yellow-poplar, eastern white pine, American sycamore, black walnut
	eastern white pine	---	---	
	American sycamore	---	---	
	white ash	---	---	
	river birch	---	---	
BrD:				
Braddock	eastern white pine	96	178	eastern white pine, yellow-poplar, shortleaf pine
	yellow-poplar	92	93	
	shortleaf pine	74	118	
	northern red oak	---	---	
BvB:				
Brevard	yellow-poplar	114	130	yellow-poplar, black walnut, eastern white pine, northern red oak, shortleaf pine
	eastern white pine	106	198	
	northern red oak	94	76	
	Virginia pine	---	---	
	white oak	---	---	
	red maple	---	---	
	shortleaf pine	---	---	
	hemlock	---	---	
CaB2:				
Cecil	loblolly pine	72	96	loblolly pine, shortleaf pine
	shortleaf pine	63	93	
	Virginia pine	65	100	
	white oak	64	47	
	northern red oak	---	---	
CeD, CeE:				
Chestnut	eastern white pine	78	139	eastern white pine, yellow-poplar, shortleaf pine
	yellow-poplar	97	102	
	scarlet oak	---	---	
	white oak	70	52	
	black oak	71	53	
	chestnut oak	69	51	
	shortleaf pine	---	---	
Ashe	chestnut oak	57	40	eastern white pine, shortleaf pine
	eastern white pine	80	144	
	shortleaf pine	57	82	
	Virginia pine	62	95	
	pitch pine	---	---	
	scarlet oak	---	---	
	northern red oak	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ChC, ChD:				
Chestnut----------------	eastern white pine--	78	139	eastern white pine, yellow-poplar, shortleaf pine
	yellow-poplar-------	97	102	
	scarlet oak---------	---	---	
	white oak-----------	70	52	
	black oak-----------	71	53	
	chestnut oak--------	69	51	
	shortleaf pine------	---	---	
Buladean----------------	eastern white pine--	97	180	eastern white pine, yellow-poplar, chestnut oak, white oak, scarlet oak
	chestnut oak--------	---	---	
	white oak-----------	---	---	
	scarlet oak---------	---	---	
	black oak-----------	---	---	
	yellow-poplar-------	97	102	
	red maple-----------	---	---	
	hickory-------------	---	---	
	black locust--------	---	---	
	sourwood------------	---	---	
CkE, CkF:				
Chestnut----------------	eastern white pine--	78	139	eastern white pine, yellow-poplar, shortleaf pine
	yellow-poplar-------	97	102	
	scarlet oak---------	---	---	
	white oak-----------	70	52	
	black oak-----------	71	53	
	chestnut oak--------	69	51	
	shortleaf pine------	---	---	
Buladean----------------	eastern white pine--	97	180	eastern white pine, yellow-poplar, chestnut oak, white oak, scarlet oak
	chestnut oak--------	---	---	
	white oak-----------	---	---	
	scarlet oak---------	---	---	
	black oak-----------	---	---	
	yellow-poplar-------	97	102	
	red maple-----------	---	---	
	hickory-------------	---	---	
	black locust--------	---	---	
	sourwood------------	---	---	
CmA:				
Chewacla----------------	yellow-poplar-------	95	98	yellow-poplar, loblolly pine, sweetgum, American sycamore
	loblolly pine-------	95	142	
	sweetgum------------	97	128	
	water oak-----------	80	74	
	eastern cottonwood--	---	---	
	green ash-----------	---	---	
	southern red oak----	---	---	
	blackgum------------	---	---	
	red maple-----------	---	---	
	willow oak----------	---	---	
	American beech------	---	---	
	American sycamore---	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CpD, CpE, CpF:				
Cliffield	scarlet oak	50	34	chestnut oak, scarlet oak, shortleaf pine
	chestnut oak	50	34	
	red maple	---	---	
	shortleaf pine	---	---	
	pitch pine	---	---	
	Virginia pine	---	---	
	white oak	---	---	
	northern red oak	---	---	
	black oak	---	---	
	black locust	---	---	
Pigeonroost	chestnut oak	55	38	eastern white pine, yellow-poplar, white oak, chestnut oak, scarlet oak
	yellow-poplar	80	71	
	eastern white pine	78	139	
	scarlet oak	54	38	
	northern red oak	68	50	
	red maple	---	---	
	hickory	---	---	
	white oak	---	---	
	black oak	---	---	
CvA:				
Colvard	yellow-poplar	100	107	yellow-poplar, green ash
	water oak	94	91	
	green ash	89	64	
	willow oak	94	91	
	American sycamore	---	---	
	river birch	---	---	
	white ash	---	---	
CyE, CyF:				
Crossnore	chestnut oak	---	---	eastern white pine
	northern red oak	---	---	
	eastern white pine	---	---	
	pitch pine	---	---	
Jeffrey	chestnut oak	---	---	eastern white pine
	eastern white pine	---	---	
	northern red oak	---	---	
	pitch pine	---	---	
DaB:				
Dillard	eastern white pine	90	166	eastern white pine, yellow-poplar
	shortleaf pine	75	120	
	Virginia pine	80	122	
	yellow-poplar	95	98	
	eastern hemlock	---	---	
DrF:				
Ditney	shortleaf pine	---	---	eastern white pine, shortleaf pine
	Virginia pine	---	---	
	pitch pine	---	---	
Unicoi	chestnut oak	---	---	chestnut oak
	Table Mountain pine	---	---	
Rock outcrop	---	---	---	---

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
EdC, EdD, EdE:				
Edneytown	northern red oak	88	70	eastern white pine, yellow-poplar, northern red oak
	pitch pine	---	---	
	Virginia pine	---	---	
	eastern white pine	91	168	
	yellow-poplar	95	98	
	white oak	---	---	
	southern red oak	---	---	
	hickory	---	---	
Pigeonroost	chestnut oak	55	38	eastern white pine, yellow-poplar, white oak, chestnut oak, scarlet oak
	yellow-poplar	80	71	
	eastern white pine	78	139	
	scarlet oak	54	38	
	northern red oak	68	50	
	red maple	---	---	
	hickory	---	---	
	white oak	---	---	
	black oak	---	---	
EuF, EvC, EvD, EvE:				
Evard	eastern white pine	91	168	eastern white pine, shortleaf pine, white oak, chestnut oak
	yellow-poplar	95	98	
	white oak	75	57	
	Virginia pine	70	109	
	shortleaf pine	73	116	
	southern red oak	75	57	
	pitch pine	---	---	
	hickory	---	---	
	northern red oak	---	---	
Cowee	eastern white pine	78	139	eastern white pine, shortleaf pine
	yellow-poplar	80	71	
	chestnut oak	55	38	
	Virginia pine	63	96	
	pitch pine	52	72	
	scarlet oak	54	38	
	shortleaf pine	---	---	
	white oak	---	---	
	northern red oak	---	---	
	black oak	---	---	
FaB2, FaC2, FaD2:				
Fairview	loblolly pine	79	108	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	shortleaf pine	68	106	
	yellow-poplar	90	90	
	northern red oak	---	---	
	Virginia pine	---	---	
	white oak	---	---	
	hickory	---	---	
FeB, FeC:				
Fairview	---	---	---	---
Urban land	---	---	---	---
FnA:				
Fluvaquents	---	---	---	---

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Udifluvents	yellow-poplar	---	---	American sycamore, black walnut, eastern white pine, yellow-poplar
	American sycamore	---	---	
	eastern white pine	---	---	
	white ash	---	---	
	white oak	---	---	
FoB:				
Fontaflora	American sycamore	---	---	eastern white pine, yellow-poplar
	eastern hemlock	---	---	
	eastern white pine	---	---	
	red maple	---	---	
	sweetgum	---	---	
	yellow-poplar	---	---	
Ostin	yellow-poplar	100	107	eastern white pine, yellow-poplar, American sycamore, black walnut
	American sycamore	---	---	
	river birch	---	---	
	red maple	---	---	
	black locust	---	---	
	black cherry	---	---	
	eastern hemlock	---	---	
	Virginia pine	---	---	
	eastern white pine	---	---	
GcD:				
Greenlee	yellow-poplar	101	109	eastern white pine, yellow-poplar
	eastern hemlock	---	---	
	white oak	80	62	
	northern red oak	---	---	
	red maple	---	---	
	eastern white pine	98	182	
	black locust	---	---	
GrD, GrE:				
Greenlee	yellow-poplar	101	109	eastern white pine, yellow-poplar
	eastern hemlock	---	---	
	white oak	80	62	
	northern red oak	---	---	
	red maple	---	---	
	eastern white pine	98	182	
	black locust	---	---	
Tate	yellow-poplar	92	83	yellow-poplar, eastern white pine
	eastern white pine	89	164	
	northern red oak	---	---	
	black locust	---	---	
	eastern hemlock	---	---	
	white oak	---	---	
GtC:				
Greenlee	yellow-poplar	101	109	eastern white pine, yellow-poplar
	eastern hemlock	---	---	
	white oak	80	62	
	northern red oak	---	---	
	red maple	---	---	
	eastern white pine	98	182	
	black locust	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Tate	yellow-poplar	92	83	yellow-poplar, eastern white pine
	eastern white pine	89	164	
	northern red oak	---	---	
	black locust	---	---	
	eastern hemlock	---	---	
	white oak	---	---	
Ostin	yellow-poplar	100	107	eastern white pine, yellow-poplar, American sycamore, black walnut
	American sycamore	---	---	
	river birch	---	---	
	red maple	---	---	
	black locust	---	---	
	black cherry	---	---	
	eastern hemlock	---	---	
	Virginia pine	---	---	
	eastern white pine	---	---	
HaA:				
Hatboro	yellow-poplar	100	107	green ash, loblolly pine
	river birch	---	---	
	American sycamore	---	---	
	water oak	94	91	
	green ash	89	64	
	willow oak	94	91	
	white ash	---	---	
IoA:				
Iotla	yellow-poplar	99	105	American sycamore, eastern white pine, yellow-poplar
	river birch	---	---	
	white ash	---	---	
	black walnut	---	---	
	eastern white pine	---	---	
	American sycamore	---	---	
	white oak	---	---	
	northern red oak	---	---	
	black oak	---	---	
MaD:				
Maymead	yellow-poplar	105	115	black walnut, eastern white pine, yellow-poplar
	eastern white pine	105	190	
	northern red oak	89	71	
MeD:				
Meadowfield	chestnut oak	50	34	chestnut oak, scarlet oak, shortleaf pine
	scarlet oak	50	34	
	northern red oak	---	---	
	Virginia pine	---	---	
	black locust	---	---	
	black oak	---	---	
	white oak	---	---	
	shortleaf pine	---	---	
	pitch pine	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Fairview----------------	loblolly pine-------	78	107	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	shortleaf pine------	70	110	
	yellow-poplar-------	90	90	
	Virginia pine-------	---	---	
	southern red oak----	---	---	
	hickory-------------	---	---	
	white oak-----------	---	---	
MoE:				
Meadowfield-------------	chestnut oak--------	50	34	chestnut oak, scarlet oak, shortleaf pine
	scarlet oak---------	50	34	
	northern red oak----	---	---	
	Virginia pine-------	---	---	
	black locust--------	---	---	
	black oak-----------	---	---	
	white oak-----------	---	---	
	shortleaf pine------	---	---	
	pitch pine----------	---	---	
Rhodhiss----------------	shortleaf pine------	75	120	shortleaf pine, eastern white pine, yellow-poplar
	Virginia pine-------	78	119	
	eastern white pine--	86	157	
	hickory-------------	---	---	
	northern red oak----	---	---	
	southern red oak----	---	---	
	white oak-----------	---	---	
	yellow-poplar-------	98	104	
MwC:				
Meadowfield-------------	chestnut oak--------	50	34	chestnut oak, scarlet oak, shortleaf pine
	scarlet oak---------	50	34	
	northern red oak----	---	---	
	Virginia pine-------	---	---	
	black locust--------	---	---	
	black oak-----------	---	---	
	white oak-----------	---	---	
	shortleaf pine------	---	---	
	pitch pine----------	---	---	
Woolwine----------------	shortleaf pine------	67	103	shortleaf pine, eastern white pine, yellow-poplar
	Virginia pine-------	76	117	
	scarlet oak---------	73	55	
	white oak-----------	---	---	
	chestnut oak--------	---	---	
	black oak-----------	---	---	
NkA:				
Nikwasi-----------------	yellow-poplar-------	88	86	yellow-poplar, eastern white pine
	eastern white pine--	84	153	
	American sycamore---	---	---	
	red maple-----------	---	---	
	yellow birch--------	---	---	
	eastern hemlock-----	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
NnD, NnE:				
Northcove	yellow-poplar	---	---	yellow-poplar, eastern white pine, northern red oak, black cherry
	eastern white pine	80	143	
	white oak	---	---	
	eastern hemlock	---	---	
	yellow birch	---	---	
	northern red oak	---	---	
	black cherry	---	---	
	yellow buckeye	---	---	
	sugar maple	---	---	
	American beech	---	---	
PaC2, PaD2:				
Pacolet	loblolly pine	70	93	loblolly pine
	shortleaf pine	60	88	
	yellow-poplar	80	71	
	Virginia pine	---	---	
PnC, PnD:				
Pineola	eastern white pine	---	---	eastern white pine, yellow-poplar
	chestnut oak	---	---	
	northern red oak	---	---	
	pitch pine	---	---	
	yellow-poplar	---	---	
Qu:				
Pits	---	---	---	---
RhD, RhE:				
Rhodhiss	shortleaf pine	75	120	shortleaf pine, eastern white pine, yellow-poplar
	Virginia pine	78	119	
	eastern white pine	86	157	
	hickory	---	---	
	northern red oak	---	---	
	southern red oak	---	---	
	white oak	---	---	
	yellow-poplar	98	104	
RoE:				
Rhodhiss	shortleaf pine	75	120	shortleaf pine, eastern white pine, yellow-poplar
	Virginia pine	78	119	
	eastern white pine	86	157	
	hickory	---	---	
	northern red oak	---	---	
	southern red oak	---	---	
	white oak	---	---	
	yellow-poplar	98	104	
Bannertown	chestnut oak	70	52	eastern white pine, shortleaf pine
	Virginia pine	62	95	
	eastern white pine	81	146	
	northern red oak	---	---	
	pitch pine	---	---	
	scarlet oak	---	---	
	shortleaf pine	57	82	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RsE:				
Rion----------------------	shortleaf pine------	75	120	loblolly pine, shortleaf pine, yellow-poplar
	yellow-poplar-------	98	104	
	Virginia pine-------	76	119	
	sweetgum------------	83	86	
	loblolly pine-------	82	114	
	white oak-----------	75	57	
	southern red oak----	75	57	
	northern red oak----	---	---	
	post oak------------	---	---	
	hickory-------------	---	---	
Cliffside-----------------	Virginia pine-------	58	86	loblolly pine, shortleaf pine
	chestnut oak--------	60	43	
	shortleaf pine------	---	---	
	white oak-----------	---	---	
	scarlet oak---------	---	---	
SoC, SoD, SoE, SoF:				
Soco----------------------	eastern white pine--	85	155	eastern white pine, shortleaf pine, chestnut oak, white oak, yellow-poplar
	shortleaf pine------	61	90	
	pitch pine----------	---	---	
	Virginia pine-------	---	---	
	chestnut oak--------	68	50	
	scarlet oak---------	76	58	
	white oak-----------	---	---	
	black oak-----------	---	---	
	yellow-poplar-------	---	---	
Ditney--------------------	shortleaf pine------	---	---	eastern white pine, shortleaf pine
	Virginia pine-------	---	---	
	pitch pine----------	---	---	
SsC, SsD, SsE:				
Stecoah-------------------	eastern white pine--	93	172	eastern white pine
	scarlet oak---------	---	---	
	white oak-----------	78	60	
	yellow-poplar-------	---	---	
	chestnut oak--------	---	---	
	Virginia pine-------	---	---	
	hickory-------------	---	---	
	black oak-----------	---	---	
	northern red oak----	81	63	
Soco----------------------	eastern white pine--	85	155	eastern white pine, shortleaf pine, chestnut oak, white oak, yellow-poplar
	shortleaf pine------	61	90	
	pitch pine----------	---	---	
	Virginia pine-------	---	---	
	chestnut oak--------	68	50	
	scarlet oak---------	76	58	
	white oak-----------	---	---	
	black oak-----------	---	---	
	yellow-poplar-------	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
TaC, TeB:				
Tate--------------------	yellow-poplar-------	92	83	yellow-poplar, eastern white pine
	eastern white pine--	89	164	
	northern red oak----	---	---	
	black locust--------	---	---	
	eastern hemlock-----	---	---	
	white oak-----------	---	---	
ToB, ToC:				
Toast-------------------	shortleaf pine------	68	106	shortleaf pine, loblolly pine, yellow-poplar
	Virginia pine-------	---	---	
	loblolly pine-------	---	---	
	northern red oak----	64	47	
	southern red oak----	70	---	
	white oak-----------	62	45	
Ud:				
Udorthents--------------	loblolly pine-------	50	72	loblolly pine, Virginia pine
UnB, UnC, UnD:				
Unison------------------	yellow-poplar-------	---	---	yellow-poplar, eastern white pine
Ur:				
Urban land--------------	---	---	---	---
Udorthents--------------	---	---	---	---
WeC, WhD:				
Whiteoak----------------	yellow-poplar-------	100	107	yellow-poplar, eastern white pine, northern red oak
	eastern white pine--	110	206	
	northern red oak----	---	---	
	white oak-----------	---	---	
	scarlet oak---------	---	---	
	American beech------	---	---	
	red maple-----------	---	---	
	eastern hemlock-----	---	---	
WoB2, WoC2, WoD2:				
Woolwine----------------	shortleaf pine------	67	103	shortleaf pine, eastern white pine, yellow-poplar
	Virginia pine-------	76	117	
	scarlet oak---------	73	55	
	white oak-----------	---	---	
	chestnut oak--------	---	---	
	black oak-----------	---	---	
Fairview----------------	loblolly pine-------	79	108	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	shortleaf pine------	68	106	
	yellow-poplar-------	90	90	
	northern red oak----	---	---	
	Virginia pine-------	---	---	
	white oak-----------	---	---	
	hickory-------------	---	---	

Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WwB, WwC:				
Woolwine----------------	---	---	---	---
Fairview----------------	---	---	---	---
Urban land--------------	---	---	---	---

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
AaA:						
Arkaqua	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Wetness	0.50				
AbE:						
Ashe	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
Chestnut	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
Buladean	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
AcF:						
Ashe	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
	Stoniness	0.50	Rock fragments	0.50		
Chestnut	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Stoniness	0.50	Rock fragments	0.50		
Buladean	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Stoniness	0.50	Rock fragments	0.50		
	Low strength	0.50	Low strength	0.50		
AsF:						
Ashe	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
	Stoniness	0.50	Rock fragments	1.00		
Cleveland	Severe		Poorly suited		Slight	
	Slope	1.00	Slope	1.00	Strength	0.10
	Stoniness	0.50	Rock fragments	1.00		
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
	Wetness	0.50				
BoB:						
Biltmore	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	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
BrD:						
Braddock	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
BvB:						
Brevard	Moderate		Well suited		Moderate	
	Low strength	0.50			Low strength	0.50
CaB2:						
Cecil	Moderate		Well suited		Moderate	
	Low strength	0.50			Low strength	0.50
CeD:						
Chestnut	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
Ashe	Moderate		Poorly suited		Moderate	
	Restrictive layer	0.50	Slope	1.00	Low strength	0.50
	Slope	0.50				
CeE:						
Chestnut	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
Ashe	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
ChC:						
Chestnut	Slight		Moderately suited		Severe	
			Slope	0.50	Low strength	1.00
Buladean	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
ChD:						
Chestnut	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
Buladean	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
CkE, CkF:						
Chestnut	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
Buladean	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
CmA:						
Chewacla	Severe		Poorly suited		Severe	
	Flooding	1.00	Flooding	1.00	Low strength	1.00
	Wetness	1.00	Low strength	0.50		
	Low strength	0.50	Wetness	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
CpD:						
Cliffield	Moderate		Poorly suited		Severe	
	Restrictive layer	0.50	Slope	1.00	Low strength	1.00
	Slope	0.50	Low strength	0.50		
	Low strength	0.50				
Pigeonroost	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
CpE, CpF:						
Cliffield	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
			Low strength	0.50		
Pigeonroost	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
CvA:						
Colvard	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
CyE, CyF:						
Crossnore	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
Jeffrey	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
DaB:						
Dillard	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
DrF:						
Ditney	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
	Low strength	0.50				
Unicoi	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
Rock outcrop	Not rated		Not rated		Not rated	
EdC:						
Edneytown	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Pigeonroost	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
EdD:						
Edneytown	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Pigeonroost	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
EdE:						
Edneytown	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Pigeonroost	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
EuF:						
Evard	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
			Low strength	0.50		
Cowee	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
			Low strength	0.50		
EvC:						
Evard	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Cowee	Slight		Moderately suited		Severe	
			Slope	0.50	Low strength	1.00
			Low strength	0.50		
EvD:						
Evard	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Cowee	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
			Low strength	0.50		
EvE:						
Evard	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
			Low strength	0.50		
Cowee	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
			Low strength	0.50		
FaB2:						
Fairview	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		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
FaC2:						
Fairview------------	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
FaD2:						
Fairview------------	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
FeB:						
Fairview------------	Slight		Well suited		Moderate	
					Low strength	0.50
Urban land----------	Not rated		Not rated		Not rated	
FeC:						
Fairview------------	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
Urban land----------	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents---------	Severe		Poorly suited		Slight	
	Flooding	1.00	Flooding	1.00		
	Wetness	0.50	Wetness	0.50		
Udifluvents---------	Severe		Poorly suited		Slight	
	Flooding	1.00	Flooding	1.00		
FoB:						
Fontaflora----------	Severe		Poorly suited		Severe	
	Flooding	1.00	Flooding	1.00	Low strength	1.00
			Low strength	0.50		
Ostin---------------	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Sandiness	0.50				
GcD:						
Greenlee------------	Moderate		Poorly suited		Slight	
	Slope	0.50	Slope	1.00	Strength	0.10
	Stoniness	0.50	Rock fragments	1.00		
GrD:						
Greenlee------------	Moderate		Poorly suited		Slight	
	Slope	0.50	Slope	1.00	Strength	0.10
	Stoniness	0.50	Rock fragments	0.50		
Tate----------------	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Stoniness	0.50	Rock fragments	0.50		
	Low strength	0.50	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
GrE:						
Greenlee------------	Severe		Poorly suited		Slight	
	Slope	1.00	Slope	1.00	Strength	0.10
	Stoniness	0.50	Rock fragments	0.50		
Tate----------------	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Stoniness	0.50	Rock fragments	0.50		
	Low strength	0.50	Low strength	0.50		
GtC:						
Greenlee------------	Severe		Moderately suited		Slight	
	Stoniness	1.00	Slope	0.50	Strength	0.10
			Rock fragments	0.50		
Tate----------------	Moderate		Moderately suited		Severe	
	Stoniness	0.50	Slope	0.50	Low strength	1.00
	Low strength	0.50	Rock fragments	0.50		
			Low strength	0.50		
Ostin---------------	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Stoniness	0.50	Rock fragments	0.50		
	Sandiness	0.50				
HaA:						
Hatboro-------------	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Wetness	1.00	Wetness	1.00		
IoA:						
Iotla---------------	Severe		Poorly suited		Moderate	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Wetness	0.50				
MaD:						
Maymead-------------	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
MeD:						
Meadowfield---------	Moderate		Poorly suited		Severe	
	Restrictive layer	0.50	Slope	1.00	Low strength	1.00
	Slope	0.50	Low strength	0.50		
	Low strength	0.50				
Fairview------------	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
MoE:						
Meadowfield---------	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Rhodhiss------------	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	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: 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
MwC:						
Meadowfield	Severe		Moderately suited		Severe	
	Stoniness	1.00	Slope	0.50	Low strength	1.00
	Restrictive layer	0.50	Low strength	0.50		
	Low strength	0.50				
Woolwine	Slight		Moderately suited		Severe	
			Slope	0.50	Low strength	1.00
			Low strength	0.50		
NkA:						
Nikwasi	Severe		Poorly suited		Severe	
	Flooding	1.00	Flooding	1.00	Low strength	1.00
	Wetness	1.00	Wetness	1.00		
	Low strength	0.50	Low strength	0.50		
NnD:						
Northcove	Severe		Poorly suited		Slight	
	Stoniness	1.00	Rock fragments	1.00	Strength	0.10
	Slope	0.50	Slope	1.00		
NnE:						
Northcove	Severe		Poorly suited		Slight	
	Slope	1.00	Rock fragments	1.00	Strength	0.10
	Stoniness	1.00	Slope	1.00		
PaC2:						
Pacolet	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
PaD2:						
Pacolet	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
PnC:						
Pineola	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
PnD:						
Pineola	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD:						
Rhodhiss	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
RhE:						
Rhodhiss	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	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
RoE:						
Rhodhiss	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
Bannertown	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
RsE:						
Rion	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
Cliffside	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
SoC:						
Soco	Slight		Moderately suited		Severe	
			Slope	0.50	Low strength	1.00
			Low strength	0.50		
Ditney	Moderate		Moderately suited		Moderate	
	Restrictive layer	0.50	Slope	0.50	Low strength	0.50
SoD:						
Soco	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Ditney	Moderate		Poorly suited		Moderate	
	Restrictive layer	0.50	Slope	1.00	Low strength	0.50
	Slope	0.50				
	Low strength	0.50				
SoE, SoF:						
Soco	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Ditney	Severe		Poorly suited		Moderate	
	Slope	1.00	Slope	1.00	Low strength	0.50
	Low strength	0.50				
SsC:						
Stecoah	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Soco	Slight		Moderately suited		Severe	
			Slope	0.50	Low strength	1.00
			Low strength	0.50		
SsD:						
Stecoah	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Soco	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	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
SsE:						
Stecoah	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Soco	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
TaC:						
Tate	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
TeB:						
Tate	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
			Slope	0.50		
ToB:						
Toast	Slight		Well suited		Moderate	
					Low strength	0.50
ToC:						
Toast	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
Ud:						
Udorthents	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
UnB:						
Unison	Moderate		Well suited		Moderate	
	Low strength	0.50			Low strength	0.50
UnC:						
Unison	Moderate		Moderately suited		Moderate	
	Low strength	0.50	Slope	0.50	Low strength	0.50
UnD:						
Unison	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
Ur:						
Urban land	Not rated		Not rated		Not rated	
Udorthents	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
WeC:						
Whiteoak	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
WhD:						
Whiteoak	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
WoB2:						
Woolwine	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
Fairview	Slight		Well suited		Moderate	
					Low strength	0.50
WoC2:						
Woolwine	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Fairview	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
WoD2:						
Woolwine	Moderate		Poorly suited		Severe	
	Slope	0.50	Slope	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
Fairview	Moderate		Poorly suited		Moderate	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50				
WwB:						
Woolwine	Moderate		Moderately suited		Severe	
	Low strength	0.50	Low strength	0.50	Low strength	1.00
Fairview	Slight		Well suited		Moderate	
					Low strength	0.50
Urban land	Not rated		Not rated		Not rated	
WwC:						
Woolwine	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
			Low strength	0.50		
Fairview	Slight		Moderately suited		Moderate	
			Slope	0.50	Low strength	0.50
Urban land	Not rated		Not rated		Not rated	

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
AaA:						
Arkaqua	Slight		Slight		Poorly suited	
					Flooding	1.00
AbE:						
Ashe	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Chestnut	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Buladean	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
AcF:						
Ashe	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
Chestnut	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
Buladean	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
					Low strength	0.50
AsF:						
Ashe	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	1.00
Cleveland	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	1.00
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
BoB:						
Biltmore	Slight		Slight		Poorly suited	
					Flooding	1.00
BrD:						
Braddock	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	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
BvB:						
Brevard	Slight		Slight		Well suited	
CaB2:						
Cecil	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
CeD:						
Chestnut	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Ashe	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
CeE:						
Chestnut	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Ashe	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
ChC:						
Chestnut	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
Buladean	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
ChD:						
Chestnut	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Buladean	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CkE:						
Chestnut	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Buladean	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CkF:						
Chestnut	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Buladean	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CmA:						
Chewacla	Slight		Slight		Poorly suited	
					Flooding	1.00
					Low strength	0.50
					Wetness	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
CpD:						
Cliffield-----------	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CpE:						
Cliffield-----------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CpF:						
Cliffield-----------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
CvA:						
Colvard-------------	Slight		Slight		Poorly suited	
					Flooding	1.00
CyE:						
Crossnore-----------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Jeffrey-------------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
CyF:						
Crossnore-----------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Jeffrey-------------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
DaB:						
Dillard-------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
DrF:						
Ditney--------------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Unicoi--------------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Rock outcrop--------	Not rated		Not rated		Not rated	

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
EdC:						
Edneytown-----------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Pigeonroost---------	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
EdD:						
Edneytown-----------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
EdE:						
Edneytown-----------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
EuF:						
Evard---------------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Cowee---------------	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
EvC:						
Evard---------------	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
Cowee---------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
EvD:						
Evard---------------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Cowee---------------	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
					Low strength	0.50
EvE:						
Evard---------------	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	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
Cowee	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
FaB2:						
Fairview	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
FaC2:						
Fairview	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
FaD2:						
Fairview	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
FeB:						
Fairview	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Slight		Slight		Poorly suited	
					Flooding	1.00
					Wetness	0.50
Udifluvents	Slight		Slight		Poorly suited	
					Flooding	1.00
FoB:						
Fontaflora	Slight		Slight		Poorly suited	
					Flooding	1.00
					Low strength	0.50
Ostin	Slight		Slight		Poorly suited	
					Flooding	1.00
GcD:						
Greenlee	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
					Rock fragments	1.00
GrD:						
Greenlee	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
					Rock fragments	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
Tate	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
					Low strength	0.50
GrE:						
Greenlee	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
Tate	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Rock fragments	0.50
					Low strength	0.50
GtC:						
Greenlee	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Rock fragments	0.50
Tate	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Rock fragments	0.50
					Low strength	0.50
Ostin	Slight		Slight		Poorly suited	
					Flooding	1.00
					Rock fragments	0.50
HaA:						
Hatboro	Slight		Slight		Poorly suited	
					Flooding	1.00
					Wetness	1.00
IoA:						
Iotla	Slight		Slight		Poorly suited	
					Flooding	1.00
MaD:						
Maymead	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
MeD:						
Meadowfield	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
					Low strength	0.50
Fairview	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
MoE:						
Meadowfield	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Rhodhiss	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00

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
MwC:						
Meadowfield	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Woolwine	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
NkA:						
Nikwasi	Slight		Slight		Poorly suited	
					Flooding	1.00
					Wetness	1.00
					Low strength	0.50
NnD:						
Northcove	Moderate		Moderate		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.50	Rock fragments	1.00
					Slope	1.00
NnE:						
Northcove	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Rock fragments	1.00
					Slope	1.00
PaC2:						
Pacolet	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
PaD2:						
Pacolet	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
PnC:						
Pineola	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
PnD:						
Pineola	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD:						
Rhodhiss	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
RhE:						
Rhodhiss	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
RoE:						
Rhodhiss	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Bannertown	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00

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
RsE:						
Rion	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
Cliffside	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
SoC:						
Soco	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
Ditney	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
SoD:						
Soco	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Ditney	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
SoE:						
Soco	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Ditney	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
SoF:						
Soco	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Ditney	Very severe		Severe		Poorly suited	
	Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
SsC:						
Stecoah	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
Soco	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
SsD:						
Stecoah	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Soco	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
SsE:						
Stecoah	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	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
Soco	Severe		Severe		Poorly suited	
	Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
TaC:						
Tate	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
TeB:						
Tate	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
					Slope	0.50
ToB:						
Toast	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
ToC:						
Toast	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
Ud:						
Udorthents	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
UnB:						
Unison	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
UnC:						
Unison	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
UnD:						
Unison	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Ur:						
Urban land	Not rated		Not rated		Not rated	
Udorthents	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
WeC:						
Whiteoak	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
					Low strength	0.50
WhD:						
Whiteoak	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	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
WoB2:						
Woolwine------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
Fairview------------	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
WoC2:						
Woolwine------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Fairview------------	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
WoD2:						
Woolwine------------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
					Low strength	0.50
Fairview------------	Moderate		Severe		Poorly suited	
	Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
WwB:						
Woolwine------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Low strength	0.50
Fairview------------	Slight		Moderate		Well suited	
			Slope/erodibility	0.50		
Urban land----------	Not rated		Not rated		Not rated	
WwC:						
Woolwine------------	Slight		Moderate		Moderately suited	
			Slope/erodibility	0.50	Slope	0.50
					Low strength	0.50
Fairview------------	Slight		Severe		Moderately suited	
			Slope/erodibility	0.95	Slope	0.50
Urban land----------	Not rated		Not rated		Not rated	

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: 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
AaA:						
Arkaqua	Well suited		Well suited		Moderately suited	
					Wetness	0.50
AbE:						
Ashe	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Chestnut	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Buladean	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
AcF:						
Ashe	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Chestnut	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Buladean	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
					Low strength	0.50
AsF:						
Ashe	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Rock fragments	1.00
	Rock fragments	0.50	Rock fragments	0.75	Slope	1.00
Cleveland	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Rock fragments	1.00
	Rock fragments	0.50	Rock fragments	0.75	Slope	1.00
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
					Wetness	0.50
BoB:						
Biltmore	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
BrD:						
Braddock	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
			Stickiness; high plasticity index	0.50	Slope	0.50
BvB:						
Brevard	Well suited		Moderately suited		Well suited	
			Rock fragments	0.50		
CaB2:						
Cecil	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
CeD:						
Chestnut	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
			Rock fragments	0.50		
Ashe	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
			Rock fragments	0.50		
CeE:						
Chestnut	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Ashe	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
ChC:						
Chestnut	Well suited		Moderately suited		Well suited	
			Rock fragments	0.50		
			Slope	0.50		
Buladean	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
ChD:						
Chestnut	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
			Rock fragments	0.50		
Buladean	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
					Slope	0.50
CkE, CkF:						
Chestnut	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Buladean	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
					Low strength	0.50

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
CmA:						
Chewacla	Well suited		Well suited		Poorly suited	
					Wetness	1.00
					Low strength	0.50
CpD:						
Cliffield	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Low strength	0.50
			Rock fragments	0.75	Slope	0.50
Pigeonroost	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50	Slope	0.50
CpE:						
Cliffield	Moderately suited		Unsuited		Poorly suited	
	Rock fragments	0.50	Slope	1.00	Slope	1.00
	Slope	0.50	Rock fragments	0.75	Low strength	0.50
Pigeonroost	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
CpF:						
Cliffield	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Pigeonroost	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
CvA:						
Colvard	Well suited		Well suited		Well suited	
CyE, CyF:						
Crossnore	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Jeffrey	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
DaB:						
Dillard	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
DrF:						
Ditney	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
Unicoi	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75		
Rock outcrop	Not rated		Not rated		Not rated	

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
EdC:						
Edneytown-----------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
Pigeonroost---------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Rock fragments	0.50		
EdD:						
Edneytown-----------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
					Slope	0.50
Pigeonroost---------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50	Slope	0.50
EdE:						
Edneytown-----------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
					Low strength	0.50
Pigeonroost---------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
EuF:						
Evard---------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
					Low strength	0.50
Cowee---------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
EvC:						
Evard---------------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
Cowee---------------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
			Slope	0.50		
EvD:						
Evard---------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
					Slope	0.50
Cowee---------------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Low strength	0.50
			Rock fragments	0.75	Slope	0.50
EvE:						
Evard---------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
					Low strength	0.50
Cowee---------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50

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
FaB2, FaC2:						
Fairview	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
FaD2:						
Fairview	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
FeB, FeC:						
Fairview	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Well suited		Well suited		Moderately suited	
					Wetness	0.50
Udifluvents	Well suited		Well suited		Well suited	
FoB:						
Fontaflora	Well suited		Well suited		Moderately suited	
					Low strength	0.50
Ostin	Moderately suited		Poorly suited		Well suited	
	Sandiness	0.50	Rock fragments	0.75		
	Rock fragments	0.50	Sandiness	0.50		
GcD:						
Greenlee	Moderately suited		Poorly suited		Poorly suited	
	Rock fragments	0.50	Slope	0.75	Rock fragments	1.00
			Rock fragments	0.75	Slope	0.50
GrD:						
Greenlee	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
			Rock fragments	0.75	Slope	0.50
Tate	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
			Rock fragments	0.75	Low strength	0.50
					Slope	0.50
GrE:						
Greenlee	Moderately suited		Unsuited		Poorly suited	
	Rock fragments	0.50	Slope	1.00	Slope	1.00
	Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
Tate	Moderately suited		Unsuited		Poorly suited	
	Rock fragments	0.50	Slope	1.00	Slope	1.00
	Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
					Low strength	0.50

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
GtC:						
Greenlee------------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
			Slope	0.50		
Tate----------------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
			Slope	0.50	Low strength	0.50
Ostin---------------	Moderately suited		Poorly suited		Moderately suited	
	Sandiness	0.50	Rock fragments	0.75	Rock fragments	0.50
	Rock fragments	0.50	Sandiness	0.50		
HaA:						
Hatboro-------------	Well suited		Well suited		Poorly suited	
					Wetness	1.00
IoA:						
Iotla---------------	Well suited		Well suited		Moderately suited	
					Wetness	0.50
MaD:						
Maymead-------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50		
MeD:						
Meadowfield---------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
			Slope	0.75	Slope	0.50
Fairview------------	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
MoE:						
Meadowfield---------	Moderately suited		Unsuited		Poorly suited	
	Rock fragments	0.50	Slope	1.00	Slope	1.00
	Slope	0.50	Rock fragments	0.75	Low strength	0.50
Rhodhiss------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
MwC:						
Meadowfield---------	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
			Slope	0.50		
Woolwine------------	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
			Stickiness; high plasticity index	0.50		
			Rock fragments	0.50		
NkA:						
Nikwasi-------------	Well suited		Well suited		Poorly suited	
					Wetness	1.00
					Low strength	0.50

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
NnD:						
Northcove	Poorly suited		Unsuited		Poorly suited	
	Rock fragments	0.75	Rock fragments	1.00	Rock fragments	1.00
			Slope	0.75	Slope	0.50
NnE:						
Northcove	Poorly suited		Unsuited		Poorly suited	
	Rock fragments	0.75	Slope	1.00	Rock fragments	1.00
	Slope	0.50	Rock fragments	1.00	Slope	1.00
PaC2:						
Pacolet	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
PaD2:						
Pacolet	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
PnC:						
Pineola	Well suited		Moderately suited		Well suited	
			Slope	0.50		
			Rock fragments	0.50		
PnD:						
Pineola	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
			Rock fragments	0.50		
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD:						
Rhodhiss	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
RhE:						
Rhodhiss	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
RoE:						
Rhodhiss	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
Bannertown	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
RsE:						
Rion	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
Cliffside	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50		

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
SoC:						
Soco----------------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Rock fragments	0.50		
Ditney--------------	Well suited		Moderately suited		Well suited	
			Slope	0.50		
			Rock fragments	0.50		
SoD:						
Soco----------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50	Slope	0.50
Ditney--------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
			Rock fragments	0.50		
SoE, SoF:						
Soco----------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
Ditney--------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50		
SsC:						
Stecoah-------------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
Soco----------------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Rock fragments	0.50		
SsD:						
Stecoah-------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
					Slope	0.50
Soco----------------	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50	Slope	0.50
SsE:						
Stecoah-------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
					Low strength	0.50
Soco----------------	Moderately suited		Unsuited		Poorly suited	
	Slope	0.50	Slope	1.00	Slope	1.00
			Rock fragments	0.50	Low strength	0.50
TaC:						
Tate----------------	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Rock fragments	0.50		

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
TeB:						
Tate	Well suited		Moderately suited		Moderately suited	
			Rock fragments	0.50	Low strength	0.50
			Slope	0.50		
ToB, ToC:						
Toast	Well suited		Moderately suited		Well suited	
			Slope	0.50		
Ud:						
Udorthents	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
					Low strength	0.50
UnB, UnC:						
Unison	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
UnD:						
Unison	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
Ur:						
Urban land	Not rated		Not rated		Not rated	
Udorthents	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
					Low strength	0.50
WeC:						
Whiteoak	Well suited		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
WhD:						
Whiteoak	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Low strength	0.50
			Rock fragments	0.50	Slope	0.50
WoB2, WoC2						
Woolwine	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
			Stickiness; high plasticity index	0.50		
			Rock fragments	0.50		
Fairview	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	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
WoD2:						
Woolwine	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
			Stickiness; high plasticity index	0.50	Slope	0.50
			Rock fragments	0.50		
Fairview	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
WwB, WwC:						
Woolwine	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
			Stickiness; high plasticity index	0.50		
			Rock fragments	0.50		
Fairview	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
Urban land	Not rated		Not rated		Not rated	

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
AaA:				
Arkaqua	Well suited		Unsuited	
			Wetness	1.00
AbE:				
Ashe	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
			Restrictive layer	0.50
Chestnut	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Buladean	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
AcF:				
Ashe	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50
			Restrictive layer	0.50
Chestnut	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50
Buladean	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50
AsF:				
Ashe	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	1.00	Rock fragments	0.50
			Restrictive layer	0.50
Cleveland	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	1.00	Restrictive layer	1.00
			Rock fragments	0.50
Rock outcrop	Not rated		Not rated	
BaB:				
Banister	Well suited		Unsuited	
			Wetness	1.00
BoB:				
Biltmore	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
BrD:				
Braddock------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
BvB:				
Brevard-------------	Well suited		Well suited	
CaB2:				
Cecil---------------	Well suited		Well suited	
CeD:				
Chestnut------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Ashe----------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
			Restrictive layer	0.50
CeE:				
Chestnut------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Ashe----------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
			Restrictive layer	0.50
ChC:				
Chestnut------------	Well suited		Well suited	
Buladean------------	Well suited		Well suited	
ChD:				
Chestnut------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Buladean------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
CkE, CkF:				
Chestnut------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Buladean------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
CmA:				
Chewacla------------	Well suited		Unsuited	
			Wetness	1.00
CpD:				
Cliffield-----------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Rock fragments	0.50		
Pigeonroost---------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	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
CpE, CpF:				
Cliffield-----------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
Pigeonroost---------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
CvA:				
Colvard-------------	Well suited		Well suited	
CyE, CyF:				
Crossnore-----------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Jeffrey-------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
DaB:				
Dillard-------------	Well suited		Well suited	
DrF:				
Ditney--------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Unicoi--------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
Rock outcrop--------	Not rated		Not rated	
EdC:				
Edneytown-----------	Well suited		Well suited	
Pigeonroost---------	Well suited		Well suited	
EdD:				
Edneytown-----------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Pigeonroost---------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
EdE:				
Edneytown-----------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Pigeonroost---------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
EuF:				
Evard---------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Cowee---------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
EvC:				
Evard---------------	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
Cowee	Poorly suited		Well suited	
	Rock fragments	0.50		
EvD:				
Evard	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Cowee	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Rock fragments	0.50		
EvE:				
Evard	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Cowee	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
FaB2, FaC2:				
Fairview	Well suited		Well suited	
FaD2:				
Fairview	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
FeB, FeC:				
Fairview	Well suited		Well suited	
Urban land	Not rated		Not rated	
FnA:				
Fluvaquents	Well suited		Unsuited	
			Wetness	1.00
Udifluvents	Well suited		Well suited	
FoB:				
Fontaflora	Well suited		Well suited	
Ostin	Poorly suited		Well suited	
	Rock fragments	0.50		
GcD:				
Greenlee	Unsuited		Poorly suited	
	Rock fragments	1.00	Slope	0.50
	Slope	0.50	Rock fragments	0.50
GrD:				
Greenlee	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Rock fragments	0.50	Rock fragments	0.50
Tate	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Rock fragments	0.50	Rock fragments	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
GrE:				
Greenlee------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50
Tate----------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50	Rock fragments	0.50
GtC:				
Greenlee------------	Poorly suited		Poorly suited	
	Rock fragments	0.50	Rock fragments	0.50
Tate----------------	Poorly suited		Poorly suited	
	Rock fragments	0.50	Rock fragments	0.50
Ostin---------------	Poorly suited		Poorly suited	
	Rock fragments	0.50	Rock fragments	0.50
HaA:				
Hatboro-------------	Well suited		Unsuited	
			Wetness	1.00
IoA:				
Iotla---------------	Well suited		Unsuited	
			Wetness	1.00
MaD:				
Maymead-------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
MeD:				
Meadowfield---------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
	Rock fragments	0.50		
Fairview------------	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
MoE:				
Meadowfield---------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
Rhodhiss------------	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
MwC:				
Meadowfield---------	Poorly suited		Well suited	
	Rock fragments	0.50		
Woolwine------------	Well suited		Well suited	
NkA:				
Nikwasi-------------	Well suited		Unsuited	
			Wetness	1.00

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
NnD:				
Northcove	Unsuited		Unsuited	
	Rock fragments	1.00	Rock fragments	1.00
	Slope	0.50	Slope	0.50
NnE:				
Northcove	Unsuited		Unsuited	
	Rock fragments	1.00	Slope	1.00
	Slope	1.00	Rock fragments	1.00
PaC2:				
Pacolet	Well suited		Well suited	
PaD2:				
Pacolet	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
PnC:				
Pineola	Well suited		Well suited	
PnD:				
Pineola	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Qu:				
Pits	Not rated		Not rated	
RhD:				
Rhodhiss	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
RhE:				
Rhodhiss	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
RoE:				
Rhodhiss	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Bannertown	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
RsE:				
Rion	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Cliffside	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
	Rock fragments	0.50		
SoC:				
Soco	Well suited		Well suited	
Ditney	Well suited		Well suited	
SoD:				
Soco	Poorly suited		Poorly suited	
	Slope	0.50	Slope	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
Ditney	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
SoE, SoF:				
Soco	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Ditney	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
SsC:				
Stecoah	Well suited		Well suited	
Soco	Well suited		Well suited	
SsD:				
Stecoah	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Soco	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
SsE:				
Stecoah	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
Soco	Unsuited		Unsuited	
	Slope	1.00	Slope	1.00
TaC, TeB:				
Tate	Well suited		Well suited	
ToB, ToC:				
Toast	Well suited		Well suited	
Ud:				
Udorthents	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
UnB, UnC:				
Unison	Well suited		Well suited	
UnD:				
Unison	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Ur:				
Urban land	Not rated		Not rated	
Udorthents	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
WeC:				
Whiteoak	Well suited		Well suited	
WhD:				
Whiteoak	Poorly suited		Poorly suited	
	Slope	0.50	Slope	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
WoB2, WoC2:				
Woolwine	Well suited		Well suited	
Fairview	Well suited		Well suited	
WoD2:				
Woolwine	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
Fairview	Poorly suited		Poorly suited	
	Slope	0.50	Slope	0.50
WwB, WwC:				
Woolwine	Well suited		Well suited	
Fairview	Well suited		Well suited	
Urban land	Not rated		Not rated	

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
AaA:						
Arkaqua	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Depth to saturated zone	0.98			Flooding	0.60
AbE:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Content of large stones	0.84
					Too Stony	0.76
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Depth to bedrock	0.42
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
AcF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
					Content of large stones	0.84
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
					Depth to bedrock	0.42
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
AsF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
					Content of large stones	0.84
Cleveland	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
Rock outcrop	Not rated		Not rated		Not rated	

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
BaB:						
Banister	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Depth to saturated zone	0.98	Restricted permeability	0.15	Slope	0.50
	Restricted permeability	0.15			Restricted permeability	0.15
BoB:						
Biltmore	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.46	Flooding	0.60
	Too sandy	0.46			Too sandy	0.46
BrD:						
Braddock	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.04
BvB:						
Brevard	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Slope	0.50
					Gravel content	0.02
					Content of large stones	0.01
CaB2:						
Cecil	Not limited		Not limited		Somewhat limited	
					Slope	0.88
CeD, CeE:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.04
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Content of large stones	0.84
					Depth to bedrock	0.42
ChC:						
Chestnut	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.04
Buladean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
ChD:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.04
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	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
CkE, CkF:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.04
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CmA:						
Chewacla	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
CpD, CpE, CpF:						
Cliffield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Gravel content	0.80
Pigeonroost	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Depth to bedrock	0.42
CvA:						
Colvard	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
CyE, CyF:						
Crossnore	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Gravel content	0.76
Jeffrey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Gravel content	1.00
	Gravel content	0.01	Gravel content	0.01	Too Stony	0.76
DaB:						
Dillard	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.19	Slope	0.88
	Depth to saturated zone	0.39			Depth to	0.39
					Depth to	0.39
DrF:						
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.04
Unicoi	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
					Content of large stones	0.84

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
Rock outcrop--------	Not rated		Not rated		Not rated	
EdC:						
Edneytown-----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Pigeonroost---------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.05
EdD, EdE:						
Edneytown-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Pigeonroost---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.05
EuF:						
Evard,--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.04
Cowee,--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
EvC:						
Evard---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.04
Cowee---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
EvD, EvE:						
Evard---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.04
Cowee---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
FaB2:						
Fairview------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88
FaC2:						
Fairview------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00

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
FaD2:						
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
FeB:						
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.88
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Not rated		Not rated		Not rated	
Udifluvents	Not rated		Not rated		Not rated	
FoB:						
Fontaflora	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
					Slope	0.12
Ostin	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Too sandy	0.91	Flooding	1.00
	Too sandy	0.91	Flooding	0.40	Content of large stones	1.00
	Depth to saturated zone	0.39	Depth to saturated zone	0.19	Too sandy	0.91
GcD:						
Greenleey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
	Content of large stones	0.35	Content of large stones	0.35	Content of large stones	1.00
GrD, GrE:						
Greenlee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
	Content of large stones	0.35	Content of large stones	0.35	Content of large stones	1.00
Tate	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
GtC:						
Greenlee	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Slope	1.00
	Slope	0.63	Slope	0.63	Too Stony	1.00
	Content of large stones	0.35	Content of large stones	0.35	Content of large stones	1.00
Tate	Very limited		Very limited		Very limited	
	Flooding	1.00	Too Stony	1.00	Slope	1.00
	Too Stony	1.00	Slope	0.63	Too Stony	1.00
	Slope	0.63				

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
Ostin	Very limited		Very limited		Very limited	
	Flooding	1.00	Too Stony	1.00	Flooding	1.00
	Too Stony	1.00	Too sandy	0.91	Too Stony	1.00
	Too sandy	0.91	Flooding	0.40	Content of large stones	1.00
HaA:						
Hatboro	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
IoA:						
Iotla	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Depth to saturated zone	0.98			Flooding	0.60
					Gravel content	0.04
MaD:						
Maymead	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Gravel content	0.45
MeD:						
Meadowfield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Slope	1.00
					Gravel content	0.80
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MoE:						
Meadowfield-stony	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Gravel content	0.80
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
MwC:						
Meadowfield	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.80
					Depth to bedrock	0.46
Woolwine	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42

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
NkA:						
Nikwasi	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
					Gravel content	0.01
NnD, NnE:						
Northcove	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
	Content of large stones	0.61	Content of large stones	0.61	Content of large stones	1.00
PaC2:						
Pacolet	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
PaD2:						
Pacolet	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
PnC:						
Pineola	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.82
					Depth to bedrock	0.42
PnD:						
Pineola	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.82
					Depth to bedrock	0.42
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD, RhE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
RoE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Bannertown	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Gravel content	0.05
RsE:						
Rion	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
Cliffside	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Gravel content	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
SoC:						
Soco----------------	Somewhat limited		Somewhat limited		Very limited	
	Too Stony	0.76	Too Stony	0.76	Slope	1.00
	Slope	0.63	Slope	0.63	Too Stony	0.76
					Depth to bedrock	0.42
Ditney--------------	Somewhat limited		Somewhat limited		Very limited	
	Too Stony	0.76	Too Stony	0.76	Slope	1.00
	Slope	0.63	Slope	0.63	Too Stony	0.76
					Depth to bedrock	0.42
SoD, SoE, SoF:						
Soco----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Depth to bedrock	0.42
Ditney--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
					Depth to bedrock	0.42
SsC:						
Stecoah-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Soco----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Depth to bedrock	0.42
SsD, SsE:						
Stecoah-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Soco----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
TaC:						
Tate----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
TeB:						
Tate----------------	Somewhat limited		Somewhat limited		Very limited	
	Too Stony	0.76	Too Stony	0.76	Slope	1.00
					Too Stony	0.76
ToB:						
Toast---------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88
ToC:						
Toast---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Ud:						
Udorthents----------	Not rated		Not rated		Not rated	
UnB:						
Unison--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88

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
UnC:						
Unison--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.37	Slope	0.37	Slope	1.00
UnD:						
Unison--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
Udorthents----------	Not rated		Not rated		Not rated	
WeC:						
Whiteoak------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
WhD:						
Whiteoak------ stony--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Too Stony	0.76
WoB2:						
Woolwine------------	Not limited		Not limited		Somewhat limited	
					Gravel content	0.93
					Slope	0.88
					Depth to bedrock	0.42
Fairview------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88
WoC2:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
Fairview------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
WoD2:						
Woolwine------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
Fairview------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
WwB:						
Woolwine------------	Not limited		Not limited		Somewhat limited	
					Gravel content	0.93
					Slope	0.88
					Depth to bedrock	0.42
Fairview------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88
Urban land----------	Not rated		Not rated		Not rated	

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
WwC:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.93
					Depth to bedrock	0.42
Fairview------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	

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		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AaA:						
Arkaqua	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Flooding	0.60
AbE:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Content of large stones	0.84
					Depth to bedrock	0.42
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76		
AcF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Content of large stones	0.84
					Depth to bedrock	0.42
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00	Depth to bedrock	0.42
					Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	1.00	Too Stony	1.00		
AsF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Too Stony	1.00	Slope	1.00
	Too Stony	1.00	Slope	1.00	Content of large stones	0.84
					Depth to bedrock	0.42
Cleveland	Very limited		Very limited		Very limited	
	Slope	1.00	Too Stony	1.00	Depth to bedrock	1.00
	Too Stony	1.00	Slope	1.00	Slope	1.00
					Droughty	1.00
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75

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
BoB:						
Biltmore	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.46	Too sandy	0.46	Flooding	0.60
					Droughty	0.26
BrD:						
Braddock	Somewhat limited		Not limited		Very limited	
	Slope	0.88			Slope	1.00
BvB:						
Brevard	Not limited		Not limited		Somewhat limited	
					Content of large stones	0.01
CaB2:						
Cecil	Not limited		Not limited		Not limited	
CeD:						
Chestnut	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.39
Ashe	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Content of large stones	0.84
					Depth to bedrock	0.42
CeE:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.39
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Content of large stones	0.84
					Depth to bedrock	0.42
ChC:						
Chestnut	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Droughty	0.39
Buladean	Not limited		Not limited		Somewhat limited	
					Slope	0.63
ChD:						
Chestnut	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.39
Buladean	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	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
CkE, CkF:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CmA:						
Chewacla	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
CpD:						
Cliffield	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.92	Too Stony	0.76	Slope	1.00
	Too Stony	0.76			Depth to bedrock	0.42
					Droughty	0.16
Pigeonroost	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.92	Too Stony	0.76	Slope	1.00
	Too Stony	0.76			Depth to bedrock	0.42
					Content of large stones	0.05
CpE, CpF:						
Cliffield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.16
Pigeonroost	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Content of large stones	0.05
CvA:						
Colvard	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
CyE, CyF:						
Crossnore	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.32
Jeffrey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Content of large stones	0.26
DaB:						
Dillard	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19

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
DrF:						
Ditney---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.01
Unicoi---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
					Slope	1.00
					Droughty	1.00
Rock outcrop---------	Not rated		Not rated		Not rated	
EdC:						
Edneytown------------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Pigeonroost----------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Content of large stones	0.05
EdD:						
Edneytown------------	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
Pigeonroost----------	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.05
EdE:						
Edneytown------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Pigeonroost----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.05
EuF:						
Evard----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Droughty	0.92
					Depth to bedrock	0.42
EvC:						
Evard----------------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Cowee----------------	Not limited		Not limited		Somewhat limited	
					Droughty	0.92
					Slope	0.63
					Depth to bedrock	0.42

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
EvD:						
Evard	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
Cowee	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Droughty	0.92
					Depth to bedrock	0.42
EvE:						
Evard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Droughty	0.92
					Depth to bedrock	0.42
FaB2:						
Fairview	Not limited		Not limited		Not limited	
FaC2:						
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.63
FaD2:						
Fairview	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
FeB:						
Fairview	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Not rated		Not rated		Not rated	
Udifluvents	Not rated		Not rated		Not rated	
FoB:						
Fontaflora	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Ostin	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.91	Too sandy	0.91	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Content of large stones	1.00
	Content of large stones	0.04	Content of large stones	0.04	Droughty	0.97
GcD:						
Greenlee	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Slope	1.00
	Slope	0.92	Content of large stones	0.35	Content of large stones	1.00
	Content of large stones	0.35			Droughty	0.32

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
GrD:						
Greenlee------------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Slope	1.00
	Slope	0.92	Content of large stones	0.35	Content of large stones	1.00
	Content of large stones	0.35			Droughty	0.32
Tate----------------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Slope	1.00
	Slope	0.92				
GrE:						
Greenlee------------	Very limited		Very limited		Very limited	
	Slope	1.00	Too Stony	1.00	Slope	1.00
	Too Stony	1.00	Slope	1.00	Content of large stones	1.00
	Content of large stones	0.35	Content of large stones	0.35	Droughty	0.32
Tate----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Too Stony	1.00	Slope	1.00
	Too Stony	1.00	Slope	1.00		
GtC:						
Greenlee------------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Content of large stones	1.00
	Content of large stones	0.35	Content of large stones	0.35	Slope	0.63
					Droughty	0.32
Tate----------------	Very limited		Very limited		Somewhat limited	
	Too Stony	1.00	Too Stony	1.00	Slope	0.63
Ostin---------------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Flooding	1.00
	Too sandy	0.91	Too sandy	0.91	Content of large stones	1.00
	Flooding	0.40	Flooding	0.40	Droughty	0.97
HaA:						
Hatboro-------------	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
IoA:						
Iotla---------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Flooding	0.60
MaD:						
Maymead-------------	Somewhat limited		Somewhat limited		Very limited	
	Too Stony	0.76	Too Stony	0.76	Slope	1.00
	Slope	0.18				
MeD:						
Meadowfield---------	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
					Droughty	0.16

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
Fairview------------	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
MoE:						
Meadowfield---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.16
Rhodhiss------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76		
MwC:						
Meadowfield---------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.46
					Droughty	0.16
Woolwine------------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Content of large stones	0.11
NkA:						
Nikwasi-------------	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
NnD:						
Northcove-----------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Slope	1.00
	Slope	0.92	Content of large stones	0.61	Content of large stones	1.00
	Content of large	0.61			Droughty	0.09
NnE:						
Northcove-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Too Stony	1.00	Slope	1.00
	Too Stony	1.00	Slope	1.00	Content of large stones	1.00
	Content of large stones	0.61	Content of large stones	0.61	Droughty	0.09
PaC2:						
Pacolet-------------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
PaD2:						
Pacolet-------------	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
PnC:						
Pineola-------------	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Content of large stones	0.05

Paths, Trails, and Golf Fairways—Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PnD:						
Pineola-------------	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.05
Qu:						
Pits----------------	Not rated		Not rated		Not rated	
RhD:						
Rhodhiss------------	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
RhE:						
Rhodhiss------------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
RoE:						
Rhodhiss------------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
Bannertown----------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
					Droughty	0.67
					Depth to bedrock	0.42
RsE:						
Rion----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76		
Cliffside-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.31
SoC:						
Soco----------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Too Stony	0.76	Too Stony	0.76	Slope	0.63
					Depth to bedrock	0.42
Ditney--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Too Stony	0.76	Too Stony	0.76	Slope	0.63
					Depth to bedrock	0.42
					Droughty	0.01
SoD:						
Soco----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.92	Too Stony	0.76	Slope	1.00
	Too Stony	0.76			Depth to bedrock	0.42
Ditney--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.92	Too Stony	0.76	Slope	1.00
	Too Stony	0.76			Depth to bedrock	0.42
					Droughty	0.01
SoE, SoF:						
Soco----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42

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
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too Stony	0.76	Too Stony	0.76	Depth to bedrock	0.42
					Droughty	0.01
SsC:						
Stecoah	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Soco	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
SsD:						
Stecoah	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
Soco	Somewhat limited		Not limited		Very limited	
	Slope	0.92			Slope	1.00
					Depth to bedrock	0.42
SsE:						
Stecoah	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.42
TaC:						
Tate	Not limited		Not limited		Somewhat limited	
					Slope	0.63
TeB:						
Tate	Somewhat limited		Somewhat limited		Not limited	
	Too Stony	0.76	Too Stony	0.76		
ToB:						
Toast	Not limited		Not limited		Not limited	
ToC:						
Toast	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Ud:						
Udorthents	Not rated		Not rated		Not rated	
UnB:						
Unison	Not limited		Not limited		Not limited	
UnC:						
Unison	Not limited		Not limited		Somewhat limited	
					Slope	0.37
UnD:						
Unison	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
Ur:						
Urban land	Not rated		Not rated		Not rated	

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
Udorthents	Not rated		Not rated		Not rated	
WeC:						
Whiteoak	Not limited		Not limited		Somewhat limited	
					Slope	0.63
WhD:						
Whiteoak	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.92	Too Stony	0.76	Slope	1.00
	Too Stony	0.76				
WoB2:						
Woolwine	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.42
					Content of large stones	0.11
Fairview	Not limited		Not limited		Not limited	
WoC2:						
Woolwine	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Content of large stones	0.11
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.63
WoD2:						
Woolwine	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
					Depth to bedrock	0.42
					Content of large stones	0.11
Fairview	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
WwB:						
Woolwine	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.42
					Content of large stones	0.11
Fairview	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
WwC:						
Woolwine	Not limited		Not limited		Somewhat limited	
					Slope	0.63
					Depth to bedrock	0.42
					Content of large stones	0.11
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Urban land	Not rated		Not rated		Not rated	

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		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AaA:						
Arkaqua	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
AbE, AcF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
AsF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
Cleveland	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
BaB:						
Banister	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BoB:						
Biltmore	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.82		
BrD:						
Braddock	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	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		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BvB:						
Brevard	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
CaB2:						
Cecil	Not limited		Not limited		Somewhat limited	
					Slope	0.12
CeD, CeE:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
ChC:						
Chestnut	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
Buladean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
ChD:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CkE, CkF:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CmA:						
Chewacla	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
CpD, CpE, CpF:						
Cliffield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Depth to hard bedrock	1.00	Content of large stones	0.82
	Depth to hard bedrock	0.42	Content of large stones	0.82	Depth to hard bedrock	0.42

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
Pigeonroost---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
CvA:						
Colvard-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.61		
CyE, CyF:						
Crossnore-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Jeffrey-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
DaB:						
Dillard-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
					Slope	0.12
DrF:						
Ditney--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
Unicoi--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Content of large stones	0.69	Content of large stones	0.69	Content of large stones	0.69
Rock outcrop--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
EdC:						
Edneytown-----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Pigeonroost---------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
EdD, EdE:						
Edneytown-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

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
Pigeonroost	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
EuF:						
Evard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
EvC:						
Evard	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Cowee	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
EvD, EvE:						
Evard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
FaB2:						
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.12
FaC2:						
Fairview	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
FaD2:						
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
FeB:						
Fairview	Not limited		Not limited		Somewhat limited	
					Slope	0.12
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Not rated		Not rated		Not rated	
Udifluvents	Not rated		Not rated		Not rated	

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
FoB:						
Fontaflora	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.95		
Ostin	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Content of large stones	1.00	Depth to saturated zone	1.00	Content of large stones	1.00
	Depth to saturated zone	0.39	Content of large stones	1.00	Depth to saturated zone	0.39
GcD:						
Greenlee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
GrD, GrE:						
Greenlee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Tate	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
GtC:						
Greenlee	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
	Slope	0.63	Slope	0.63	Content of large stones	1.00
Tate	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Slope	1.00
	Slope	0.63	Slope	0.63	Flooding	1.00
Ostin	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Content of large stones	1.00	Depth to saturated zone	1.00	Content of large stones	1.00
	Depth to saturated zone	0.39	Content of large stones	1.00	Depth to saturated zone	0.39
HaA:						
Hatboro	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
IoA:						
Iotla	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
MaD:						
Maymead	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

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
MeD:						
Meadowfield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Depth to hard bedrock	1.00	Content of large stones	0.82
	Depth to hard bedrock	0.42	Content of large stones	0.82	Depth to hard bedrock	0.42
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MoE:						
Meadowfield	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Depth to hard bedrock	1.00	Content of large stones	0.82
	Depth to hard bedrock	0.42	Content of large stones	0.82	Depth to hard bedrock	0.42
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MwC:						
Meadowfield	Somewhat limited		Very limited		Very limited	
	Content of large stones	0.85	Depth to hard bedrock	1.00	Slope	1.00
	Slope	0.63	Content of large stones	0.85	Content of large stones	0.85
	Depth to hard bedrock	0.46	Slope	0.63	Depth to hard bedrock	0.46
Woolwine	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
NkA:						
Nikwasi	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
NnD, NnE:						
Northcove	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
PaC2:						
Pacolet	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
PaD2:						
Pacolet	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
PnC:						
Pineola	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		

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
PnD:						
Pineola	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD, RhE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
RoE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Bannertown	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
RsE:						
Rion	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cliffside	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
SoC:						
Soco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
Ditney	Somewhat limited		Very limited		Very limited	
	Slope	0.63	Depth to hard bedrock	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Slope	0.63	Depth to hard bedrock	0.42
SoD, SoE, SoF:						
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Depth to hard bedrock	1.00	Depth to hard bedrock	0.42
SsC:						
Stecoah	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00

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
Soco----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
SsD, SsE:						
Stecoah-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Soco----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
TaC:						
Tate----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
TeB:						
Tate----------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
ToB:						
Toast---------------	Not limited		Not limited		Somewhat limited	
					Slope	0.12
ToC:						
Toast---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Ud:						
Udorthents----------	Not rated		Not rated		Not rated	
UnB:						
Unison--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.12
UnC:						
Unison--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.37	Slope	0.37	Slope	1.00
UnD:						
Unison--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
Udorthents----------	Not rated		Not rated		Not rated	
WeC:						
Whiteoak------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
WhD:						
Whiteoak------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

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
WoB2:						
Woolwine------------	Not limited		Somewhat limited		Somewhat limited	
			Depth to soft bedrock	0.42	Slope	0.12
Fairview------------	Not limited		Not limited		Somewhat limited	
					Slope	0.12
WoC2:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
Fairview------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
WoD2:						
Woolwine------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.42		
Fairview------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
WwB:						
Woolwine------------	Not limited		Somewhat limited		Somewhat limited	
			Depth to soft bedrock	0.42	Slope	0.12
Fairview------------	Not limited		Not limited		Somewhat limited	
					Slope	0.12
Urban land----------	Not rated		Not rated		Not rated	
WwC:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
			Depth to soft bedrock	0.42		
Fairview------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	

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		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AaA:						
Arkaqua	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	0.78	Flooding	0.60	Flooding	0.60
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
AbE, AcF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Frost action	0.50	Slope	1.00	Content of large stones	0.84
	Depth to hard bedrock	0.42	Cutbanks cave	0.10	Depth to bedrock	0.42
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00		
AsF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Frost action	0.50	Slope	1.00	Content of large stones	0.84
	Depth to hard bedrock	0.42	Cutbanks cave	0.10	Depth to bedrock	0.42
Cleveland	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50	Too clayey	0.03		
BoB:						
Biltmore	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Depth to saturated zone	0.82	Droughty	0.26
			Flooding	0.60		

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
BrD:						
Braddock	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
BvB:						
Brevard	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	0.10	Content of large stones	0.01
	Flooding	0.40				
CaB2:						
Cecil	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
CeD, CeE:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.39
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Frost action	0.50	Slope	1.00	Content of large stones	0.84
	Depth to hard bedrock	0.42	Cutbanks cave	0.10	Depth to bedrock	0.42
ChC:						
Chestnut	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.39
Buladean	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63		
ChD:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00		
CkE, CkF:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.39
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00		

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
CmA:						
Chewacla	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
	Low strength	1.00	Cutbanks cave	0.10		
CpD, CpE, CpF:						
Cliffield	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Content of large stones	0.82	Slope	1.00	Depth to bedrock	0.42
	Frost action	0.50	Content of large stones	0.82	Droughty	0.16
Pigeonroost	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Cutbanks cave	0.10	Content of large stones	0.05
CvA:						
Colvard	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.61	Flooding	0.60
	Frost action	0.50	Flooding	0.60		
			Cutbanks cave	0.10		
CyE, CyF:						
Crossnore	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42	Droughty	0.32
Jeffrey	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Slope	1.00	Depth to bedrock	0.42
			Cutbanks cave	1.00	Content of large stones	0.26
DaB:						
Dillard	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Flooding	0.40	Cutbanks cave	0.10		
	Low strength	0.22				
DrF:						
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Frost action	0.50	Slope	1.00	Depth to bedrock	0.42
	Depth to hard bedrock	0.42	Cutbanks cave	1.00	Droughty	0.01
Unicoi	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	0.69	Content of large stones	0.69	Droughty	1.00
Rock outcrop	Not rated		Not rated		Not rated	

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
EdC:						
Edneytown	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Frost action	0.50	Cutbanks cave	0.10		
Pigeonroost	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Frost action	0.50	Depth to soft bedrock	0.42	Depth to bedrock	0.42
					Content of large stones	0.05
			Cutbanks cave	0.10		
EdD, EdE:						
Edneytown	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
Pigeonroost	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Depth to soft bedrock	0.42	Depth to bedrock	0.42
					Content of large stones	0.05
			Cutbanks cave	0.10		
EuF:						
Evard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
Cowee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Droughty	0.92
			Depth to soft bedrock	0.42	Depth to bedrock	0.42
EvC:						
Evard	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Frost action	0.50	Cutbanks cave	0.10		
Cowee	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Droughty	0.92
	Frost action	0.50	Slope	0.63	Slope	0.63
			Depth to soft bedrock	0.42	Depth to bedrock	0.42
EvD, EvE:						
Evard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
Cowee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Droughty	0.92
			Depth to soft bedrock	0.42	Depth to bedrock	0.42
FaB2:						
Fairview	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Too clayey	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
FaC2:						
Fairview	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
FaD2:						
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
FeB:						
Fairview	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Not rated		Not rated		Not rated	
Udifluvents	Not rated		Not rated		Not rated	
FoB:						
Fontaflora	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Depth to saturated zone	0.95		
			Flooding	0.60		
Ostin	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Content of large stones	1.00	Cutbanks cave	1.00	Content of large stones	1.00
	Depth to saturated zone	0.19	Content of large stones	1.00	Droughty	0.97
GcD:						
Greenlee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
			Cutbanks cave	0.10	Droughty	0.32
GrD, GrE:						
Greenlee	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
			Cutbanks cave	0.10	Droughty	0.32

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
Tate	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00		
GtC:						
Greenlee	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
			Cutbanks cave	0.10	Droughty	0.32
Tate	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63		
	Flooding	0.40				
Ostin	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Content of large stones	1.00	Cutbanks cave	1.00	Content of large stones	1.00
	Depth to saturated zone	0.19	Content of large stones	1.00	Droughty	0.97
HaA:						
Hatboro	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
	Low strength	1.00	Cutbanks cave	0.10		
IoA:						
Iotla	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	1.00	Flooding	0.60
	Frost action	0.50	Flooding	0.60		
MaD:						
Maymead	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
MeD:						
Meadowfield	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Content of large stones	0.82	Slope	1.00	Depth to bedrock	0.42
	Frost action	0.50	Content of large stones	0.82	Droughty	0.16
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
MoE:						
Meadowfield	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Content of large stones	0.82	Slope	1.00	Depth to bedrock	0.42
	Frost action	0.50	Content of large stones	0.82	Droughty	0.16

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
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10		
MwC:						
Meadowfield	Somewhat limited		Very limited		Somewhat limited	
	Content of large stones	0.85	Depth to hard bedrock	1.00	Slope	0.63
	Slope	0.63	Content of large stones	0.85	Depth to bedrock	0.46
	Frost action	0.50	Slope	0.63	Droughty	0.16
Woolwine	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Too clayey	0.28	Content of large stones	0.11
NkA:						
Nikwasi	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
	Frost action	0.50	Flooding	0.80		
NnD, NnE:						
Northcove	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
			Cutbanks cave	0.10	Droughty	0.09
PaC2:						
Pacolet	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
PaD2:						
Pacolet	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
PnC:						
Pineola	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.78	Cutbanks cave	1.00	Slope	0.63
	Slope	0.63	Slope	0.63	Depth to bedrock	0.42
	Frost action	0.50	Depth to soft bedrock	0.42	Content of large stones	0.05
PnD:						
Pineola	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.78	Cutbanks cave	1.00	Depth to bedrock	0.42
	Frost action	0.50	Depth to soft bedrock	0.42	Content of large stones	0.05
Qu:						
Pits	Not rated		Not rated		Not rated	

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
RhD, RhE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10		
RoE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10		
Bannertown	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Slope	1.00	Droughty	0.67
			Cutbanks cave	1.00	Depth to bedrock	0.42
RsE:						
Rion	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10		
Cliffside	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Depth to hard bedrock	0.42	Slope	1.00	Depth to bedrock	0.42
			Cutbanks cave	0.10	Droughty	0.31
SoC:						
Soco	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63	Depth to bedrock	0.42
			Depth to soft bedrock	0.42		
Ditney	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Depth to hard bedrock	1.00	Slope	0.63
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
	Depth to hard bedrock	0.42	Slope	0.63	Droughty	0.01
SoD, SoE, SoF:						
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42		
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Frost action	0.50	Slope	1.00	Depth to bedrock	0.42
	Depth to hard bedrock	0.42	Cutbanks cave	1.00	Droughty	0.01
SsC:						
Stecoah	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Frost action	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
Soco	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63	Depth to bedrock	0.42
			Depth to soft bedrock	0.42		
SsD, SsE:						
Stecoah	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.42
			Depth to soft bedrock	0.42		
TaC:						
Tate	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Slope	0.63
	Frost action	0.50	Slope	0.63		
TeB:						
Tate	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
ToB:						
Toast	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Cutbanks cave	0.10		
ToC:						
Toast	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Cutbanks cave	0.10		
Ud:						
Udorthents	Not rated		Not rated		Not rated	
UnB:						
Unison	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Too clayey	0.50		
	Frost action	0.50	Cutbanks cave	0.10		
UnC:						
Unison	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Too clayey	0.50	Slope	0.37
	Frost action	0.50	Slope	0.37		
	Slope	0.37	Cutbanks cave	0.10		
UnD:						
Unison	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	0.50	Cutbanks cave	0.10		
Ur:						
Urban land	Not rated		Not rated		Not rated	
Udorthents	Not rated		Not rated		Not rated	

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
WeC:						
Whiteoak	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Frost action	0.50	Cutbanks cave	0.10		
WhD:						
Whiteoak	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
WoB2:						
Woolwine	Somewhat limited		Somewhat limited		Somewhat limited	
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Too clayey	0.28	Content of large stones	0.11
			Cutbanks cave	0.10		
Fairview	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
WoC2:						
Woolwine	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Too clayey	0.28	Content of large stones	0.11
Fairview	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
WoD2:						
Woolwine	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Too clayey	0.28	Content of large stones	1.00
Fairview	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
WwB:						
Woolwine	Somewhat limited		Somewhat limited		Somewhat limited	
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
			Too clayey	0.28	Content of large stones	0.11
			Cutbanks cave	0.10		
Fairview	Somewhat limited		Somewhat limited		Not limited	
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	

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
WwC:						
Woolwine	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Depth to soft bedrock	0.42	Depth to bedrock	0.42
					Content of large stones	0.11
			Too clayey	0.28		
Fairview	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
	Low strength	0.10	Too clayey	0.50		
			Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	

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: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
AaA:				
Arkaqua	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
AbE, AcF:				
Ashe	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Chestnut	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Buladean	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Depth to bedrock	0.78	Depth to soft bedrock	0.42
AsF:				
Ashe	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Cleveland	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Rock outcrop	Not rated		Not rated	
BaB:				
Banister	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Flooding	0.40

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
BoB:				
Biltmore	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	0.99
BrD:				
Braddock	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
BvB:				
Brevard	Somewhat limited		Very limited	
	Flooding	0.40	Seepage	1.00
			Flooding	0.40
			Slope	0.32
CaB2:				
Cecil	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
CeD, CeE:				
Chestnut	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Ashe	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
ChC:				
Chestnut	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
Buladean	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Slope	1.00
	Depth to bedrock	0.78	Seepage	1.00
	Slope	0.63	Depth to soft bedrock	0.42
ChD:				
Chestnut	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	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
Buladean------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Depth to bedrock	0.78	Depth to soft bedrock	0.42
CkE, CkF:				
Chestnut------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Buladean------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Depth to bedrock	0.78	Depth to soft bedrock	0.42
CmA:				
Chewacla------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
CpD, CpE, CpF:				
Cliffield-----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Content of large stones	1.00
Pigeonroost---------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
CvA:				
Colvard-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.71
CyE, CyF:				
Crossnore-----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Jeffrey-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	0.50

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
DaB:				
Dillard-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
	Flooding	0.40		
DrF:				
Ditney--------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00		
	Seepage (bottom layer)	1.00	Slope	1.00
			Seepage	1.00
Unicoi--------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00		
	Seepage (bottom layer)	1.00	Slope	1.00
			Seepage	1.00
Rock outcrop--------	Not rated		Not rated	
EdC:				
Edneytown-----------	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Slope	1.00
			Seepage	1.00
	Slope	0.63		
	Restricted permeability	0.50		
Pigeonroost---------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63		
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
EdD, EdE:				
Edneytown-----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
Pigeonroost---------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00		
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
EuF:				
Evard---------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50

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
Cowee	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	1.00
EvC:				
Evard	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Cowee	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63	Slope	1.00
			Seepage	1.00
EvD, EvE:				
Evard	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Cowee	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	1.00
FaB2:				
Fairview	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
FaC2:				
Fairview	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
FaD2:				
Fairview	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
FeB:				
Fairview	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
Urban land	Not rated		Not rated	
FeC:				
Fairview	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	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
Urban land	Not rated		Not rated	
FnA:				
Fluvaquents	Not rated		Not rated	
Udifluvents	Not rated		Not rated	
FoB:				
Fontaflora	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	1.00
Ostin	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	1.00
GcD:				
Greenlee	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Content of large stones	1.00
GrD, GrE:				
Greenlee	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Content of large stones	1.00
Tate	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
GtC:				
Greenlee	Very limited		Very limited	
	Content of large stones	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Slope	0.63	Content of large stones	1.00
Tate	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
	Restricted permeability	0.50	Flooding	0.40

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
Ostin----------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	1.00
HaA:				
Hatboro--------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
IoA:				
Iotla----------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	1.00
MaD:				
Maymead--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
MeD:				
Meadowfield----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Content of large stones	1.00
Fairview-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
MoE:				
Meadowfield----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Content of large stones	0.82	Content of large stones	1.00
Rhodhiss-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		

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
MwC:				
Meadowfield---------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Content of large stones	0.85	Slope	1.00
	Slope	0.63	Content of large stones	1.00
Woolwine------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63	Slope	1.00
			Seepage	0.50
NkA:				
Nikwasi-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Depth to saturated zone	1.00
NnD, NnE:				
Northcove-----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Content of large stones	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
PaC2:				
Pacolet-------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
PaD2:				
Pacolet-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
PnC:				
Pineola-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
PnD:				
Pineola-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Qu:				
Pits----------------	Not rated		Not rated	

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
RhD, RhE:				
Rhodhiss------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
RoE:				
Rhodhiss------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
Bannertown----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
RsE:				
Rion----------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50		
Cliffside-----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
SoC:				
Soco----------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
Ditney--------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
SoD, SoE, SoF:				
Soco----------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
Ditney--------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	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
SsC:				
Stecoah	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Slope	1.00
	Depth to bedrock	0.78	Seepage	1.00
	Slope	0.63	Depth to soft bedrock	0.42
Soco	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
SsD, SsE:				
Stecoah	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
	Depth to bedrock	0.78	Depth to soft bedrock	0.42
Soco	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00
TaC:				
Tate	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Slope	1.00
	Slope	0.63	Seepage	1.00
	Restricted permeability	0.50		
TeB:				
Tate	Very limited		Very limited	
	Seepage (bottom layer)	1.00	Seepage	1.00
	Restricted permeability	0.50	Slope	0.92
ToB:				
Toast	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
ToC:				
Toast	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Ud:				
Udorthents	Not rated		Not rated	
UnB:				
Unison	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50

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
UnC:				
Unison	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
	Slope	0.37	Seepage	0.50
UnD:				
Unison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Ur:				
Urban land	Not rated		Not rated	
Udorthents	Not rated		Not rated	
WeC:				
Whiteoak	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
WhD:				
Whiteoak	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
WoB2:				
Woolwine	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
			Slope	0.68
			Seepage	0.50
Fairview	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
WoC2:				
Woolwine	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63		
			Slope	1.00
			Seepage	0.50
Fairview	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
WoD2:				
Woolwine	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	0.50

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
Fairview------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
WwB:				
Woolwine------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
			Slope	0.68
			Seepage	0.50
Fairview------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Slope	0.68
			Seepage	0.50
Urban land----------	Not rated		Not rated	
WwC:				
Woolwine------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.63	Slope	1.00
			Seepage	0.50
Fairview------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land----------	Not rated		Not rated	

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
AaA:						
Arkaqua	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Hard to compact	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Too clayey	0.50			Too clayey	0.50
AbE, AcF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Seepage	1.00	Seepage	0.50
	Seepage (bottom layer)	1.00	Depth to bedrock	0.42	Depth to bedrock	0.42
AsF:						
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Cleveland	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00			Seepage	0.50
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	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	Flooding	0.40	Hard to compact	1.00
	Seepage (bottom layer)	1.00			Depth to saturated zone	0.99
BoB:						
Biltmore	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	0.50
	Seepage (bottom layer)	1.00	Seepage	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
BrD:						
Braddock	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	1.00			Too clayey	1.00
	Seepage (bottom layer)	1.00			Hard to compact	1.00
BvB:						
Brevard	Somewhat limited		Very limited		Not limited	
	Flooding	0.40	Seepage	1.00		
			Flooding	0.40		
CaB2:						
Cecil	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
CeD, CeE:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Ashe	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
ChC:						
Chestnut	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Slope	0.63
			Slope	0.63	Seepage	0.50
	Slope	0.63				
Buladean	Very limited		Very limited		Somewhat limited	
	Depth to bedrock	1.00	Seepage	1.00	Slope	0.63
	Seepage (bottom layer)	1.00	Slope	0.63	Seepage	0.50
			Depth to bedrock	0.42	Depth to bedrock	0.42
	Slope	0.63				
ChD:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Buladean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Seepage	1.00	Seepage	0.50
	Seepage (bottom layer)	1.00	Depth to bedrock	0.42	Depth to bedrock	0.42
CkE, CkF:						
Chestnut	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50

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
Buladean------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Seepage	1.00	Seepage	0.50
	Seepage (bottom layer)	1.00	Depth to bedrock	0.42	Depth to bedrock	0.42
CmA:						
Chewacla------------	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	Too clayey	0.50
	Seepage (bottom layer)	1.00			Seepage	0.21
CpD, CpE, CpF						
Cliffield-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Content of large stones	0.82			Content of large stones	0.82
Pigeonroost---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
CpE, CpF:						
Cliffield-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Content of large stones	0.82			Content of large stones	0.82
Pigeonroost---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
CvA:						
Colvard-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage (bottom layer)	1.00	Seepage	1.00		
CyE, CyF:						
Crossnore-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Jeffrey-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
					Gravel content	0.01
DaB:						
Dillard-------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Flooding	0.40	Flooding	0.40	Too clayey	0.50

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
DrF:						
Ditney---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Unicoi---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00			Content of large stones	0.69
Rock outcrop---------	Not rated		Not rated		Not rated	
EdC:						
Edneytown------------	Very limited		Somewhat limited		Somewhat limited	
	Seepage (bottom layer)	1.00	Slope	0.63	Slope	0.63
	Slope	0.63			Seepage	0.50
	Too clayey	0.50			Too clayey	0.50
Pigeonroost----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
EdD, EdE:						
Edneytown------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00			Seepage	0.50
	Too clayey	0.50			Too clayey	0.50
Pigeonroost----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
EuF:						
Evard----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
EvC:						
Evard----------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Cowee----------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
EvD, EvE:						
Evard----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Cowee----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	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
FaB2:						
Fairview------------	Not limited		Not limited		Not limited	
FaC2:						
Fairview------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
FaD2:						
Fairview------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
FeB:						
Fairview------------	Not limited		Not limited		Not limited	
Urban land----------	Not rated		Not rated		Not rated	
FeC:						
Fairview------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Urban land----------	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents---------	Not rated		Very limited		Not rated	
			Flooding	1.00		
			Depth to saturated zone	1.00		
Udifluvents---------	Not rated		Very limited		Not rated	
			Flooding	1.00		
			Depth to saturated zone	1.00		
FoB:						
Fontaflora----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Depth to saturated zone	0.11
Ostin---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Content of large stones stones	0.99
GcD:						
Greenlee------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Content of large stones	1.00
	Content of large stones	1.00			Seepage	0.50

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
GrD, GrE:						
Greenlee------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Content of large stones	1.00
	Content of large stones	1.00			Seepage	0.50
Tate----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00				
GtC:						
Greenlee------------	Very limited		Very limited		Very limited	
	Seepage (bottom layer)	1.00	Seepage	1.00	Content of large stones	1.00
	Content of large stones	1.00	Slope	0.63	Slope	0.63
	Slope	0.63			Seepage	0.50
Tate----------------	Very limited		Somewhat limited		Somewhat limited	
	Seepage (bottom layer)	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Flooding	0.40		
	Flooding	0.40				
Ostin---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Content of large stones	0.99
HaA:						
Hatboro-------------	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		
IoA:						
Iotla---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Depth to saturated zone	0.99
MaD:						
Maymead-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
MeD:						
Meadowfield---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Content of large stones	0.82			Content of large stones	0.82

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
Fairview------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MoE:						
Meadowfield---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Content of large stones	0.82			Content of large stones	0.82
Rhodhiss------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
MwC:						
Meadowfield---------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	0.85	Slope	0.63	Content of large stones	0.85
	Slope	0.63			Slope	0.63
Woolwine------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
NkA:						
Nikwasi-------------	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	0.50
	Seepage (bottom layer)	1.00	Seepage	1.00		
NnD, NnE:						
Northcove-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	1.00	Seepage	1.00	Content of large stones	1.00
	Seepage (bottom layer)	1.00			Seepage	0.50
PaC2:						
Pacolet-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
					Too clayey	0.50
PaD2:						
Pacolet-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Too clayey	0.50
PnC:						
Pineola-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50

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
PnD:						
Pineola	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD, RhE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
RoE:						
Rhodhiss	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
Bannertown	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
RsE:						
Rion	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00		
Cliffside	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
					Gravel content	0.12
SoC:						
Soco	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Slope	0.63
			Slope	0.63	Seepage	0.50
	Slope	0.63				
Ditney	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Slope	0.63
			Slope	0.63	Seepage	0.50
	Slope	0.63				
SoD, SoE, SoF:						
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50

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
Ditney	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
SsC:						
Stecoah	Very limited		Very limited		Somewhat limited	
	Depth to bedrock	1.00	Seepage	1.00	Slope	0.63
	Seepage (bottom layer)	1.00	Slope	0.63	Seepage	0.50
	Slope	0.63	Depth to bedrock	0.42	Depth to bedrock	0.42
Soco	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Slope	0.63
	Slope	0.63	Slope	0.63	Seepage	0.50
SsD, SsE:						
Stecoah	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Seepage	1.00	Seepage	0.50
	Seepage (bottom layer)	1.00	Depth to bedrock	0.42	Depth to bedrock	0.42
Soco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Seepage (bottom layer)	1.00	Seepage	1.00	Seepage	0.50
TaC:						
Tate	Very limited		Somewhat limited		Somewhat limited	
	Seepage (bottom layer)	1.00	Slope	0.63	Slope	0.63
	Slope	0.63				
TeB:						
Tate	Very limited		Not limited		Not limited	
	Seepage (bottom layer)	1.00				
ToB:						
Toast	Not limited		Not limited		Not limited	
ToC:						
Toast	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Ud:						
Udorthents	Not rated		Very limited		Not rated	
			Slope	1.00		
UnB:						
Unison	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50

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
UnC:						
Unison--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.37	Too clayey	0.50
	Slope	0.37			Slope	0.37
UnD:						
Unison--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
Udorthents----------	Not rated		Very limited		Not rated	
			Slope	1.00		
WeC:						
Whiteoak------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
WhD:						
Whiteoak------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
WoB2:						
Woolwine------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
					Hard to compact	0.50
Fairview------------	Not limited		Not limited		Not limited	
WoC2:						
Woolwine------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
Fairview------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
WoD2:						
Woolwine------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Fairview------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
WwB:						
Woolwine------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
					Hard to compact	0.50
Fairview------------	Not limited		Not limited		Not limited	
Urban land----------	Not rated		Not rated		Not rated	

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
WwC:						
Woolwine------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
Fairview------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Urban land----------	Not rated		Not rated		Not rated	

Source of Sand and Gravel

(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
AaA:				
Arkaqua	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
AbE, AcF:				
Ashe	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.04
	Thickest layer	0.00	Thickest layer	0.04
Chestnut	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
Buladean	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
AsF:				
Ashe	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.04
	Thickest layer	0.00	Thickest layer	0.04
Cleveland	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
Rock outcrop	Not rated		Not rated	
BaB:				
Banister	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BoB:				
Biltmore	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.08
	Thickest layer	0.00	Bottom layer	0.10
BrD:				
Braddock	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BvB:				
Brevard	Not rated		Not rated	
CaB2:				
Cecil	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04

Source of Sand and Gravel—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CeD, CeE:				
Chestnut	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
Ashe	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.04
	Thickest layer	0.00	Thickest layer	0.04
ChC, Chd, CkE, CkF:				
Chestnut	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
Buladean	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
CmA:				
Chewacla	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
CpD, CpE, CpF:				
Cliffield	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Pigeonroost	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
CvA:				
Colvard	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.04
	Thickest layer	0.00	Bottom layer	0.04
CyE, CyF:				
Crossnore	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.11
Jeffrey	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
DaB:				
Dillard	Not rated		Not rated	
DrF:				
Ditney	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Unicoi	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	Not rated		Not rated	

Source of Sand and Gravel—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
EdC, EdD, EdE:				
Edneytown-----------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.03
Pigeonroost---------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
EuF, EvC, EvD, EvE:				
Evard---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
Cowee---------------	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
FaB2, FaC2, FaD2:				
Fairview------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FeB, FeC:				
Fairview------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land----------	Not rated		Not rated	
FnA:				
Fluvaquents---------	Not rated		Not rated	
Udifluvents---------	Not rated		Not rated	
FoB:				
Fontaflora----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ostin---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GcD:				
Greenlee------------	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
GrD, GrE:				
Greenlee------------	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
Tate----------------	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
GtC:				
Greenlee	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
Tate	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Ostin	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HaA:				
Hatboro	Not rated		Not rated	
IoA:				
Iotla	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.31
MaD:				
Maymead	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MeD:				
Meadowfield	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Fairview	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MoE:				
Meadowfield	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Rhodhiss	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
MwC:				
Meadowfield	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Woolwine	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
NkA:				
Nikwasi	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.14

Source of Sand and Gravel—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
NnD, NnE:				
Northcove-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
PaC2, PaD2:				
Pacolet-------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
PnC, PnD:				
Pineola-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Qu:				
Pits----------------	Not rated		Not rated	
RhD, RhE:				
Rhodhiss------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.02
RoE:				
Rhodhiss------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.02
Bannertown----------	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
RsE:				
Rion----------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.03
Cliffside-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SoC, SoD, SoE, SoF:				
Soco----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Ditney--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SsC, SsD, SsE:				
Stecoah-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Soco----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Source of Sand and Gravel—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
TaC, TeB:				
Tate	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
ToB, ToC:				
Toast	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.02
	Thickest layer	0.00	Thickest layer	0.04
Ud:				
Udorthents	Not rated		Not rated	
UnB, UnC, UnD:				
Unison	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Ur:				
Urban land	Not rated		Not rated	
Udorthents	Not rated		Not rated	
WeC, WhD:				
Whiteoak	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
WoB2, WoC2, WoD2:				
Woolwine	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Fairview	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
WwB, WwC:				
Woolwine	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Fairview	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	

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: 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
AaA:						
Arkaqua	Fair		Fair		Fair	
	Too clayey	0.50	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Too acid	0.68	Low strength	0.22	Too clayey	0.44
AbE, AcF:						
Ashe	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.24
	Low content of organic matter	0.50			Depth to bedrock	0.58
Chestnut	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
Buladean	Fair		Poor		Poor	
	Too acid	0.50	Slope	0.00	Slope	0.00
			Depth to bedrock	0.58	Too acid	0.76
					Hard to reclaim (rock fragments)	0.92
AsF:						
Ashe	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.24
	Low content of organic matter	0.50			Depth to bedrock	0.58
Cleveland	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
	Too acid	0.54			Rock fragments	0.00
Rock outcrop	Not rated		Not rated		Not rated	
BaB:						
Banister	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Too acid	0.08	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low content of organic matter	0.12	Shrink-swell	0.99	Too acid	0.50
BoB:						
Biltmore	Poor		Good		Poor	
	Wind erosion	0.00			Too sandy	0.00
	Too sandy	0.00				
	Low content of organic matter	0.12				

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
BrD:						
Braddock------------	Poor		Fair		Poor	
	Too clayey	0.00	Slope	0.12	Slope	0.00
	Too acid	0.12	Shrink-swell	0.99	Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.59
BvB:						
Brevard-------------	Poor		Good		Fair	
	Low content of organic matter	0.00			Too acid	0.98
	Too acid	0.54				
	Droughty	0.95				
CaB2:						
Cecil---------------	Poor		Fair		Poor	
	Too clayey	0.00	Low strength	0.10	Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.98
	Too acid	0.54				
CeD:						
Chestnut------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
Ashe----------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Rock fragments	0.24
	Low content of organic matter	0.50			Depth to bedrock	0.58
CeE:						
Chestnut------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
Ashe----------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.24
	Low content of organic matter	0.50			Depth to bedrock	0.58
ChC:						
Chestnut------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Too acid	0.50			Slope	0.37
	Depth to bedrock	0.58			Depth to bedrock	0.58
Buladean------------	Fair		Fair		Fair	
	Too acid	0.50	Depth to bedrock	0.58	Slope	0.37
					Too acid	0.76
					Hard to reclaim (rock fragments)	0.92

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
ChD:						
Chestnut	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
Buladean	Fair		Fair		Poor	
	Too acid	0.50	Slope	0.08	Slope	0.00
			Depth to bedrock	0.58	Too acid	0.76
					Hard to reclaim (rock fragments)	0.92
CkE, CkF:						
Chestnut	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
Buladean	Fair		Poor		Poor	
	Too acid	0.50	Slope	0.00	Slope	0.00
			Depth to bedrock	0.58	Too acid	0.76
					Hard to reclaim (rock fragments)	0.92
CmA:						
Chewacla	Fair		Poor		Poor	
	Too acid	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
					Rock fragments	0.97
CpD:						
Cliffield	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.05	Slope	0.08	Rock fragments	0.00
	Too acid	0.50	Stone content	0.22	Depth to bedrock	0.58
Pigeonroost	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.08	Depth to bedrock	0.58
	Droughty	0.33			Too acid	0.76
	Too acid	0.50				
CpE, CpF:						
Cliffield	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.05	Slope	0.00	Rock fragments	0.00
	Too acid	0.50	Stone content	0.22	Depth to bedrock	0.58
Pigeonroost	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.00	Depth to bedrock	0.58
	Droughty	0.33			Too acid	0.76
	Too acid	0.50				
CvA:						
Colvard	Fair		Good		Good	
	Low content of organic matter	0.88				

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
CyE, CyF:						
Crossnore	Fair		Poor		Poor	
	Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.50
	Low content of organic matter	0.50			Depth to bedrock	0.58
Jeffrey	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.00	Rock fragments	0.00
	Droughty	0.22			Depth to bedrock	0.58
	Too acid	0.50				
DaB:						
Dillard	Poor		Fair		Fair	
	Low content of organic matter	0.00	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Too acid	0.50			Too acid	0.88
	Droughty	0.99				
DrF:						
Ditney	Fair		Poor		Poor	
	Droughty	0.18	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Depth to bedrock	0.58
	Low content of organic matter	0.50			Too acid	0.59
Unicoi	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
	Stone content	0.15	Stone content	0.99	Depth to bedrock	0.00
Rock outcrop	Not rated		Not rated		Not rated	
EdC:						
Edneytown	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
					Too acid	0.88
	Too acid	0.32				
Pigeonroost	Fair		Poor		Fair	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.37
					Depth to bedrock	0.58
	Droughty	0.33			Too acid	0.76
	Too acid	0.50				
EdD:						
Edneytown	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.08	Slope	0.00
					Too acid	0.88
	Too acid	0.32				
Pigeonroost	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.08	Depth to bedrock	0.58
	Droughty	0.33			Too acid	0.76
	Too acid	0.50				

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
EdE:						
Edneytown-----------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.32			Too acid	0.88
Pigeonroost---------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.33	Slope	0.00	Depth to bedrock	0.58
	Too acid	0.50			Too acid	0.76
EuF:						
Evard---------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.54			Hard to reclaim (rock fragments)	0.95
					Too acid	0.98
Cowee---------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
EvC:						
Evard---------------	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.54			Hard to reclaim (rock fragments)	0.95
					Rock fragments	0.98
Cowee---------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Too acid	0.50			Slope	0.37
	Depth to bedrock	0.58			Depth to bedrock	0.58
EvD:						
Evard---------------	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.08	Slope	0.00
	Too acid	0.54			Hard to reclaim (rock fragments)	0.95
					Too acid	0.98
Cowee---------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58
EvE:						
Evard---------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.54			Hard to reclaim (rock fragments)	0.95
					Too acid	0.98
Cowee---------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Rock fragments	0.00
	Depth to bedrock	0.58			Depth to bedrock	0.58

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
FaB2:						
Fairview	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.68
	Too acid	0.50				
FaC2:						
Fairview	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.50			Too acid	0.68
FaD2:						
Fairview	Poor		Fair		Poor	
	Too clayey	0.00	Slope	0.50	Slope	0.00
	Low content of organic matter	0.12			Too clayey	0.00
	Too acid	0.50			Too acid	0.68
FeB:						
Fairview	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.68
	Too acid	0.50				
Urban land	Not rated		Not rated		Not rated	
FeC:						
Fairview	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.50			Too acid	0.68
Urban land	Not rated		Not rated		Not rated	
FnA:						
Fluvaquents	Not rated		Not rated		Not rated	
Udifluvents	Not rated		Not rated		Not rated	
FoB:						
Fontaflora	Fair		Good		Poor	
	Low content of organic matter	0.12			Hard to reclaim (rock fragments)	0.00
	Too sandy	0.16			Too sandy	0.16
	Too acid	0.68				
Ostin	Poor		Poor		Poor	
	Too sandy	0.00	Cobble content	0.00	Too sandy	0.00
	Wind erosion	0.00	Depth to saturated zone	0.53	Hard to reclaim (rock fragments)	0.00
	Droughty	0.01	Stone content	0.92	Rock fragments	0.00

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
GcD:						
Greenlee	Poor		Poor		Poor	
	Stone content	0.00	Stone content	0.00	Slope	0.00
	Too acid	0.50	Cobble content	0.02	Rock fragments	0.00
	Cobble content	0.79	Slope	0.08	Hard to reclaim (rock fragments)	0.00
GrD:						
Greenlee	Poor		Poor		Poor	
	Stone content	0.00	Stone content	0.00	Slope	0.00
	Too acid	0.50	Cobble content	0.02	Rock fragments	0.00
	Cobble content	0.79	Slope	0.08	Hard to reclaim (rock fragments)	0.00
Tate	Fair		Fair		Poor	
	Low content of organic matter	0.50	Slope	0.08	Slope	0.00
					Rock fragments	0.00
	Too acid	0.68			Hard to reclaim (rock fragments)	0.82
GrE:						
Greenlee	Poor		Poor		Poor	
	Stone content	0.00	Slope	0.00	Slope	0.00
	Too acid	0.50	Stone content	0.00	Rock fragments	0.00
	Cobble content	0.79	Cobble content	0.02	Hard to reclaim (rock fragments)	0.00
Tate	Fair		Poor		Poor	
	Low content of organic matter	0.50	Slope	0.00	Slope	0.00
					Rock fragments	0.00
	Too acid	0.68			Hard to reclaim (rock fragments)	0.82
GtC:						
Greenlee	Poor		Poor		Poor	
	Stone content	0.00	Stone content	0.00	Rock fragments	0.00
	Too acid	0.50	Cobble content	0.02	Hard to reclaim (rock fragments)	0.00
	Cobble content	0.79			Slope	0.37
Tate	Fair		Good		Poor	
	Low content of organic matter	0.50			Rock fragments	0.00
					Slope	0.37
	Too acid	0.68			Hard to reclaim (rock fragments)	0.82
Ostin	Poor		Poor		Poor	
	Too sandy	0.00	Cobble content	0.00	Too sandy	0.00
	Wind erosion	0.00	Depth to saturated zone	0.53	Hard to reclaim (rock fragments)	0.00
	Droughty	0.01	Stone content	0.92	Rock fragments	0.00
HaA:						
Hatboro	Fair		Poor		Poor	
	Too acid	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00

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
IoA:						
Iotla	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Too acid	0.97			Rock fragments	0.97
MaD:						
Maymead	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.82	Slope	0.00
					Rock fragments	0.12
	Too acid	0.50			Hard to reclaim (rock fragments)	0.24
MeD:						
Meadowfield	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.05	Slope	0.08	Rock fragments	0.00
	Too acid	0.50	Stone content	0.22	Depth to bedrock	0.58
Fairview	Poor		Fair		Poor	
	Too clayey	0.00	Slope	0.50	Slope	0.00
	Low content of organic matter	0.12			Too clayey	0.00
					Too acid	0.68
	Too acid	0.50				
MoE:						
Meadowfield	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.05	Slope	0.00	Rock fragments	0.00
	Too acid	0.50	Stone content	0.22	Depth to bedrock	0.58
Rhodhiss	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.68				
MwC:						
Meadowfield	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Droughty	0.05	Stone content	0.22	Slope	0.37
	Too acid	0.50	Cobble content	0.82	Depth to bedrock	0.54
Woolwine	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.10	Slope	0.37
					Rock fragments	0.50
	Droughty	0.34				
NkA:						
Nikwasi	Fair		Poor		Poor	
	Too acid	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.75			Rock fragments	0.99
NnD:						
Northcove	Poor		Poor		Poor	
	Stone content	0.00	Stone content	0.00	Slope	0.00
	Cobble content	0.08	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
	Too acid	0.50	Slope	0.08		
					Rock fragments	0.00

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
NnE:						
Northcove	Poor		Poor		Poor	
	Stone content	0.00	Slope	0.00	Slope	0.00
	Cobble content	0.08	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
	Too acid	0.50	Cobble content	0.00	Rock fragments	0.00
PaC2:						
Pacolet	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.54			Too acid	0.98
PaD2:						
Pacolet	Poor		Fair		Poor	
	Too clayey	0.00	Slope	0.50	Slope	0.00
	Low content of organic matter	0.12			Too clayey	0.00
	Too acid	0.54			Too acid	0.98
PnC:						
Pineola	Fair		Poor		Fair	
	Droughty	0.30	Depth to bedrock	0.00	Slope	0.37
	Too acid	0.50	Low strength	0.22	Rock fragments	0.50
	Low content of organic matter	0.50			Depth to bedrock	0.58
PnD:						
Pineola	Fair		Poor		Poor	
	Droughty	0.30	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Rock fragments	0.50
	Low content of organic matter	0.50	Low strength	0.22	Depth to bedrock	0.58
Qu:						
Pits	Not rated		Not rated		Not rated	
RhD:						
Rhodhiss	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.50	Slope	0.00
	Too acid	0.68				
RhE:						
Rhodhiss	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.68				
RoE:						
Rhodhiss	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.68				
Bannertown	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.00	Rock fragments	0.12
	Too acid	0.50			Depth to bedrock	0.58

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
RsE:						
Rion	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Too acid	0.68				
Cliffside	Fair		Poor		Poor	
	Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.00	Rock fragments	0.00
					Depth to bedrock	0.58
	Too acid	0.50				
SoC:						
Soco	Fair		Poor		Fair	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Rock fragments	0.04
					Slope	0.37
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
Ditney	Fair		Poor		Fair	
	Droughty	0.18	Depth to bedrock	0.00	Slope	0.37
	Too acid	0.50			Depth to bedrock	0.58
	Low content of organic matter	0.50			Too acid	0.59
SoD:						
Soco	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.08	Rock fragments	0.04
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
Ditney	Fair		Poor		Poor	
	Droughty	0.18	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.08	Depth to bedrock	0.58
	Low content of organic matter	0.50			Too acid	0.59
SoE, SoF:						
Soco	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.00	Rock fragments	0.04
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
Ditney	Fair		Poor		Poor	
	Droughty	0.18	Depth to bedrock	0.00	Slope	0.00
	Too acid	0.50	Slope	0.00	Depth to bedrock	0.58
	Low content of organic matter	0.50			Too acid	0.59
SsC:						
Stecoah	Fair		Fair		Fair	
	Too acid	0.08	Depth to bedrock	0.58	Slope	0.37
	Low content of organic matter	0.88			Too acid	0.50

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
Soco----------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Rock fragments	0.04
					Slope	0.37
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
SsD:						
Stecoah-------------	Fair		Fair		Poor	
	Too acid	0.08	Slope	0.08	Slope	0.00
	Low content of organic matter	0.88	Depth to bedrock	0.58	Too acid	0.50
Soco----------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.08	Rock fragments	0.04
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
SsE:						
Stecoah-------------	Fair		Poor		Poor	
	Too acid	0.08	Slope	0.00	Slope	0.00
	Low content of organic matter	0.88	Depth to bedrock	0.58	Too acid	0.50
Soco----------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
			Slope	0.00	Rock fragments	0.04
	Droughty	0.32			Too acid	0.50
	Too acid	0.50				
TaC:						
Tate----------------	Fair		Good		Poor	
	Low content of organic matter	0.50			Rock fragments	0.00
					Slope	0.37
	Too acid	0.68			Hard to reclaim (rock fragments)	0.82
TeB:						
Tate----------------	Fair		Good		Poor	
	Low content of organic matter	0.50			Rock fragments	0.00
					Hard to reclaim (rock fragments)	0.82
	Too acid	0.68				
ToB:						
Toast---------------	Fair		Good		Fair	
	Too acid	0.12			Too acid	0.59
	Low content of organic matter	0.12				
ToC:						
Toast---------------	Fair		Good		Fair	
	Too acid	0.12			Slope	0.37
	Low content of organic matter	0.12			Too acid	0.59
Ud:						
Udorthents----------	Not rated		Not rated		Poor	
					Slope	0.00

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
UnB:						
Unison	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.98
	Too acid	0.54				
UnC:						
Unison	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.63
	Too acid	0.54			Too acid	0.98
UnD:						
Unison	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.50	Too clayey	0.00
	Too acid	0.54			Slope	0.98
Ur:						
Urban land	Not rated		Not rated		Not rated	
Udorthents	Not rated		Not rated		Poor	
					Slope	0.00
WeC:						
Whiteoak	Fair		Good		Fair	
	Too acid	0.32			Slope	0.37
	Low content of organic matter	0.88			Too acid	0.88
WhD:						
Whiteoak	Fair		Fair		Poor	
	Too acid	0.32	Slope	0.08	Slope	0.00
	Low content of organic matter	0.88			Too acid	0.88
WoB2:						
Woolwine	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.10	Rock fragments	0.50
	Droughty	0.34			Depth to bedrock	0.58
Fairview	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.68
	Too acid	0.50				
WoC2:						
Woolwine	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.10	Slope	0.37
	Droughty	0.34			Rock fragments	0.50

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
Fairview------------	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.50			Too acid	0.68
WoD2:						
Woolwine------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
	Low content of organic matter	0.12	Low strength	0.10	Too clayey	0.00
	Droughty	0.34	Slope	0.50	Rock fragments	0.50
Fairview------------	Poor		Fair		Poor	
	Too clayey	0.00	Slope	0.50	Slope	0.00
	Low content of organic matter	0.12			Too clayey	0.00
	Too acid	0.50			Too acid	0.68
WwB:						
Woolwine------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.10	Rock fragments	0.50
	Droughty	0.34			Depth to bedrock	0.58
Fairview------------	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Too acid	0.68
	Too acid	0.50				
Urban land----------	Not rated		Not rated		Not rated	
WwC:						
Woolwine------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.10	Slope	0.37
	Droughty	0.34			Rock fragments	0.50
Fairview------------	Poor		Good		Poor	
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.12			Slope	0.37
	Too acid	0.50			Too acid	0.68
Urban land----------	Not rated		Not rated		Not rated	

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
AaA:						
Arkaqua	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
AbE:						
Ashe	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.04		
	Depth to bedrock	0.85				
Chestnut	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.03		
	Depth to bedrock	0.11				
Buladean	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	0.88				
	Depth to bedrock	0.01				
AcF:						
Ashe	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00	Seepage	0.04		
	Depth to bedrock	0.85				
Chestnut	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00	Seepage	0.03		
	Depth to bedrock	0.11				
Buladean	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	1.00				
	Depth to bedrock	0.01				
AsF:						
Ashe	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00	Seepage	0.04		
	Depth to bedrock	0.85				
Cleveland	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
	Slope	1.00	Seepage	0.04		
Rock outcrop	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	No ground water	1.00
	Slope	1.00	Thin layer	1.00		
BaB:						
Banister	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.17		

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
BoB:						
Biltmore------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.10	Cutbanks cave	1.00
			Depth to saturated zone	0.09	Depth to water	0.54
BrD:						
Braddock------------	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.20				
BvB:						
Brevard-------------	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
CaB2:						
Cecil---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.53	No ground water	1.00
			Seepage	0.04		
CeD:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.21	Seepage	0.03		
	Depth to bedrock	0.11				
Ashe----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85	Seepage	0.04		
	Slope	0.21				
CeE:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.03		
	Depth to bedrock	0.11				
Ashe----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.04		
	Depth to bedrock	0.85				
ChC:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11	Seepage	0.03		
	Slope	0.01				
Buladean------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	0.01				
	Depth to bedrock	0.01				
ChD:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.21	Seepage	0.03		
	Depth to bedrock	0.11				

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
Buladean------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	0.21				
	Depth to bedrock	0.01				
CkE:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.03		
	Depth to bedrock	0.11				
Buladean------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	0.88				
	Depth to bedrock	0.01				
CkF:						
Chestnut------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00	Seepage	0.03		
	Depth to bedrock	0.11				
Buladean------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.11	No ground water	1.00
	Slope	1.00				
	Depth to bedrock	0.01				
CmA:						
Chewacla------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.97		
CpD:						
Cliffield-----------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.85	Thin layer	0.85	No ground water	1.00
	Seepage	0.70	Content of large stones	0.82		
	Slope	0.21				
Pigeonroost---------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.21	Thin layer	0.85		
	Depth to bedrock	0.11				
CpE:						
Cliffield-----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85	Content of large stones	0.82		
	Seepage	0.70				
Pigeonroost---------	Somewhat limited		Very limited		Very limited	
	Slope	0.88	Piping	1.00	No ground water	1.00
	Seepage	0.70	Thin layer	0.85		
	Depth to bedrock	0.11				
CpF:						
Cliffield-----------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85	Content of large stones	0.82		
	Seepage	0.70				

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
Pigeonroost----------	Very limited		Very limited		Very limited	
	Slope	1.00	Piping	1.00	No ground water	1.00
	Seepage	0.70	Thin layer	0.85		
	Depth to bedrock	0.11				
CvA:						
Colvard-------------	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Seepage	0.04	Depth to water	0.81
					Cutbanks cave	0.10
CyE:						
Crossnore-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88	Seepage	0.11		
	Depth to bedrock	0.11				
Jeffrey-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85				
	Seepage	0.70				
CyF:						
Crossnore-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00	Seepage	0.11		
	Depth to bedrock	0.11				
Jeffrey-------------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85				
	Seepage	0.70				
DaB:						
Dillard-------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	0.99	Slow refill	0.30
					Cutbanks cave	0.10
					Depth to water	0.01
DrF:						
Ditney--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00				
	Depth to bedrock	0.85				
Unicoi--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
	Slope	1.00	Content of large stones	0.69		
			Seepage	0.01		
Rock outcrop--------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	No ground water	1.00
	Slope	1.00	Thin layer	1.00		
EdC:						
Edneytown-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.03	No ground water	1.00
	Slope	0.01				

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
Pigeonroost----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Depth to bedrock	0.11	Thin layer	0.85		
	Slope	0.01				
EdD:						
Edneytown-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.03	No ground water	1.00
	Slope	0.21				
Pigeonroost----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.21	Thin layer	0.85		
	Depth to bedrock	0.11				
EdE:						
Edneytown-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.03	No ground water	1.00
	Slope	0.88				
Pigeonroost----------	Somewhat limited		Very limited		Very limited	
	Slope	0.88	Piping	1.00	No ground water	1.00
	Seepage	0.70	Thin layer	0.85		
	Depth to bedrock	0.11				
EuF:						
Evard---------------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Seepage	0.04	No ground water	1.00
	Seepage	0.70				
Cowee---------------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Thin layer	0.85	No ground water	1.00
	Seepage	0.70				
	Depth to bedrock	0.11				
EvC:						
Evard---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
	Slope	0.01				
Cowee---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				
	Slope	0.01				
EvD:						
Evard---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
	Slope	0.21				
Cowee---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Slope	0.21				
	Depth to bedrock	0.11				
EvE:						
Evard---------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Seepage	0.04	No ground water	1.00
	Seepage	0.70				

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
Cowee----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Thin layer	0.85	No ground water	1.00
	Seepage	0.70				
	Depth to bedrock	0.11				
FaB2:						
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
FaC2:						
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.01				
FaD2:						
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.12				
FeB:						
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
Urban land----------	Not limited		Not rated		Not rated	
FeC:						
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.01				
Urban land----------	Somewhat limited		Not rated		Not rated	
	Slope	0.01				
FnA:						
Fluvaquents---------	Not limited		Not rated		Not rated	
Udifluvents---------	Not limited		Not rated		Not rated	
FoB:						
Fontaflora----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.66	Cutbanks cave	1.00
			Depth to saturated zone	0.46	Depth to water	0.24
Ostin---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.99	Content of large stones	1.00
			Seepage	0.50	Depth to water	0.01
GcD:						
Greenlee------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.21	Seepage	0.03		

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
GrD:						
Greenlee	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.21	Seepage	0.03		
Tate	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.21				
GrE:						
Greenlee	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.88	Seepage	0.03		
Tate	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.88				
GtC:						
Greenlee	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.01	Seepage	0.03		
Tate	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.01				
Ostin	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.99	Content of large stones	1.00
			Seepage	0.50	Depth to water	0.01
HaA:						
Hatboro	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
IoA:						
Iotla	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.31		
MaD:						
Maymead	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.08				
MeD:						
Meadowfield	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.85	Thin layer	0.85	No ground water	1.00
	Seepage	0.70	Content of large stones	0.82		
	Slope	0.21				

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
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.12				
MoE:						
Meadowfield---------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85	Content of large stones	0.82		
	Seepage	0.70				
Rhodhiss------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.02	No ground water	1.00
	Slope	0.94				
MwC:						
Meadowfield---------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.86	Thin layer	0.86	No ground water	1.00
	Seepage	0.70	Content of large stones	0.85		
	Slope	0.01				
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				
	Slope	0.01				
NkA:						
Nikwasi-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Thin layer	0.86		
			Seepage	0.79		
NnD:						
Northcove-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.21				
NnE:						
Northcove-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Content of large stones	1.00	No ground water	1.00
	Slope	0.88				
PaC2:						
Pacolet-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
	Slope	0.01				
PaD2:						
Pacolet-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
	Slope	0.12				
PnC:						
Pineola-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.98	No ground water	1.00
	Depth to bedrock	0.11	Thin layer	0.85		
	Slope	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
PnD:						
Pineola	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.98	No ground water	1.00
	Slope	0.21	Thin layer	0.85		
	Depth to bedrock	0.11				
Qu:						
Pits	Very limited		Not rated		Not rated	
	Depth to bedrock	1.00				
	Slope	1.00				
RhD:						
Rhodhiss	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.02	No ground water	1.00
	Slope	0.12				
RhE:						
Rhodhiss	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.02	No ground water	1.00
	Slope	0.82				
RoE:						
Rhodhiss	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.02	No ground water	1.00
	Slope	0.82				
Bannertown	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85	Seepage	0.03		
	Slope	0.82				
RsE:						
Rion	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.03	No ground water	1.00
	Slope	0.94				
Cliffside	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.94	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85				
	Seepage	0.70				
SoC:						
Soco	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Depth to bedrock	0.11	Thin layer	0.85		
	Slope	0.01				
Ditney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85				
	Slope	0.01				
SoD:						
Soco	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.21	Thin layer	0.85		
	Depth to bedrock	0.11				

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
Ditney--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.85				
	Slope	0.21				
SoE:						
Soco----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.88	Thin layer	0.85		
	Depth to bedrock	0.11				
Ditney--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	0.88				
	Depth to bedrock	0.85				
SoF:						
Soco----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	1.00	Thin layer	0.85		
	Depth to bedrock	0.11				
Ditney--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.85	No ground water	1.00
	Slope	1.00				
	Depth to bedrock	0.85				
SsC:						
Stecoah-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.01	Thin layer	0.11		
	Depth to bedrock	0.01				
Soco----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Depth to bedrock	0.11	Thin layer	0.85		
	Slope	0.01				
SsD:						
Stecoah-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.21	Thin layer	0.11		
	Depth to bedrock	0.01				
Soco----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.21	Thin layer	0.85		
	Depth to bedrock	0.11				
SsE:						
Stecoah-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.88	Thin layer	0.11		
	Depth to bedrock	0.01				
Soco----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
	Slope	0.88	Thin layer	0.85		
	Depth to bedrock	0.11				

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
TaC:						
Tate----------------	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
	Slope	0.01				
TeB:						
Tate----------------	Very limited		Not limited		Very limited	
	Seepage	1.00			No ground water	1.00
ToB:						
Toast---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
ToC:						
Toast---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Seepage	0.04	No ground water	1.00
	Slope	0.01				
Ud:						
Udorthents----------	Somewhat limited		Not rated		Not rated	
	Seepage	0.43				
	Slope	0.28				
UnB:						
Unison--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.01	No ground water	1.00
UnC:						
Unison--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.01	No ground water	1.00
	Slope	0.01				
UnD:						
Unison--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.01	No ground water	1.00
	Slope	0.12				
Ur:						
Urban land----------	Somewhat limited		Not rated		Not rated	
	Slope	0.20				
Udorthents----------	Somewhat limited		Not rated		Not rated	
	Seepage	0.43				
	Slope	0.20				
WeC:						
Whiteoak------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.01				
WhD:						
Whiteoak------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.21				
WoB2:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				

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
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
WoC2:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				
	Slope	0.01				
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.01				
WoD2:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Slope	0.12				
	Depth to bedrock	0.11				
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.12				
WwB:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
Urban land----------	Not limited		Not rated		Not rated	
WwC:						
Woolwine------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Thin layer	0.85	No ground water	1.00
	Depth to bedrock	0.11				
	Slope	0.01				
Fairview------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
	Slope	0.01				
Urban land----------	Somewhat limited		Not rated		Not rated	
	Slope	0.01				

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	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AaA:												
Arkaqua---------	0-9	Loam	SM	A-2, A-4	0	0	98-100	95-100	60-90	30-50	0-35	NP-7
	9-36	Clay loam, sandy clay loam	MH, ML	A-4, A-5, A-6, A-7	0	0	90-100	85-100	65-100	30-80	35-55	4-20
	36-40	Clay loam, sandy clay loam	MH, ML	A-4, A-5, A-6, A-7	0	0	90-100	85-100	65-100	30-80	35-55	4-20
	40-48	Fine sandy loam, sandy clay loam, loam, sandy loam, clay loam	SM, CL-ML, ML	A-4	0	0	96-100	75-100	55-100	30-90	0-35	NP-7
	48-53	Variable			---	---	---	---	---	---	---	---
	53-60	Variable			---	---	---	---	---	---	---	---
AbE:												
Ashe------------	0-3	Gravelly sandy loam	SM, SC-SM	A-2, A-4	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	3-25	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-5	5-30	85-100	80-95	60-95	35-49	25-35	NP-7
	25-32	Weathered bedrock			---	---	---	---	---	---	---	---
	32-60	Unweathered bedrock			---	---	---	---	---	---	---	---

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	
Chestnut--------	0-2	Fine sandy loam	ML, SC-SM, SM, CL-ML	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---
Buladean--------	0-2	Fine sandy loam	SM, SC, CL, ML	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	SC, ML, SM, CL	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---

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	
AcF:												
Ashe------------	0-3	Gravelly sandy loam	SC-SM, SM	A-2, A-4	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	3-25	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-4	0-5	5-30	85-100	80-95	60-95	35-49	25-35	NP-7
	25-32	Weathered bedrock			---	---	---	---	---	---	---	---
	32-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Chestnut--------	0-2	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Buladean--------	0-2	Fine sandy loam	SC, CL, ML, SM	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	CL, ML, SM, SC	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---
AsF:												
Ashe------------	0-3	Gravelly sandy loam	SM, SC-SM	A-2, A-4	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	3-25	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-5	5-30	85-100	80-95	60-95	35-49	25-35	NP-7
	25-32	Weathered bedrock			---	---	---	---	---	---	---	---
	32-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Cleveland-------	0-3	Gravelly sandy loam	GM, SM	A-1, A-2, A-4	0-2	2-10	65-90	50-80	45-75	20-40	0-25	NP-3
	3-16	Gravelly sandy loam	GM, SM	A-1, A-2, A-4	0-2	2-10	65-90	50-80	45-75	20-40	0-25	NP-3
	16-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			0	0	0	0	0	0	0-0	NP

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	
BaB:												
Banister--------	0-7	Loam	CL, ML, SC, SM	A-4	0	0	95-100	75-100	60-100	40-85	0-30	NP-10
	7-10	Sandy clay loam, loam, sandy loam	SM, SC-SM, ML, CL	A-4, A-6, A-7-6	0	0	96-100	95-100	60-100	36-70	20-45	2-15
	10-31	Clay, sandy clay	SC, CH, CL	A-6, A-7	0	0	95-100	75-100	65-100	40-90	35-60	16-40
	31-41	Clay loam, clay, sandy clay	CH, CL, SC	A-6, A-7	0	0	95-100	75-100	65-100	40-90	35-60	16-40
	41-60	Sandy clay loam	SC-SM, SC, SM, SP-SM	A-1, A-2, A-4	0	0	80-100	60-100	35-100	10-40	0-30	NP-10
BoB:												
Biltmore--------	0-10	Loamy sand	SM, SP-SM	A-2-4	0	0-5	95-100	90-100	55-88	10-35	10-20	NP
	10-60	Loamy sand, sand, fine sand	SM, SP-SM	A-2-4, A-3	0	0-8	95-100	85-100	55-96	5-35	10-20	NP
BrD:												
Braddock--------	0-2	Fine sandy loam	SM, SC, ML, CL	A-2, A-4	0	0-5	85-100	75-100	50-85	25-65	15-30	NP-10
	2-6	Fine sandy loam, sandy loam, loam	CL, ML, SC, SM	A-2, A-4	0-7	0-25	85-100	75-100	45-95	15-75	0-30	NP-10
	6-41	Sandy clay, clay loam, clay	CH, CL, SC, GC	A-2, A-7	0	0-5	80-100	75-100	25-95	20-90	42-66	15-35
	41-79	Fine sandy loam, sandy loam, loam	CL, ML, SC, SM	A-2, A-4	0-7	0-25	85-100	75-100	45-95	15-75	0-30	NP-10
BvB:												
Brevard---------	0-5	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0-4	0-10	90-100	75-100	50-80	30-50	25-35	NP-7
	5-23	Sandy clay loam, clay loam, silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0-5	0-10	95-100	95-100	85-97	51-75	29-50	5-15
	23-35	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0-4	0-10	90-100	75-100	50-80	30-50	25-35	NP-7
	35-79	Variable			---	---	---	---	---	---	---	---

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	
CaB2:												
Cecil-----------	0-6	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	6-39	Sandy clay, clay loam, clay	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	39-65	Clay loam, sandy clay loam, sandy loam	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	65-72	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
CeD:												
Chestnut--------	0-2	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Ashe------------	0-3	Gravelly sandy loam	SM, SC-SM	A-2, A-4	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	3-25	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-5	5-30	85-100	80-95	60-95	35-49	25-35	NP-7
	25-32	Weathered bedrock			---	---	---	---	---	---	---	---
	32-60	Unweathered bedrock			---	---	---	---	---	---	---	---
CeE:												
Chestnut--------	0-2	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Ashe------------	0-3	Gravelly sandy loam	SM, SC-SM	A-2, A-4	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	3-25	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-4	0-5	5-30	85-100	80-95	60-95	35-49	25-35	NP-7
	25-32	Weathered bedrock			---	---	---	---	---	---	---	---
	32-60	Unweathered bedrock			---	---	---	---	---	---	---	---
ChC:												
Chestnut--------	0-2	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Buladean--------	0-2	Fine sandy loam	CL, ML, SC, SM	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	SM, SC, ML, CL	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---
ChD:												
Chestnut--------	0-2	Fine sandy loam	CL-ML, SC-SM, ML, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Buladean--------	0-2	Fine sandy loam	SM, SC, ML, CL	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	ML, SM, SC, CL	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---
CkE:												
Chestnut--------	0-2	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Buladean--------	0-2	Fine sandy loam	SC, CL, SM, ML	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	SC, CL, ML, SM	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---
CkF: Chestnut--------	0-2	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	2-6	Gravelly sandy loam, sandy loam, fine sandy loam	SM, SC-SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	6-26	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	26-32	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	32-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Buladean--------	0-2	Fine sandy loam	ML, SC, SM, CL	A-2-4, A-4	0-2	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	2-24	Loam, sandy loam, coarse sandy loam	CL, ML, SC, SM	A-2-4, A-4	0-1	0-5	90-100	85-100	60-90	30-75	25-40	NP-10
	24-39	Loam, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-5	80-100	75-100	60-95	20-49	15-30	NP-7
	39-51	Gravelly fine sandy loam, gravelly sandy loam, gravelly loam, sandy loam, fine sandy loam, loam	SM, SC-SM	A-2, A-4, A-5	0-30	0-30	85-100	50-90	30-85	15-65	20-45	NP-10
	51-79	Weathered bedrock			---	---	---	---	---	---	---	---
CmA:												
Chewacla--------	0-6	Loam	CL, ML, CL-ML	A-4, A-6, A-7	0	0	98-100	95-100	70-100	55-90	25-49	4-20
	6-16	Silt loam, silty clay loam, clay loam	ML, CL	A-4, A-6, A-7	0	0	96-100	95-100	80-100	51-98	30-49	4-22
	16-23	Sandy clay loam, sandy loam, clay loam	CL, SM, SC-SM, ML	A-4, A-6, A-7-6	0	0	96-100	95-100	60-100	36-70	20-45	2-15
	23-41	Silt loam, clay loam, silty clay loam	MH, CL, CH, ML	A-4, A-6, A-7	0	0	85-100	75-100	60-100	51-98	22-61	4-28
	41-79	Sandy loam, fine sandy loam, loam, sandy clay loam, clay loam	SM, SC-SM, SC, ML, CL	A-2-4, A-4, A-6, A-7-6	0	0	80-100	75-100	45-100	25-80	7-45	NP-18

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	
CpD:												
Cliffield-------	0-2	Gravelly sandy loam	ML, SM	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	CL, GM, ML, SM	A-2, A-4, A-6, A-7	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	SM, CL, ML, GM	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Pigeonroost-----	0-1	Fine sandy loam	CL, SM, SC, ML	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	SM, SC, ML, CL	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	ML, CL, SC, SM	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---

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	
CpE:												
Cliffield-------	0-2	Gravelly sandy loam	ML, SM	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	SM, ML, CL, GM	A-2, A-4, A-6, A-7	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	SM, GM, ML, CL	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Pigeonroost-----	0-1	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	SC, CL, SM, ML	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---

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	
CpF:												
Cliffield-------	0-2	Gravelly sandy loam	ML, SM	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	CL, GM, ML, SM	A-2, A-4, A-6, A-7	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	ML, GM, CL, SM	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Pigeonroost-----	0-1	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	SM, SC, ML, CL	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---
CvA:												
Colvard---------	0-10	Sandy loam	SM, SC-SM, SC	A-2, A-4	0	0-5	98-100	85-100	60-85	25-49	15-30	NP-10
	10-44	Fine sandy loam, sandy loam, loam	SM, SC-SM, SC	A-4, A-2	0	0-5	98-100	85-100	60-85	25-49	15-30	NP-10
	44-79	Fine sandy loam, sandy loam, loam	SP-SM, SM, GP-GM, GM	A-1, A-2	0	0-5	98-100	85-100	25-85	10-35	10-14	NP

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	
CyE:												
Crossnore-------	0-7	Gravelly sandy loam	SC-SM, SM	A-2, A-4	0-5	2-15	75-95	65-90	60-85	30-49	15-30	NP-7
	7-16	Gravelly sandy loam, gravelly loam, loam	SM, SC, SC-SM	A-2, A-4	0-2	0-20	75-98	65-95	60-85	30-49	15-30	NP-10
	16-22	Gravelly loamy sand, gravelly sandy loam, gravelly loam	SM, SC-SM	A-2-4, A-4	0-5	0-20	75-95	65-90	50-85	15-49	15-30	NP-7
	22-30	Gravelly loamy sand, gravelly sandy loam, gravelly loam	SM, SC-SM	A-2-4, A-4	0-5	0-20	75-95	65-90	50-85	15-49	15-30	NP-7
	30-79	Weathered bedrock			---	---	---	---	---	---	---	---
Jeffrey---------	0-5	Gravelly sandy loam	GC-GM, SM, SC, SC-SM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	5-9	Gravelly sandy loam	SM, SC-SM, SC, GC-GM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	9-20	Gravelly loam, gravelly sandy loam, sandy loam	SM, SC-SM, GC-GM, SC	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	20-31	Gravelly loam, gravelly sandy loam, sandy loam	SC-SM, SM, SC, GC-GM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	31-36	Unweathered bedrock			---	---	---	---	---	---	---	---

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	
CyF:												
Crossnore-------	0-7	Gravelly sandy loam	SC-SM, SM	A-2, A-4	0-5	2-15	75-95	65-90	60-85	30-49	15-30	NP-7
	7-16	Gravelly sandy loam, gravelly loam, loam	SC-SM, SC, SM	A-2, A-4	0-2	0-20	75-98	65-95	60-85	30-49	15-30	NP-10
	16-22	Gravelly loamy sand, gravelly sandy loam, gravelly loam	SC-SM, SM	A-2-4, A-4	0-5	0-20	75-95	65-90	50-85	15-49	15-30	NP-7
	22-30	Gravelly loamy sand, gravelly sandy loam, gravelly loam	SM, SC-SM	A-2-4, A-4	0-5	0-20	75-95	65-90	50-85	15-49	15-30	NP-7
	30-79	Weathered bedrock			---	---	---	---	---	---	---	---
Jeffrey---------	0-5	Gravelly sandy loam	SM, GC-GM, SC, SC-SM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	5-9	Gravelly sandy loam	GC-GM, SC, SC-SM, SM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	9-20	Gravelly loam, gravelly sandy loam, sandy loam	GC-GM, SC-SM, SM, SC	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	20-31	Gravelly loam, gravelly sandy loam, sandy loam	SM, SC-SM, SC, GC-GM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	31-36	Unweathered bedrock			---	---	---	---	---	---	---	---
DaB:												
Dillard---------	0-9	Fine sandy loam	CL, SC, SM, ML	A-4, A-2	0	0-2	95-100	95-100	60-90	30-55	0-35	NP-10
	9-24	Clay loam, sandy clay loam, loam	CL, ML, SC	A-4, A-6, A-7	0	0-2	95-100	85-100	60-95	45-70	30-45	7-22
	24-42	Clay loam, sandy clay loam, loam	CL, ML, SC	A-4, A-6, A-7	0	0-2	95-100	85-100	60-95	45-70	30-45	7-22
	42-46	Variable			---	---	---	---	---	---	---	---
	46-79	Variable			---	---	---	---	---	---	---	---

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	Plas- ticity index
	In				Pct	Pct					Pct	
DrF:												
Ditney----------	0-5	Fine sandy loam	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	5-7	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	7-27	Loam, sandy loam, fine sandy loam	CL-ML, SM, SC-SM, ML	A-2-4, A-4	0	0-5	90-100	80-95	65-80	30-60	0-30	NP-10
	27-34	Sandy loam, loam, loamy fine sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP
	34-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Unicoi----------	0-4	Gravelly fine sandy loam	SC-SM, SM	A-4, A-2	10-15	5-15	80-90	75-90	65-90	30-49	25-35	NP-7
	4-18	Very cobbly loam, very cobbly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2	0-15	20-50	60-75	40-65	30-50	20-35	0-25	NP-6
	18-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			0	0	0	0	0	0	0-0	NP
EdC:												
Edneytown-------	0-3	Loam	SM, CL-ML, ML, SC-SM	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	3-13	Loam, sandy loam	SC-SM, SM, ML, CL-ML	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	13-33	Sandy clay loam, clay loam	CL, SC, CL-ML	A-4, A-6	0	0	98-100	95-100	80-97	45-75	25-35	5-15
	33-51	Sandy loam, sandy clay loam, loam	SM, SC, ML, CL	A-2, A-4	0	0	98-100	95-100	65-85	30-55	0-25	NP-9
	51-79	Loamy sand, sandy loam, loam	SC-SM, ML, CL-ML, SM	A-2, A-4	0	0	98-100	95-100	50-90	15-70	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	
Pigeonroost-----	0-1	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	ML, SM, SC, CL	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	SC, ML, CL, SM	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---
EdD:												
Edneytown-------	0-3	Loam	CL-ML, ML, SC-SM, SM	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	3-13	Sandy loam, loam	CL-ML, ML, SC-SM, SM	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	13-33	Sandy clay loam, clay loam	CL, CL-ML, SC	A-4, A-6	0	0	98-100	95-100	80-97	45-75	25-35	5-15
	33-51	Sandy loam, sandy clay loam, loam	SM, SC, ML, CL	A-2, A-4	0	0	98-100	95-100	65-85	30-55	0-25	NP-9
	51-79	Loamy sand, sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	98-100	95-100	50-90	15-70	0-25	NP-7
Pigeonroost-----	0-1	Fine sandy loam	CL, ML, SM, SC	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	CL, ML, SM, SC	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	SM, SC, ML, CL	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---

Engineering Soil Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
EdE:												
Edneytown-------	0-3	Loam	CL-ML, ML, SC-SM, SM	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	3-13	Sandy loam, loam	CL-ML, SM, ML, SC-SM	A-4	0-1	0-2	95-100	90-100	70-85	40-70	0-25	NP-7
	13-33	Sandy clay loam, clay loam	SC, CL, CL-ML	A-4, A-6	0	0	98-100	95-100	80-97	45-75	25-35	5-15
	33-51	Sandy loam, sandy clay loam, loam	CL, ML, SC, SM	A-2, A-4	0	0	98-100	95-100	65-85	30-55	0-25	NP-9
	51-79	Loamy sand, sandy loam, loam	SC-SM, SM, ML, CL-ML	A-2, A-4	0	0	98-100	95-100	50-90	15-70	0-25	NP-7
Pigeonroost-----	0-1	Fine sandy loam	ML, CL, SC, SM	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	1-4	Fine sandy loam	SC, SM, ML, CL	A-2, A-4	0-1	0-15	90-100	85-100	60-90	30-75	20-30	NP-10
	4-27	Loam, sandy clay loam, gravelly sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	27-79	Weathered bedrock			---	---	---	---	---	---	---	---
EuF:												
Evard-----------	0-2	Fine sandy loam	SM, ML	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	2-6	Fine sandy loam	SM, ML	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	6-26	Sandy clay loam, clay loam	ML, SC, SM, CL	A-2, A-4, A-6, A-7-6	0	0-2	90-100	85-100	60-95	30-70	25-45	7-18
	26-32	Sandy loam, loam, sandy clay loam	CL, SC, SM, ML	A-2, A-4	0	0-5	80-100	75-100	60-95	20-55	0-25	NP-9
	32-79	Sandy loam, loam, loamy sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP

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	
Cowee-----------	0-3	Gravelly loam	ML, SC-SM, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	3-7	Gravelly loam, very gravelly loam, cobbly loam	SM, GM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	7-15	Gravelly loam, very gravelly loam, cobbly loam	SM, GM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	15-23	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SC, SM, ML, CL	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	23-45	Weathered bedrock			---	---	---	---	---	---	---	---
EvC: Evard-----------	0-2	Fine sandy loam	ML, SM	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	2-6	Fine sandy loam	SM, ML	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	6-26	Sandy clay loam, clay loam	SC, SM, ML, CL	A-2, A-4, A-6, A-7-6	0	0-2	90-100	85-100	60-95	30-70	25-45	7-18
	26-32	Sandy loam, loam, sandy clay loam	ML, CL, SM, SC	A-2, A-4	0	0-5	80-100	75-100	60-95	20-55	0-25	NP-9
	32-79	Sandy loam, loam, loamy sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP

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	
Cowee-----------	0-3	Gravelly loam	SM, ML, SC-SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	3-7	Gravelly loam, very gravelly loam, cobbly loam	GM, SM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	7-15	Gravelly loam, very gravelly loam, cobbly loam	GM, SM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	15-23	Gravelly sandy clay loam, gravelly sandy loam, clay loam	ML, CL, SM, SC	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	23-45	Weathered bedrock			---	---	---	---	---	---	---	---
EvD:												
Evard-----------	0-2	Fine sandy loam	SM, ML	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	2-6	Fine sandy loam	ML, SM	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	6-26	Sandy clay loam, clay loam	CL, ML, SC, SM	A-2, A-4, A-6, A-7-6	0	0-2	90-100	85-100	60-95	30-70	25-45	7-18
	26-32	Sandy loam, loam, sandy clay loam	SM, CL, SC, ML	A-2, A-4	0	0-5	80-100	75-100	60-95	20-55	0-25	NP-9
	32-79	Sandy loam, loam, loamy sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP

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	
Cowee-----------	0-3	Gravelly loam	SC-SM, SM, ML	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	3-7	Gravelly loam, very gravelly loam, cobbly loam	SM, GM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	7-15	Gravelly loam, very gravelly loam, cobbly loam	SM, GM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	15-23	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SM, SC, CL, ML	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	23-45	Weathered bedrock			---	---	---	---	---	---	---	---
EvE:												
Evard-----------	0-2	Fine sandy loam	ML, SM	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	2-6	Fine sandy loam	SM, ML	A-2, A-4	0	0-5	80-100	75-100	65-90	20-60	0-35	NP-9
	6-26	Sandy clay loam, clay loam	SM, SC, ML, CL	A-2, A-4, A-6, A-7-6	0	0-2	90-100	85-100	60-95	30-70	25-45	7-18
	26-32	Sandy loam, loam, sandy clay loam	ML, SC, SM, CL	A-2, A-4	0	0-5	80-100	75-100	60-95	20-55	0-25	NP-9
	32-79	Sandy loam, loam, loamy sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP

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	
Cowee-----------	0-3	Gravelly loam	ML, SC-SM, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	3-7	Gravelly loam, very gravelly loam, cobbly loam	GM, SM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	7-15	Gravelly loam, very gravelly loam, cobbly loam	GM, SM	A-1, A-2-4	0-15	5-50	30-70	30-70	25-45	12-35	20-35	NP-7
	15-23	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SC, ML, CL, SM	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	23-45	Weathered bedrock			---	---	---	---	---	---	---	---
FaB2: Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL-ML, SC, SC-SM, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
FaC2: Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6

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	
FaD2:												
Fairview--------	0-7	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
FeB:												
Fairview--------	0-7	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
Urban land------	0-6	Variable			---	---	---	---	---	---	---	---
FeC:												
Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	ML, CL, MH	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
Urban land------	0-6	Variable			---	---	---	---	---	---	---	---

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	
FnA:												
Fluvaquents-----	---	---	---	---	---	---	---	---	---	---	---	---
Udifluvents-----	---	---	---	---	---	---	---	---	---	---	---	---
FoB:												
Fontaflora------	0-5	Sandy loam	SC-SM, CL-ML, ML, SM	A-2-4, A-4	0	0-5	90-100	80-100	55-95	20-70	15-30	NP-7
	5-20	Sandy loam, fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	90-100	75-100	55-85	20-50	15-25	NP-7
	20-36	Loamy sand, sand, coarse sand	SP-SM	A-1-b, A-2-4, A-3	0	0-5	80-100	80-100	45-55	5-15	10-14	NP
	36-60	Extremely cobbly coarse sand, very cobbly sand, very gravelly sand	GW-GM, GW, GP-GM, GP	A-1-a, A-1-b	0-10	10-70	25-70	15-60	3-40	0-7	10-14	NP
Ostin-----------	0-6	Very cobbly loamy sand	SM	A-1-b, A-2-4	0-15	15-50	80-95	70-85	40-70	15-30	10-25	NP-3
	6-35	Extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly coarse sand	GP, GW-GM, GP-GM, GW	A-1-a, A-1-b	0-15	20-75	25-70	15-40	3-40	1-10	---	NP
	35-44	Sandy loam	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0-5	90-100	80-100	55-95	20-70	15-30	NP-7
	44-50	Extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly coarse sand	GW-GM, GW, GP, GP-GM	A-1-a, A-1-b	0-15	20-75	25-70	15-40	3-40	1-10	---	NP

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	
GcD:												
Greenlee--------	0-2	Very cobbly sandy loam	SM, GM	A-1-b, A-2-4, A-4	5-10	20-55	50-100	50-100	30-85	20-45	15-30	NP-7
	2-80	Very cobbly sandy loam, very stony sandy loam	SM, GM	A-1-b, A-2-4, A-4	5-40	10-55	50-90	50-80	30-60	20-40	15-30	NP-7
GrD:												
Greenlee--------	0-2	Very cobbly sandy loam	GM, SM	A-1-b, A-2-4, A-4	5-10	20-55	50-100	50-100	30-85	20-45	15-30	NP-7
	2-80	Very cobbly sandy loam, very stony sandy loam	GM, SM	A-1-b, A-2-4, A-4	5-40	10-55	50-90	50-80	30-60	20-40	15-30	NP-7
Tate------------	0-3	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	3-6	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	6-15	Clay loam, sandy clay loam, loam	CL, CL-ML, ML, SC-SM	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	15-26	Clay loam, sandy clay loam, loam	CL, ML, CL-ML, SC-SM	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	26-50	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	50-60	Gravelly fine sandy loam, cobbly fine sandy loam, fine sandy loam	SM, SC-SM, GM, GC-GM	A-2-4, A-2-6, A-4	0-10	5-35	40-100	40-90	35-60	30-50	15-35	NP-13

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	
GrE:												
Greenlee--------	0-2	Very cobbly sandy loam	GM, SM	A-1-b, A-2-4, A-4	5-10	20-55	50-100	50-100	30-85	20-45	15-30	NP-7
	2-80	Very cobbly sandy loam, very stony sandy loam	GM, SM	A-1-b, A-2-4, A-4	5-40	10-55	50-90	50-80	30-60	20-40	15-30	NP-7
Tate------------	0-3	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	3-6	Fine sandy loam	SM, ML	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	6-15	Clay loam, sandy clay loam, loam	SC-SM, ML, CL-ML, CL	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	15-26	Clay loam, sandy clay loam, loam	ML, SC-SM, CL, CL-ML	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	26-50	Gravelly sandy clay loam, gravelly sandy loam, clay loam	CL, ML, SM, SC	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	50-60	Gravelly fine sandy loam, cobbly fine sandy loam, fine sandy loam	SM, SC-SM, GM, GC-GM	A-2-4, A-2-6, A-4	0-10	5-35	40-100	40-90	35-60	30-50	15-35	NP-13
GtC:												
Greenlee--------	0-2	Very cobbly sandy loam	SM, GM	A-1-b, A-2-4, A-4	5-10	20-55	50-100	50-100	30-85	20-45	15-30	NP-7
	2-80	Very cobbly sandy loam, very stony sandy loam	GM, SM	A-1-b, A-2-4, A-4	5-40	10-55	50-90	50-80	30-60	20-40	15-30	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	
Tate------------	0-3	Fine sandy loam	SM, ML	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	3-6	Fine sandy loam	SM, ML	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	6-15	Clay loam, sandy clay loam, loam	CL-ML, SC-SM, ML, CL	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	15-26	Clay loam, sandy clay loam, loam	ML, CL-ML, SC-SM, CL	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	26-50	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	50-60	Gravelly fine sandy loam, cobbly fine sandy loam, fine sandy loam	GM, SC-SM, GC-GM, SM	A-2-4, A-2-6, A-4	0-10	5-35	40-100	40-90	35-60	30-50	15-35	NP-13
Ostin-----------	0-6	Very cobbly loamy sand	SM	A-1-b, A-2-4	0-15	15-50	80-95	70-85	40-70	15-30	10-25	NP-3
	6-35	Extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly coarse sand	GW-GM, GW, GP-GM, GP	A-1-a, A-1-b	0-15	20-75	25-70	15-40	3-40	1-10	---	NP
	35-44	Sandy loam	ML, CL-ML, SM, SC-SM	A-2-4, A-4	0	0-5	90-100	80-100	55-95	20-70	15-30	NP-7
	44-50	Extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly coarse sand	GW-GM, GW, GP, GP-GM	A-1-a, A-1-b	0-15	20-75	25-70	15-40	3-40	1-10	---	NP

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	
HaA:												
Hatboro---------	0-10	Sandy loam	SC, SM	A-4, A-2	0	0	95-100	90-100	55-70	25-40	20-30	NP-10
	10-21	Sandy clay loam, coarse sandy loam	SC, ML, CL, SM	A-4	0	0	75-100	70-100	60-90	45-60	22-30	2-10
	21-44	Silty clay loam, loam, sandy clay loam	CL-ML, CL, ML, SC	A-4, A-6, A-7	0	0	100	99-100	85-100	45-98	25-58	6-25
	44-48	Silty clay loam, loam, sandy clay loam	CL, CL-ML, ML, SC	A-4, A-6, A-7	0	0	100	99-100	85-100	45-98	25-58	6-25
	48-80	Variable			---	---	---	---	---	---	---	---
IoA:												
Iotla-----------	0-12	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0-5	95-100	75-100	60-85	25-49	20-35	NP-10
	12-21	Fine sandy loam, loam, sandy loam	SC, SC-SM, SM, ML	A-2, A-4, A-5	0	0-5	95-100	75-100	60-92	25-67	20-46	NP-10
	21-26	Fine sandy loam, loam, sandy loam	ML, SC, SC-SM, SM	A-2, A-4, A-5	0	0-5	95-100	75-100	60-92	25-67	20-46	NP-10
	26-30	Loamy sand, sand	SM, SP-SM	A-2	0	0-5	95-100	85-100	55-85	10-35	10-20	NP
	30-50	Fine sandy loam, loam, sandy loam	SC-SM, SM, SC	A-2, A-4	0	0-5	95-100	75-100	60-85	25-49	20-35	NP-10
	50-80	Gravelly loamy sand, sand	SM, SP-SM	A-2	0	0-5	90-95	75-90	55-85	10-35	10-20	NP
MaD:												
Maymead---------	0-4	Fine sandy loam	ML, CL-ML	A-4	0	0-3	80-95	75-90	65-80	50-60	0-25	NP-7
	4-18	Gravelly loam, gravelly fine sandy loam, sandy loam	SC, SM, SC-SM, GC-GM	A-4, A-1-b, A-2	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	18-33	Gravelly loam, cobbly loam, cobbly fine sandy loam	SM, ML, GM, CL-ML	A-4	0	10-25	70-90	65-85	55-75	40-60	0-25	NP-7
	33-80	Gravelly loam, cobbly loam, cobbly fine sandy loam	SM, CL-ML, GM, ML	A-4	0	10-25	70-90	65-85	55-75	40-60	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	
MeD:												
Meadowfield-----	0-2	Gravelly sandy loam	ML, SM	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	CL, GM, ML, SM	A-2, A-4, A-6, A-7	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	SM, GM, ML, CL	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Fairview--------	0-7	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6

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	
MoE:												
Meadowfield-----	0-2	Gravelly sandy loam	SM, ML	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	CL, ML, SM, GM	A-6, A-7, A-2, A-4	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	CL, SM, ML, GM	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Rhodhiss--------	0-3	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	3-8	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	8-30	Sandy loam, sandy clay loam, clay loam	SC, CL-ML, CL, SC-SM	A-6, A-2, A-4	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	30-80	Sandy loam, sandy clay loam, loamy sand	SM, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	0-36	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	
MwC:												
Meadowfield-----	0-2	Gravelly sandy loam	ML, SM	A-2-4, A-4	0-10	0-10	80-90	70-85	65-75	30-60	20-35	NP-10
	2-6	Very stony sandy clay loam, extremely stony clay loam, very cobbly loam	GM, SM, ML, CL	A-2, A-4, A-6, A-7	30-65	20-40	55-80	40-80	30-75	25-60	20-45	NP-15
	6-30	Very gravelly sandy clay loam, very cobbly clay loam, very cobbly sandy clay loam	SM, ML, GM, CL	A-2, A-4, A-6, A-7	5-20	20-40	70-85	50-75	35-70	25-60	20-45	NP-15
	30-60	Unweathered bedrock			---	---	---	---	---	---	---	---
Woolwine--------	0-4	Gravelly loam	ML, SC-SM, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	4-8	Gravelly loam	SM, SC-SM, ML	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-12	Clay, clay loam, gravelly clay	CL, CH, ML, MH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	12-18	Clay, clay loam, gravelly clay	ML, MH, CL, CH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	ML, CH, CL, MH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-80	Weathered bedrock			---	---	---	---	---	---	---	---

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	
NkA:												
Nikwasi---------	0-24	Loam	SM, ML	A-2-4, A-4	0	0-5	90-100	80-99	50-93	17-55	15-37	NP-4
	24-30	Gravelly loam, gravelly sandy loam, sandy loam	GC-GM, SM, SC-SM, SC	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	30-62	Extremely gravelly coarse sand, very gravelly sand, very cobbly loamy sand	SM, GP-GM, GM, SP-SM	A-1	0-5	10-50	25-75	10-55	7-40	1-15	10-14	NP
NnD:												
Northcove-------	0-6	Very cobbly loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4, A-4	5-10	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
	6-9	Very cobbly loam	SC-SM, SM, GC-GM, GM	A-1-b, A-2-4, A-4	5-10	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
	9-80	Very cobbly loam, very stony loam, very flaggy loam	SC-SM, GM, GC-GM, SM	A-1-b, A-2-4, A-4	15-40	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
NnE:												
Northcove-------	0-6	Very cobbly loam	GM, SC-SM, SM, GC-GM	A-1-b, A-2-4, A-4	5-10	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
	6-9	Very cobbly loam	SC-SM, GM, GC-GM, SM	A-1-b, A-2-4, A-4	5-10	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
	9-80	Very cobbly loam, very stony loam, very flaggy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4, A-4	15-40	25-65	50-90	50-85	30-70	20-45	15-30	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	
PaC2:												
Pacolet---------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-28	Sandy clay, clay loam, clay	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	28-44	Clay loam, sandy clay loam, sandy loam	CL-ML, SC, SC-SM, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	44-80	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
PaD2:												
Pacolet---------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-28	Sandy clay, clay loam, clay	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	28-44	Clay loam, sandy clay loam, sandy loam	SC-SM, CL, SC, CL-ML	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	44-80	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
PnC:												
Pineola---------	0-7	Gravelly loam	SM, SC-SM, SC	A-2, A-4	0-2	0-15	75-95	65-90	60-85	30-49	15-30	NP-10
	7-20	Clay loam, sandy clay loam, gravelly loam	SC, CL, GC	A-4, A-6, A-7-6	0-1	0-15	70-100	60-100	55-95	40-85	30-45	9-20
	20-26	Clay loam, sandy clay loam, gravelly loam	CL, SC, GC	A-4, A-6, A-7-6	0-1	0-15	70-100	60-100	55-95	40-85	30-45	9-20
	26-32	Gravelly loam, gravelly sandy loam, sandy loam	GC-GM, SC, SC-SM, SM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	32-61	Weathered bedrock			---	---	---	---	---	---	---	---

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	
PnD:												
Pineola	0-7	Gravelly loam	SC, SC-SM, SM	A-2, A-4	0-2	0-15	75-95	65-90	60-85	30-49	15-30	NP-10
	7-20	Clay loam, sandy clay loam, gravelly loam	SC, CL, GC	A-4, A-6, A-7-6	0-1	0-15	70-100	60-100	55-95	40-85	30-45	9-20
	20-26	Clay loam, sandy clay loam, gravelly loam	GC, CL, SC	A-4, A-6, A-7-6	0-1	0-15	70-100	60-100	55-95	40-85	30-45	9-20
	26-32	Gravelly loam, gravelly sandy loam, sandy loam	SM, SC-SM, SC, GC-GM	A-1-b, A-2, A-4	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	32-61	Weathered bedrock			---	---	---	---	---	---	---	---
Qu:												
Pits	0-60	Unweathered bedrock			---	---	---	---	---	---	---	---
RhD:												
Rhodhiss	0-3	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	3-8	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	8-30	Sandy loam, sandy clay loam, clay loam	CL, CL-ML, SC, SC-SM	A-6, A-2, A-4	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	30-80	Sandy loam, sandy clay loam, loamy sand	SC, SC-SM, SM	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	0-36	NP-12
RhE:												
Rhodhiss	0-3	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	3-8	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	8-30	Sandy loam, sandy clay loam, clay loam	SC-SM, CL-ML, SC, CL	A-6, A-2, A-4	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	30-80	Sandy loam, sandy clay loam, loamy sand	SM, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	0-36	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	Plas- ticity index
	In				Pct	Pct					Pct	
RoE:												
Rhodhiss--------	0-3	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	3-8	Sandy loam	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	8-30	Sandy loam, sandy clay loam, clay loam	CL-ML, SC, CL, SC-SM	A-6, A-2, A-4	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	30-80	Sandy loam, sandy clay loam, loamy sand	SC, SC-SM, SM	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	0-36	NP-12
Bannertown------	0-2	Sandy loam	SC-SM, SM	A-1, A-2, A-4	0	0-2	80-100	75-100	40-80	20-50	0-25	NP-6
	2-6	Loam, fine sandy loam, gravelly sandy loam	GC-GM, SM, SC-SM, GM	A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	6-11	Loam, fine sandy loam, gravelly sandy loam	SM, SC-SM, GM, GC-GM	A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	11-24	Sandy loam, fine sandy loam, gravelly sandy loam	SC-SM, GM, SM, GC-GM	A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	24-31	Sandy loam, fine sandy loam, gravelly sandy loam	GC-GM, GM, SC-SM, SM	A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	31-60	Unweathered bedrock			---	---	---	---	---	---	---	---
RsE:												
Rion------------	0-5	Sandy loam	SM	A-2-4, A-4	0-1	0-2	90-100	85-100	60-80	20-45	0-35	NP-7
	5-38	Sandy loam, sandy clay loam, clay loam	CL, SC, SC-SM, CL-ML	A-2, A-4, A-6	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	38-62	Sandy loam, sandy clay loam, loamy sand	SC, SC-SM, SM	A-2-4, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	0-36	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	
Cliffside-------	0-7	Gravelly sandy loam	SM, ML	A-1-b, A-2-4, A-4	0-10	0-10	80-90	60-75	40-70	20-55	15-35	NP-10
	7-27	Very cobbly sandy clay loam, very gravelly sandy clay loam, very gravelly clay loam	SC, SC-SM, SM	A-1-b, A-2-4, A-4	0-10	10-40	75-90	40-55	30-55	15-45	15-45	NP-15
	27-60	Unweathered bedrock			---	---	---	---	---	---	---	---
SoC:												
Soco------------	0-5	Fine sandy loam	SM, ML, MH	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	SC, ML, SM, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	CL, ML, SC, SM	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---
Ditney----------	0-5	Fine sandy loam	ML, CL-ML, SM, SC-SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	5-7	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	7-27	Loam, sandy loam, fine sandy loam	ML, CL-ML, SM, SC-SM	A-2-4, A-4	0	0-5	90-100	80-95	65-80	30-60	0-30	NP-10
	27-34	Sandy loam, loam, loamy fine sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP
	34-60	Unweathered bedrock			---	---	---	---	---	---	---	---

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	
SoD:												
Soco------------	0-5	Fine sandy loam	MH, ML, SM	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	CL, ML, SC, SM	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---
Ditney----------	0-5	Fine sandy loam	SC-SM, ML, CL-ML, SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	5-7	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	7-27	Loam, sandy loam, fine sandy loam	SC-SM, ML, SM, CL-ML	A-2-4, A-4	0	0-5	90-100	80-95	65-80	30-60	0-30	NP-10
	27-34	Sandy loam, loam, loamy fine sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP
	34-60	Unweathered bedrock			---	---	---	---	---	---	---	---
SoE:												
Soco------------	0-5	Fine sandy loam	SM, ML, MH	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	ML, CL, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	CL, ML, SC, SM	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Ditney----------	0-5	Fine sandy loam	SM, CL-ML, SC-SM, ML	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	5-7	Fine sandy loam	SM, ML, SC-SM, CL-ML	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	7-27	Loam, sandy loam, fine sandy loam	SC-SM, ML, CL-ML, SM	A-2-4, A-4	0	0-5	90-100	80-95	65-80	30-60	0-30	NP-10
	27-34	Sandy loam, loam, loamy fine sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP
	34-60	Unweathered bedrock			---	---	---	---	---	---	---	---
SoF:												
Soco------------	0-5	Fine sandy loam	MH, ML, SM	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	SM, CL, ML, SC	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---
Ditney----------	0-5	Fine sandy loam	SC-SM, ML, CL-ML, SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	5-7	Fine sandy loam	ML, SC-SM, SM, CL-ML	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	7-27	Loam, sandy loam, fine sandy loam	SC-SM, SM, CL-ML, ML	A-2-4, A-4	0	0-5	90-100	80-95	65-80	30-60	0-30	NP-10
	27-34	Sandy loam, loam, loamy fine sand	SM	A-2, A-4	0	0-15	75-100	70-100	60-90	15-50	0-14	NP
	34-60	Unweathered bedrock			---	---	---	---	---	---	---	---

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	
SsC:												
Stecoah---------	0-2	Fine sandy loam	MH, ML, SM	A-5, A-4	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	2-27	Loam, fine sandy loam, silt loam	SM, ML, CL, SC	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	27-40	Loam, fine sandy loam, silt loam	SM, SC, ML, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	40-49	Silt loam, fine sandy loam	SM, SC, ML, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	49-80	Weathered bedrock			---	---	---	---	---	---	---	---
Soco------------	0-5	Fine sandy loam	MH, ML, SM	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	SM, SC, ML, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	SM, CL, ML, SC	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---
SsD:												
Stecoah---------	0-2	Fine sandy loam	ML, SM, MH	A-5, A-4	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	2-27	Loam, fine sandy loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	27-40	Loam, fine sandy loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	40-49	Silt loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	49-80	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Soco------------	0-5	Fine sandy loam	SM, ML, MH	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	CL, SC, SM, ML	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	SM, CL, ML, SC	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---
SsE:												
Stecoah---------	0-2	Fine sandy loam	SM, ML, MH	A-5, A-4	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	2-27	Loam, fine sandy loam, silt loam	CL, ML, SM, SC	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	27-40	Loam, fine sandy loam, silt loam	SM, SC, ML, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	40-49	Silt loam, fine sandy loam	ML, SM, SC, CL	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	49-80	Weathered bedrock			---	---	---	---	---	---	---	---
Soco------------	0-5	Fine sandy loam	MH, ML, SM	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	5-10	Loam, fine sandy loam, silt loam	SM, CL, ML, SC	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	10-34	Gravelly loam, channery fine sandy loam, channery silt loam	ML, CL, SC, SM	A-4, A-6	0-5	5-15	70-95	55-91	40-91	35-65	25-40	NP-11
	34-48	Weathered bedrock			---	---	---	---	---	---	---	---

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	
TaC:												
Tate------------	0-3	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	3-6	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	6-15	Clay loam, sandy clay loam, loam	CL, ML, SC-SM, CL-ML	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	15-26	Clay loam, sandy clay loam, loam	ML, CL-ML, CL, SC-SM	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	26-50	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	50-60	Gravelly fine sandy loam, cobbly fine sandy loam, fine sandy loam	SM, SC-SM, GM, GC-GM	A-2-4, A-2-6, A-4	0-10	5-35	40-100	40-90	35-60	30-50	15-35	NP-13
TeB:												
Tate------------	0-3	Fine sandy loam	ML, SM	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	3-6	Fine sandy loam	SM, ML	A-4, A-6	0	0-5	96-100	86-98	68-98	40-80	15-38	NP-13
	6-15	Clay loam, sandy clay loam, loam	CL, ML, CL-ML, SC-SM	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	15-26	Clay loam, sandy clay loam, loam	ML, CL-ML, CL, SC-SM	A-4, A-6	0-1	0-15	94-100	87-100	75-99	40-85	20-40	5-15
	26-50	Gravelly sandy clay loam, gravelly sandy loam, clay loam	SC, SM, CL, ML	A-2, A-4, A-6, A-7	0-2	0-15	47-99	45-90	32-85	17-60	26-50	5-22
	50-60	Gravelly fine sandy loam, cobbly fine sandy loam, fine sandy loam	SM, GM, SC-SM, GC-GM	A-2-4, A-2-6, A-4	0-10	5-35	40-100	40-90	35-60	30-50	15-35	NP-13

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	
ToB:												
Toast-----------	0-12	Sandy loam	SM, SC-SM	A-4, A-2-4	0	0	95-100	80-100	50-99	23-50	0-30	NP-6
	12-22	Sandy clay, clay loam, clay	CL, SC, ML, MH	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	22-30	Sandy clay, clay loam, clay	ML, MH, CL, SC	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	30-37	Sandy clay, clay loam, clay	CL, MH, SC, ML	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	37-42	Sandy clay loam, clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
	42-60	Sandy clay loam, clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
ToC:												
Toast-----------	0-12	Sandy loam	SC-SM, SM	A-4, A-2-4	0	0	95-100	80-100	50-99	23-50	0-30	NP-6
	12-22	Sandy clay, clay loam, clay	SC, CL, ML, MH	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	22-30	Sandy clay, clay loam, clay	CL, MH, ML, SC	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	30-37	Sandy clay, clay loam, clay	ML, MH, CL, SC	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	37-42	Sandy clay loam, clay loam, sandy loam	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
	42-60	Sandy clay loam, clay loam, sandy loam	SC-SM, CL-ML, CL, SC	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
Ud:												
Udorthents------	0-60	Sandy loam	SC, CL-ML, CL, SC-SM	A-2, A-4, A-6, A-7	---	0-3	95-100	90-100	70-98	30-90	20-45	4-25

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	
UnB:												
Unison----------	0-4	Fine sandy loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	4-10	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	10-50	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	50-60	Clay loam, sandy clay loam, sandy loam	SC-SM, CL, CL-ML, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
UnC:												
Unison----------	0-4	Fine sandy loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	4-10	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	10-50	Sandy clay, clay loam, clay	ML, CL, MH	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	50-60	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
UnD:												
Unison----------	0-4	Fine sandy loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	4-10	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	10-50	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	50-60	Clay loam, sandy clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
Ur:												
Urban land------	0-6	Variable			---	---	---	---	---	---	---	---
Udorthents------	0-60	Sandy loam	SC-SM, CL, SC, CL-ML	A-2, A-4, A-6, A-7	---	0-3	95-100	90-100	70-98	30-90	20-45	4-25

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	Plas- ticity index
	In				Pct	Pct					Pct	
WeC, WhD:												
Whiteoak--------	0-9	Fine sandy loam	ML, SM	A-4	0-1	0-5	85-100	80-100	65-85	35-65	25-35	NP-10
	9-12	Loam, clay loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-10	87-100	81-100	66-90	45-75	25-40	7-14
	12-30	Loam, clay loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-10	87-100	81-100	66-90	45-75	25-40	7-14
	30-55	Loam, clay loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-10	87-100	81-100	66-90	45-75	25-40	7-14
	55-62	Loam, clay loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-10	87-100	81-100	66-90	45-75	25-40	7-14
WoB2:												
Woolwine--------	0-8	Gravelly loam	SC-SM, ML, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-18	Clay, clay loam, gravelly clay	CH, ML, MH, CL	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	CH, ML, MH, CL	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-60	Weathered bedrock			---	---	---	---	---	---	---	---
Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6

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	
WoC2:												
Woolwine--------	0-8	Gravelly loam	SM, SC-SM, ML	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-18	Clay, clay loam, gravelly clay	ML, CH, MH, CL	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	CH, CL, MH, ML	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-60	Weathered bedrock			---	---	---	---	---	---	---	---
Fairview--------	0-7	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	ML, CL, MH	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	SC-SM, CL, CL-ML, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
WoD2:												
Woolwine--------	0-8	Gravelly loam	SM, SC-SM, ML	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-18	Clay, clay loam, gravelly clay	ML, MH, CL, CH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	ML, MH, CL, CH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-60	Weathered bedrock			---	---	---	---	---	---	---	---

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	
Fairview--------	0-7	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL-ML, SC, SC-SM, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
WwB:												
Woolwine--------	0-8	Gravelly loam	ML, SC-SM, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-18	Clay, clay loam, gravelly clay	MH, CL, ML, CH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	CH, CL, MH, ML	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-60	Weathered bedrock			---	---	---	---	---	---	---	---
Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	MH, ML, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	SC-SM, CL, CL-ML, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SM, SC-SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
Urban land------	0-6	Variable			---	---	---	---	---	---	---	---

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	
WwC:												
Woolwine--------	0-8	Gravelly loam	ML, SC-SM, SM	A-2, A-2-4, A-4, A-5	0-5	0-15	75-95	65-85	55-75	20-51	26-41	NP-12
	8-18	Clay, clay loam, gravelly clay	MH, CH, CL, ML	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	18-31	Clay, clay loam, gravelly clay	ML, MH, CL, CH	A-6, A-7	0	0-10	65-100	60-100	55-100	50-85	38-65	14-30
	31-60	Weathered bedrock			---	---	---	---	---	---	---	---
Fairview--------	0-7	Sandy clay loam	SC, SC-SM	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-26	Sandy clay, clay loam, clay	CL, MH, ML	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	26-38	Clay loam, sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-79	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	80-100	70-100	60-90	25-50	0-28	NP-6
Urban land------	0-6	Variable			---	---	---	---	---	---	---	---

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	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
AaA:												
Arkaqua-------------	0-9	10-20	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	2.0-5.0	.24	.24	5	5	56
	9-36	7-40	1.20-1.55	0.6-2	0.12-0.20	0.0-2.9	1.0-2.0	.28	.28			
	36-40	7-40	1.20-1.55	0.6-2	0.12-0.20	0.0-2.9	1.0-2.0	.28	.28			
	40-48	10-30	1.30-1.60	0.6-2	0.12-0.20	0.0-2.9	1.0-2.0	.28	.28			
	48-53	---	---	---	---	---	---	---	---			
	53-60	---	---	---	---	---	---	---	---			
AbE:												
Ashe----------------	0-3	10-25	1.35-1.60	2-6	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2	8	0
	3-25	10-25	1.35-1.60	2-6	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24			
	25-32	---	---	0.00-2	0.00-0.01	---	---	---	---			
	32-60	---	---	0.00-0.01	0.00-0.00	---	---	---	---			
Chestnut------------	0-2	5-20	1.35-1.60	2-6	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3	5	56
	2-6	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	6-26	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	26-32	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	32-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Buladean------------	0-2	5-27	1.30-1.65	2-6	0.14-0.20	0.0-2.9	1.0-8.0	.20	.20	4	5	56
	2-24	5-18	1.30-1.65	2-6	0.12-0.18	0.0-2.9	0.0-2.0	.20	.20			
	24-39	2-18	1.45-1.75	2-6	0.07-0.14	0.0-2.9	0.0-0.5	.15	.15			
	39-51	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24			
	51-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
AcF:												
Ashe----------------	0-3	10-25	1.35-1.60	2-6	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2	8	0
	3-25	10-25	1.35-1.60	2-6	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24			
	25-32	---	---	0.00-2	0.00-0.01	---	---	---	---			
	32-60	---	---	0.00-0.01	0.00-0.00	---	---	---	---			
Chestnut------------	0-2	5-20	1.35-1.60	2-6	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3	8	0
	2-6	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	6-26	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	26-32	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	32-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Buladean------------	0-2	5-27	1.30-1.65	2-6	0.14-0.20	0.0-2.9	1.0-8.0	.20	.20	4	5	56
	2-24	5-18	1.30-1.65	2-6	0.12-0.18	0.0-2.9	0.0-2.0	.20	.20			
	24-39	2-18	1.45-1.75	2-6	0.07-0.14	0.0-2.9	0.0-0.5	.15	.15			
	39-51	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24			
	51-79	---	---	0.00-2	0.00-0.01	---	---	---	---			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
AsF:												
Ashe----------------	0-3	10-25	1.35-1.60	2-6	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2	8	0
	3-25	10-25	1.35-1.60	2-6	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24			
	25-32	---	---	0.00-2	0.00-0.01	---	---	---	---			
	32-60	---	---	0.00-0.01	0.00-0.00	---	---	---	---			
Cleveland-----------	0-3	6-20	1.20-1.50	2-6	0.05-0.10	0.0-2.9	0.5-8.0	.17	.28	1	8	0
	3-16	6-20	1.20-1.50	2-6	0.05-0.10	0.0-2.9	0.5-8.0	.17	.28			
	16-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Rock outcrop--------	0-60	0-0	---	0.00-0.01	0.00-0.01	0.0-0.0	0.0-0.0	---	---	--	---	0
BaB:												
Banister------------	0-7	5-15	1.30-1.45	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.37	.37	5	5	56
	7-10	18-35	1.30-1.60	0.6-2	0.12-0.20	0.0-2.9	0.5-2.0	.28	.28			
	10-31	35-50	1.45-1.60	0.2-0.6	0.12-0.19	3.0-5.9	0.0-0.5	.28	.28			
	31-41	35-50	1.45-1.60	0.2-0.6	0.12-0.19	3.0-5.9	0.0-0.5	.28	.28			
	41-60	5-30	1.30-1.50	0.6-6	0.05-0.14	0.0-2.9	0.0-0.5	.17	.17			
BoB:												
Biltmore------------	0-10	0-9	1.20-1.65	6-20	0.07-0.11	0.0-2.9	0.5-3.0	.10	.10	5	2	134
	10-60	0-12	1.20-1.70	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.10	.10			
BrD:												
Braddock------------	0-2	10-25	1.20-1.50	0.6-6	0.14-0.19	0.0-2.9	1.0-2.0	.32	.32	5	8	0
	2-6	10-18	1.00-1.20	0.6-6	0.14-0.19	0.0-2.9	0.5-1.0	.24	.28			
	6-41	35-55	1.20-1.50	0.6-2	0.12-0.17	3.0-5.9	0.0-0.5	.24	.28			
	41-79	10-18	1.00-1.20	0.6-6	0.14-0.19	0.0-2.9	0.0-0.5	.24	.28			
BvB:												
Brevard-------------	0-5	5-15	1.45-1.65	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.15	.15	5	5	56
	5-23	20-35	1.30-1.40	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.24	.24			
	23-35	5-15	1.45-1.65	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.15	.15			
	35-79	---	---	---	---	---	---	---	---			
CaB2:												
Cecil---------------	0-6	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	6-39	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	39-65	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	65-72	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
CeD, CeE:												
Chestnut------------	0-2	5-20	1.35-1.60	2-6	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3	8	0
	2-6	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	6-26	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	26-32	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	32-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Ashe----------------	0-3	10-25	1.35-1.60	2-6	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2	8	0
	3-25	10-25	1.35-1.60	2-6	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24			
	25-32	---	---	0.00-2	0.00-0.01	---	---	---	---			
	32-60	---	---	0.00-0.01	0.00-0.00	---	---	---	---			
ChC, ChD:												
Chestnut------------	0-2	5-20	1.35-1.60	2-6	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3	8	0
	2-6	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	6-26	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	26-32	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	32-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Buladean------------	0-2	5-27	1.30-1.65	2-6	0.14-0.20	0.0-2.9	1.0-8.0	.20	.20	4	5	56
	2-24	5-18	1.30-1.65	2-6	0.12-0.18	0.0-2.9	0.0-2.0	.20	.20			
	24-39	2-18	1.45-1.75	2-6	0.07-0.14	0.0-2.9	0.0-0.5	.15	.15			
	39-51	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24			
	51-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
CkE, CkF:												
Chestnut------------	0-2	5-20	1.35-1.60	2-6	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3	8	0
	2-6	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	6-26	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	26-32	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24			
	32-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Buladean------------	0-2	5-27	1.30-1.65	2-6	0.14-0.20	0.0-2.9	1.0-8.0	.20	.20	4	5	56
	2-24	5-18	1.30-1.65	2-6	0.12-0.18	0.0-2.9	0.0-2.0	.20	.20			
	24-39	2-18	1.45-1.75	2-6	0.07-0.14	0.0-2.9	0.0-0.5	.15	.15			
	39-51	5-25	1.35-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24			
	51-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
CmA:												
Chewacla------------	0-6	10-35	1.30-1.60	0.6-2	0.15-0.24	0.0-2.9	1.0-4.0	.28	.28	5	5	56
	6-16	18-35	1.30-1.50	0.6-2	0.15-0.24	0.0-2.9	0.5-2.0	.32	.32			
	16-23	18-35	1.30-1.60	0.6-2	0.12-0.20	0.0-2.9	0.5-2.0	.28	.28			
	23-41	18-35	1.30-1.50	0.6-2	0.15-0.24	0.0-2.9	0.5-2.0	.32	.32			
	41-79	5-40	1.30-1.50	0.6-6	0.11-0.13	0.0-2.9	1.0-3.0	.24	.24			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
CpD, CpE, CpF:												
Cliffield-----------	0-2	7-20	1.25-1.60	2-6	0.08-0.13	0.0-2.9	1.0-5.0	.15	.24	2	5	56
	2-6	10-35	1.20-1.60	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.10	.28			
	6-30	10-35	1.20-1.60	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.10	.28			
	30-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Pigeonroost---------	0-1	8-20	1.35-1.60	2-6	0.14-0.20	0.0-2.9	1.0-5.0	.24	.24	3	5	56
	1-4	8-20	1.35-1.60	2-6	0.14-0.20	0.0-2.9	1.0-5.0	.24	.24			
	4-27	18-35	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28			
	27-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
CvA:												
Colvard-------------	0-10	8-18	1.45-1.65	2-6	0.09-0.12	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	10-44	8-18	1.45-1.65	2-6	0.09-0.12	0.0-2.9	0.5-1.0	.24	.24			
	44-79	1-12	1.60-1.75	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.10	.15			
CyE, CyF:												
Crossnore-----------	0-7	5-20	1.35-1.60	2-6	0.08-0.12	0.0-2.9	3.0-8.0	.15	.24	3	5	56
	7-16	5-20	1.35-1.60	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.17	.24			
	16-22	5-15	1.35-1.60	2-6	0.07-0.12	0.0-2.9	0.0-0.5	.15	.24			
	22-30	5-15	1.35-1.60	2-6	0.07-0.12	0.0-2.9	0.0-0.5	.15	.24			
	30-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
Jeffrey-------------	0-5	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	3.0-8.0	.17	.24	2	---	---
	5-9	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24			
	9-20	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24			
	20-31	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24			
	31-36	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
DaB:												
Dillard-------------	0-9	10-20	1.20-1.50	0.6-2	0.12-0.15	0.0-2.9	0.5-5.0	.24	.24	5	3	86
	9-24	18-35	1.40-1.60	0.6-2	0.12-0.16	0.0-2.9	0.5-1.0	.28	.28			
	24-42	18-35	1.40-1.60	0.6-2	0.12-0.16	0.0-2.9	0.5-1.0	.28	.28			
	42-46	---	---	---	---	---	---	---	---			
	46-79	---	---	---	---	---	---	---	---			
DrF:												
Ditney--------------	0-5	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	1.0-3.0	.24	.24	2	---	---
	5-7	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.24	.24			
	7-27	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.24	.24			
	27-34	5-20	1.20-1.40	0.6-2	0.08-0.12	0.0-2.9	0.0-0.5	.24	.24			
	34-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Unicoi--------------	0-4	10-25	1.35-1.60	2-6	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	1	---	---
	4-18	5-20	1.45-1.60	2-6	0.04-0.09	0.0-2.9	0.5-2.0	.15	.24			
	18-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Rock outcrop--------	0-60	0-0	---	0.00-0.01	0.00-0.01	0.0-0.0	0.0-0.0	---	---	--	---	0
EdC, EdD, EdE:												
Edneytown-----------	0-3	5-15	1.40-1.60	2-6	0.11-0.17	0.0-2.9	1.0-3.0	.20	.20	5	---	---
	3-13	5-15	1.40-1.60	2-6	0.11-0.17	0.0-2.9	0.5-1.0	.20	.20			
	13-33	20-35	1.30-1.40	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.24	.24			
	33-51	10-22	1.30-1.50	0.6-2	0.11-0.14	0.0-2.9	0.0-0.5	.24	.24			
	51-79	4-15	1.30-1.50	2-6	0.06-0.12	0.0-2.9	0.0-0.5	.17	.17			
Pigeonroost---------	0-1	8-20	1.35-1.60	2-6	0.14-0.20	0.0-2.9	1.0-5.0	.24	.24	3	5	56
	1-4	8-20	1.35-1.60	2-6	0.14-0.20	0.0-2.9	1.0-5.0	.24	.24			
	4-27	18-35	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28			
	27-79	---	---	0.00-2	0.00-0.01	---	---	---	---			
EuF, EvC, EvD, EvE:												
Evard---------------	0-2	5-20	1.30-1.60	2-6	0.10-0.14	0.0-2.9	1.0-5.0	.24	.24	5	3	86
	2-6	5-20	1.30-1.60	2-6	0.10-0.14	0.0-2.9	0.5-2.0	.24	.24			
	6-26	18-35	1.30-1.50	0.6-2	0.12-0.16	0.0-2.9	0.0-0.5	.24	.24			
	26-32	12-30	1.20-1.40	0.6-2	0.10-0.25	0.0-2.9	0.0-0.5	.24	.24			
	32-79	5-20	1.20-1.40	0.6-2	0.08-0.12	0.0-2.9	0.0-0.5	.24	.24			
Cowee---------------	0-3	8-20	1.25-1.60	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.20	.28	3	5	56
	3-7	10-25	1.30-1.50	6-20	0.04-0.08	0.0-2.9	0.0-0.5	.10	.24			
	7-15	10-25	1.30-1.50	6-20	0.04-0.08	0.0-2.9	0.0-0.5	.10	.24			
	15-23	18-35	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.5-1.0	.24	.28			
	23-45	---	---	0.00-2	0.00-0.01	---	---	---	---			
FaB2, FaC2, FaD2:												
Fairview------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-26	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-38	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	38-79	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
FeB, FeC:												
Fairview------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-26	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-38	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	38-79	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Urban land----------	0-6	---	---	---	0.00-0.00	---	---	---	---	--	---	---

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
FnA:												
Fluvaquents----------	---	---	---	---	---	---	---	---	---	--	---	---
Udifluvents----------	---	---	---	---	---	---	---	---	---	5	2	134
FoB:												
Fontaflora-----------	0-5	6-18	1.30-1.50	2-6	0.12-0.18	0.0-2.9	0.5-4.0	.20	.20	4	3	86
	5-20	6-18	1.30-1.55	2-6	0.10-0.16	0.0-2.9	0.0-2.0	.20	.20			
	20-36	1-5	1.35-1.60	6-20	0.06-0.12	0.0-2.9	0.0-0.5	.15	.15			
	36-60	0-2	1.40-1.60	6-20	0.02-0.05	0.0-2.9	0.0-0.5	.05	.10			
Ostin----------------	0-6	5-15	1.20-1.50	6-20	0.03-0.10	0.0-2.9	1.0-3.0	.10	.15	5	2	134
	6-35	1-5	1.40-1.60	20-20	0.02-0.05	0.0-2.9	0.0-0.5	.05	.10			
	35-44	6-18	1.30-1.50	2-6	0.12-0.18	0.0-2.9	0.5-4.0	.20	.20			
	44-50	1-5	1.40-1.60	20-20	0.02-0.05	0.0-2.9	0.0-0.5	.05	.10			
GcD:												
Greenlee-------------	0-2	5-25	1.30-1.50	2-6	0.06-0.11	0.0-2.9	2.0-5.0	.10	.20	3	8	0
	2-80	5-25	1.40-1.60	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
GrD, GrE:												
Greenlee-------------	0-2	5-25	1.30-1.50	2-6	0.06-0.11	0.0-2.9	2.0-5.0	.10	.20	3	8	0
	2-80	5-25	1.40-1.60	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
Tate-----------------	0-3	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	1.0-4.0	.24	.24	5	5	56
	3-6	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	0.5-2.0	.24	.24			
	6-15	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	15-26	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	26-50	18-35	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.24	.28			
	50-60	5-25	1.35-1.60	2-6	0.12-0.15	0.0-2.9	0.0-0.5	.17	.24			
GtC:												
Greenlee-------------	0-2	5-25	1.30-1.50	2-6	0.06-0.11	0.0-2.9	2.0-5.0	.10	.20	3	8	0
	2-80	5-25	1.40-1.60	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
Tate-----------------	0-3	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	1.0-4.0	.24	.24	5	5	56
	3-6	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	0.5-2.0	.24	.24			
	6-15	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	15-26	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	26-50	18-35	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.24	.28			
	50-60	5-25	1.35-1.60	2-6	0.12-0.15	0.0-2.9	0.0-0.5	.17	.24			
Ostin----------------	0-6	5-15	1.20-1.50	6-20	0.03-0.10	0.0-2.9	1.0-3.0	.10	.15	5	2	134
	6-35	1-5	1.40-1.60	20-20	0.02-0.05	0.0-2.9	0.0-0.5	.05	.10			
	35-44	6-18	1.30-1.50	2-6	0.12-0.18	0.0-2.9	0.5-4.0	.20	.20			
	44-50	1-5	1.40-1.60	20-20	0.02-0.05	0.0-2.9	0.0-0.5	.05	.10			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
HaA:												
Hatboro-------------	0-10	10-18	1.20-1.40	0.6-2	0.13-0.16	0.0-2.9	2.0-4.0	.32	.32	5	6	48
	10-21	10-18	1.20-1.50	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.20	.20			
	21-44	18-35	1.30-1.50	0.6-2	0.16-0.20	0.0-2.9	1.0-3.0	.32	.32			
	44-48	18-35	1.30-1.50	0.6-2	0.16-0.20	0.0-2.9	0.1-2.0	.32	.32			
	48-80	---	---	---	---	---	---	---	---			
IoA:												
Iotla---------------	0-12	12-18	1.45-1.65	2-6	0.10-0.15	0.0-2.9	2.0-5.0	.20	.20	5	5	56
	12-21	12-23	1.45-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.20	.20			
	21-26	12-23	1.45-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.20	.20			
	26-30	4-12	1.60-1.75	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.10	.10			
	30-50	12-18	1.45-1.65	2-6	0.10-0.15	0.0-2.9	0.2-1.0	.20	.20			
	50-80	4-12	1.60-1.75	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.10	.10			
MaD:												
Maymead-------------	0-4	8-18	1.40-1.55	2-6	0.15-0.18	0.0-2.9	1.0-3.0	.24	.24	5	---	---
	4-18	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24			
	18-33	5-18	1.40-1.55	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.17	.24			
	33-80	5-18	1.40-1.55	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.17	.24			
MeD:												
Meadowfield---------	0-2	7-20	1.25-1.60	2-6	0.08-0.13	0.0-2.9	1.0-5.0	.15	.24	2	5	56
	2-6	10-35	1.20-1.60	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.10	.28			
	6-30	10-35	1.20-1.60	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.10	.28			
	30-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Fairview------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-26	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-38	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	38-79	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
MoE:												
Meadowfield---------	0-2	7-20	1.25-1.60	2-6	0.08-0.13	0.0-2.9	1.0-5.0	.15	.24	2	5	56
	2-6	10-35	1.20-1.60	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.10	.28			
	6-30	10-35	1.20-1.60	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.10	.28			
	30-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Rhodhiss------------	0-3	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.24	.24	5	---	---
	3-8	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-1.0	.24	.24			
	8-30	18-35	1.40-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.20	.24			
	30-80	2-20	1.30-1.50	2-6	0.06-0.12	0.0-2.9	0.0-0.5	.20	.24			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
MwC:												
Meadowfield----------	0-2	7-20	1.25-1.60	2-6	0.08-0.13	0.0-2.9	1.0-5.0	.15	.24	2	8	0
	2-6	10-35	1.20-1.60	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.10	.28			
	6-30	10-35	1.20-1.60	0.6-2	0.10-0.13	0.0-2.9	0.5-1.0	.10	.28			
	30-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
Woolwine------------	0-4	8-20	1.25-1.60	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.20	.28	3	3	86
	4-8	8-20	1.25-1.60	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.20	.28			
	8-12	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	12-18	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	18-31	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	31-80	---	---	0.00-2	0.00-0.01	---	---	---	---			
NkA:												
Nikwasi-------------	0-24	5-18	1.30-1.50	2-6	0.13-0.20	0.0-2.9	5.0-12	.20	.20	4	3	86
	24-30	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	4.0-7.0	.17	.24			
	30-62	1-5	1.40-1.60	6-20	0.02-0.05	0.0-2.9	0.0-1.0	.05	.10			
NnD, NnE:												
Northcove-----------	0-6	5-18	1.30-1.50	2-6	0.06-0.11	0.0-2.9	0.5-2.0	.10	.28	5	8	0
	6-9	5-18	1.30-1.50	2-6	0.06-0.11	0.0-2.9	0.2-1.0	.10	.28			
	9-80	5-18	1.40-1.60	2-6	0.06-0.11	0.0-2.9	0.0-1.0	.10	.28			
PaC2, PaD2:												
Pacolet-------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-28	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	28-44	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	44-80	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
PnC, PnD:												
Pineola-------------	0-7	5-20	1.30-1.60	2-6	0.08-0.12	0.0-2.9	3.0-8.0	.15	.24	3	5	56
	7-20	18-35	1.20-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.28	.28			
	20-26	18-35	1.20-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.28	.28			
	26-32	5-18	1.30-1.60	0.6-2	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24			
	32-61	---	---	0.00-2	0.00-0.01	---	---	---	---			
Qu:												
Pits----------------	0-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---	--	8	0
RhD, RhE:												
Rhodhiss------------	0-3	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.24	.24	5	3	86
	3-8	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-1.0	.24	.24			
	8-30	18-35	1.40-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.20	.24			
	30-80	2-20	1.30-1.50	2-6	0.06-0.12	0.0-2.9	0.0-0.5	.20	.24			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
RoE:												
Rhodhiss------------	0-3	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.24	.24	5	3	86
	3-8	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.0-1.0	.24	.24			
	8-30	18-35	1.40-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.20	.24			
	30-80	2-20	1.30-1.50	2-6	0.06-0.12	0.0-2.9	0.0-0.5	.20	.24			
Bannertown----------	0-2	5-15	1.30-1.55	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.24	2	3	86
	2-6	5-15	1.30-1.55	2-6	0.04-0.14	0.0-2.9	0.0-0.5	.24	.28			
	6-11	5-15	1.30-1.55	2-6	0.04-0.14	0.0-2.9	0.0-0.5	.24	.28			
	11-24	5-15	1.30-1.55	2-6	0.04-0.14	0.0-2.9	0.0-0.5	.24	.28			
	24-31	5-15	1.30-1.55	2-6	0.04-0.14	0.0-2.9	0.0-0.5	.24	.28			
	31-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
RsE:												
Rion----------------	0-5	5-20	1.30-1.50	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.24	.24	5	---	---
	5-38	18-35	1.40-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.20	.24			
	38-62	18-25	1.30-1.50	2-6	0.06-0.12	0.0-2.9	0.0-0.5	.20	.24			
Cliffside-----------	0-7	7-20	1.30-1.60	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.10	.24	2	3	86
	7-27	10-35	1.25-1.60	0.6-2	0.10-0.13	0.0-2.9	0.0-0.5	.10	.28			
	27-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
SoC, SoD, SoE, SoF:												
Soco----------------	0-5	5-18	1.35-1.60	2-6	0.14-0.22	0.0-2.9	1.0-8.0	.28	.28	3	5	56
	5-10	5-18	1.35-1.60	2-6	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32			
	10-34	5-18	1.40-1.65	2-6	0.09-0.15	0.0-2.9	0.0-0.5	.15	.24			
	34-48	---	---	0.2-0.6	0.00-0.01	---	---	---	---			
Ditney--------------	0-5	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	1.0-3.0	.24	.24	2	---	---
	5-7	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.24	.24			
	7-27	5-18	1.50-1.65	2-6	0.10-0.15	0.0-2.9	0.0-1.0	.24	.24			
	27-34	5-20	1.20-1.40	0.6-2	0.08-0.12	0.0-2.9	0.0-0.5	.24	.24			
	34-60	---	---	0.00-0.01	0.00-0.01	---	---	---	---			
SsC, SsD, SsE:												
Stecoah-------------	0-2	5-18	1.35-1.60	2-6	0.14-0.22	0.0-2.9	1.0-8.0	.28	.28	4	5	56
	2-27	5-18	1.35-1.60	2-6	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32			
	27-40	5-18	1.35-1.60	2-6	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32			
	40-49	5-18	1.35-1.60	2-6	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32			
	49-80	---	---	0.2-0.6	0.00-0.01	---	---	---	---			
Soco----------------	0-5	5-18	1.35-1.60	2-6	0.14-0.22	0.0-2.9	1.0-8.0	.28	.28	3	5	56
	5-10	5-18	1.35-1.60	2-6	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32			
	10-34	5-18	1.40-1.65	2-6	0.09-0.15	0.0-2.9	0.0-0.5	.15	.24			
	34-48	---	---	0.2-0.6	0.00-0.01	---	---	---	---			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
TaC:												
Tate----------------	0-3	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	1.0-4.0	.24	.24	5	5	56
	3-6	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	0.5-2.0	.24	.24			
	6-15	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	15-26	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	26-50	18-35	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.24	.28			
	50-60	5-25	1.35-1.60	2-6	0.12-0.15	0.0-2.9	0.0-0.5	.17	.24			
TeB:												
Tate----------------	0-3	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	1.0-4.0	.24	.24	5	5	56
	3-6	5-25	1.35-1.60	2-6	0.17-0.19	0.0-2.9	0.5-2.0	.24	.24			
	6-15	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	15-26	18-35	1.30-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.28	.28			
	26-50	18-35	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.24	.28			
	50-60	5-25	1.35-1.60	2-6	0.12-0.15	0.0-2.9	0.0-0.5	.17	.24			
ToB, ToC:												
Toast---------------	0-12	5-20	1.25-1.60	2-6	0.10-0.18	0.0-2.9	0.5-3.0	.24	.24	5	3	86
	12-22	35-45	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28			
	22-30	35-45	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28			
	30-37	35-45	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-42	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	42-60	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Ud:												
Udorthents----------	0-60	10-50	1.30-1.65	0.00-2	0.10-0.17	3.0-5.9	0.0-1.0	.28	.28	5	5	56
UnB, UnC, UnD:												
Unison--------------	0-4	12-20	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	4-10	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	10-50	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	50-60	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Ur:												
Urban land----------	0-6	---	---	---	0.00-0.00	---	---	---	---	--	---	---
Udorthents----------	0-60	10-50	1.30-1.65	0.00-2	0.10-0.17	3.0-5.9	0.0-1.0	.28	.28	5	5	56
WeC:												
Whiteoak------------	0-9	15-24	1.35-1.60	2-6	0.14-0.24	0.0-2.9	3.0-10	.28	.28	5	5	56
	9-12	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	12-30	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	30-55	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	55-62	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			

Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
WhD:												
Whiteoak------------	0-9	15-24	1.35-1.60	2-6	0.14-0.24	0.0-2.9	3.0-10	.28	.28	5	5	56
	9-12	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	12-30	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	30-55	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
	55-62	18-29	1.35-1.60	0.6-2	0.14-0.22	0.0-2.9	0.5-1.0	.24	.24			
WoB2, WoC2, WoD2:												
Woolwine------------	0-8	8-20	1.25-1.60	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.20	.28	3	3	86
	8-18	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	18-31	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	31-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Fairview------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-26	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-38	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	38-79	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
WwB, WwC:												
Woolwine------------	0-8	8-20	1.25-1.60	2-6	0.10-0.15	0.0-2.9	1.0-5.0	.20	.28	3	3	86
	8-18	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	18-31	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.32			
	31-60	---	---	0.00-2	0.00-0.01	---	---	---	---			
Fairview------------	0-7	20-35	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	5	5	56
	7-26	35-65	1.30-1.50	0.6-2	0.12-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-38	15-30	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	38-79	10-25	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Urban land----------	0-6	---	---	---	0.00-0.00	---	---	---	---	--	---	---

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
	Inches	meq/100 g	meq/100 g	pH
AaA:				
Arkaqua	0-9	8.5-12	6.0-10	4.5-6.5
	9-36	7.0-11	5.0-9.0	4.5-6.5
	36-40	7.0-11	5.0-9.0	4.5-6.5
	40-48	6.3-10	5.0-9.0	4.5-6.5
	48-53	---	---	---
	53-60	---	---	---
AbE, AcF:				
Ashe	0-3	4.8-18	3.6-13	3.5-6.0
	3-25	2.5-8.5	1.9-6.4	3.5-6.0
	25-32	---	---	---
	32-60	---	---	---
Chestnut	0-2	3.5-23	2.6-17	3.5-6.0
	2-6	1.2-11	0.9-8.1	3.5-6.0
	6-26	1.2-11	0.9-8.1	3.5-6.0
	26-32	1.2-11	0.9-8.1	3.5-6.0
	32-60	---	---	---
Buladean	0-2	3.5-25	2.6-19	3.5-6.0
	2-24	1.2-9.0	0.9-6.8	3.5-6.0
	24-39	0.5-5.6	0.4-4.2	3.5-6.0
	39-51	1.2-7.4	0.9-5.5	3.5-6.0
	51-79	---	---	---
AsF:				
Ashe	0-3	4.8-18	3.6-13	3.5-6.0
	3-25	2.5-8.5	1.9-6.4	3.5-6.0
	25-32	---	---	---
	32-60	---	---	---
Cleveland	0-3	2.6-23	2.0-17	4.5-6.0
	3-16	2.6-23	2.0-17	4.5-6.0
	16-60	---	---	---
Rock outcrop	0-60	0.0-0.0	0.0-0.0	---
BaB:				
Banister	0-7	2.4-4.8	3.0-10	3.5-5.5
	7-10	10-25	3.8-6.5	4.5-6.0
	10-31	8.8-14	8.0-20	3.5-5.5
	31-41	8.8-14	8.0-20	3.5-5.5
	41-60	1.2-8.6	1.0-6.0	3.5-5.5
BoB:				
Biltmore	0-10	1.0-9.0	1.0-6.8	5.1-7.8
	10-60	0.0-4.0	0.0-3.0	5.1-7.8
BrD:				
Braddock	0-2	4.8-11	3.6-8.1	3.6-5.5
	2-6	3.6-6.8	2.7-5.1	3.6-5.5
	6-41	8.8-15	6.6-11	3.6-5.5
	41-79	2.5-5.6	1.9-4.2	3.6-5.5

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
BvB:				
Brevard	0-5	2.8-13	2.1-9.6	4.5-6.0
	5-23	3.1-5.8	2.3-4.3	4.5-6.0
	23-35	1.6-3.8	1.2-2.8	4.5-6.0
	35-79	---	---	---
CaB2:				
Cecil	0-6	3.1-5.8	2.3-4.3	4.5-6.5
	6-39	3.5-7.6	2.6-5.7	4.5-6.0
	39-65	1.5-4.1	1.1-3.1	4.5-6.0
	65-72	1.0-3.6	0.8-2.7	4.5-6.0
CeD, CeE:				
Chestnut	0-2	3.5-23	2.6-17	3.5-6.0
	2-6	1.2-11	0.9-8.1	3.5-6.0
	6-26	1.2-11	0.9-8.1	3.5-6.0
	26-32	1.2-11	0.9-8.1	3.5-6.0
	32-60	---	---	---
Ashe	0-3	4.8-18	3.6-13	3.5-6.0
	3-25	2.5-8.5	1.9-6.4	3.5-6.0
	25-32	---	---	---
	32-60	---	---	---
ChC:				
Chestnut	0-2	3.5-23	2.6-17	3.5-6.0
	2-6	1.2-11	0.9-8.1	3.5-6.0
	6-26	1.2-11	0.9-8.1	3.5-6.0
	26-32	1.2-11	0.9-8.1	3.5-6.0
	32-60	---	---	---
Buladean	0-2	3.5-25	2.6-19	3.5-6.0
	2-24	1.2-9.0	0.9-6.8	3.5-6.0
	24-39	0.5-5.6	0.4-4.2	3.5-6.0
	39-51	1.2-7.4	0.9-5.5	3.5-6.0
	51-79	---	---	---
ChD, CkE, CkF:				
Chestnut	0-2	3.5-23	2.6-17	3.5-6.0
	2-6	1.2-11	0.9-8.1	3.5-6.0
	6-26	1.2-11	0.9-8.1	3.5-6.0
	26-32	1.2-11	0.9-8.1	3.5-6.0
	32-60	---	---	---
Buladean	0-2	3.5-25	2.6-19	3.5-6.0
	2-24	1.2-9.0	0.9-6.8	3.5-6.0
	24-39	0.5-5.6	0.4-4.2	3.5-6.0
	39-51	1.2-7.4	0.9-5.5	3.5-6.0
	51-79	---	---	---
CmA:				
Chewacla	0-6	4.8-18	3.6-13	4.5-6.5
	6-16	5.6-13	4.2-9.9	4.5-6.5
	16-23	5.6-13	4.2-9.9	4.5-6.5
	23-41	5.6-13	4.2-9.9	4.5-6.5
	41-79	3.5-17	2.6-13	4.5-7.8

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
CpD, CpE, CpF:				
Cliffield	0-2	4.0-16	3.0-12	3.5-5.5
	2-6	2.5-9.9	1.9-7.4	4.5-5.5
	6-30	3.6-11	2.7-8.2	4.5-5.5
	30-60	---	---	---
Pigeonroost	0-1	4.2-16	3.2-12	3.5-6.0
	1-4	4.2-16	3.2-12	3.5-6.0
	4-27	4.5-9.9	3.4-7.4	3.5-6.0
	27-79	---	---	---
CvA:				
Colvard	0-10	5.0-15	3.2-6.8	5.1-7.8
	10-44	4.0-15	2.3-5.1	5.1-7.8
	44-79	0.0-10	0.2-3.1	5.1-7.8
CyE, CyF:				
Crossnore	0-7	8.0-23	6.0-17	3.5-6.0
	7-16	1.2-7.2	0.9-5.4	3.5-6.0
	16-22	1.2-4.9	0.9-3.7	3.5-6.0
	22-30	1.2-4.9	0.9-3.7	3.5-6.0
	30-79	---	---	---
Jeffrey	0-5	8.0-22	6.0-17	3.5-6.0
	5-9	1.2-5.6	0.9-4.2	3.5-6.0
	9-20	1.2-5.6	0.9-4.2	3.5-6.0
	20-31	1.2-5.6	0.9-4.2	3.5-6.0
	31-36	---	---	---
DaB:				
Dillard	0-9	3.6-16	2.7-12	5.1-6.0
	9-24	5.6-11	4.2-8.2	4.5-5.5
	24-42	5.6-11	4.2-8.2	4.5-5.5
	42-46	---	---	---
	46-79	---	---	---
DrF:				
Ditney	0-5	3.5-11	2.6-8.4	3.6-5.5
	5-7	1.2-6.8	0.9-5.1	3.6-5.5
	7-27	1.2-6.8	0.9-5.1	3.6-5.5
	27-34	1.2-6.1	0.9-4.6	4.5-6.0
	34-60	---	---	---
Unicoi	0-4	4.8-18	3.6-13	3.5-5.5
	4-18	2.4-9.5	1.8-7.1	3.5-5.5
	18-60	---	---	---
Rock outcrop	0-60	0.0-0.0	0.0-0.0	---
EdC, EdD, EdE:				
Edneytown	0-3	3.5-10	2.6-7.9	4.5-6.0
	3-13	2.4-6.0	1.8-4.5	4.5-6.0
	13-33	5.0-9.9	3.8-7.4	4.5-5.5
	33-51	2.5-6.6	1.9-5.0	4.5-5.5
	51-79	1.0-4.9	0.8-3.7	4.5-5.5
Pigeonroost	0-1	4.2-16	3.2-12	3.5-6.0
	1-4	4.2-16	3.2-12	3.5-6.0
	4-27	4.5-9.9	3.4-7.4	3.5-6.0
	27-79	---	---	---

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
EuF, EvC, EvD, EvE:				
Evard----------------	0-2	2.8-13	2.1-9.9	4.5-6.0
	2-6	1.6-6.5	1.2-4.9	4.5-6.0
	6-26	1.8-4.6	1.4-3.5	4.5-6.0
	26-32	1.2-4.1	0.9-3.1	4.5-6.0
	32-79	0.5-3.1	0.4-2.3	4.5-6.0
Cowee----------------	0-3	3.0-13	2.3-9.9	3.5-6.0
	3-7	1.0-3.6	0.8-2.7	4.5-6.0
	7-15	1.0-3.6	0.8-2.7	4.5-6.0
	15-23	2.9-5.8	2.2-4.3	3.5-6.0
	23-45	---	---	---
FaB2, FaC2, FaD2:				
Fairview-------------	0-7	3.1-5.8	2.3-4.3	3.5-6.5
	7-26	3.5-7.6	2.6-5.7	3.5-6.0
	26-38	1.5-4.1	1.1-3.1	3.5-6.0
	38-79	1.0-3.6	0.8-2.7	3.5-6.5
FeB, FeC:				
Fairview-------------	0-7	3.1-5.8	2.3-4.3	3.5-6.5
	7-26	3.5-7.6	2.6-5.7	3.5-6.0
	26-38	1.5-4.1	1.1-3.1	3.5-6.0
	38-79	1.0-3.6	0.8-2.7	3.5-6.5
Urban land-----------	0-6	---	---	---
FnA:				
Fluvaquents----------	---	---	---	---
Udifluvents----------	---	---	---	---
FoB:				
Fontaflora-----------	0-5	2.0-8.0	2.0-10	4.5-6.5
	5-20	1.0-7.0	2.0-6.7	4.5-6.5
	20-36	0.0-2.0	0.6-1.9	4.5-6.5
	36-60	0.0-1.0	0.1-0.8	4.5-6.5
Ostin----------------	0-6	1.0-3.0	2.6-7.9	4.5-7.3
	6-35	0.0-1.0	0.6-1.8	4.5-7.3
	35-44	2.0-8.0	2.0-9.1	4.5-6.5
	44-50	0.0-1.0	0.6-1.8	4.5-7.3
GcD:				
Greenlee-------------	0-2	5.0-14	3.8-10	3.5-6.0
	2-80	1.6-4.8	1.2-3.6	3.5-6.0
GrD, GrE:				
Greenlee-------------	0-2	5.0-14	3.8-10	3.5-6.0
	2-80	1.6-4.8	1.2-3.6	3.5-6.0
Tate-----------------	0-3	3.5-15	2.6-11	4.5-6.5
	3-6	2.4-11	1.8-8.1	4.5-6.5
	6-15	4.5-11	3.4-8.2	4.5-6.5
	15-26	4.5-11	3.4-8.2	4.5-6.5
	26-50	4.5-11	3.4-8.2	4.5-6.5
	50-60	1.2-7.4	0.9-5.5	4.5-6.5

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
GtC:				
Greenlee	0-2	5.0-14	3.8-10	3.5-6.0
	2-80	1.6-4.8	1.2-3.6	3.5-6.0
Tate	0-3	3.5-15	2.6-11	4.5-6.5
	3-6	2.4-11	1.8-8.1	4.5-6.5
	6-15	4.5-11	3.4-8.2	4.5-6.5
	15-26	4.5-11	3.4-8.2	4.5-6.5
	26-50	4.5-11	3.4-8.2	4.5-6.5
	50-60	1.2-7.4	0.9-5.5	4.5-6.5
Ostin	0-6	1.0-3.0	2.6-7.9	4.5-7.3
	6-35	0.0-1.0	0.6-1.8	4.5-7.3
	35-44	2.0-8.0	2.0-9.1	4.5-6.5
	44-50	0.0-1.0	0.6-1.8	4.5-7.3
HaA:				
Hatboro	0-10	7.0-14	5.2-10	4.5-7.3
	10-21	4.8-11	3.6-8.4	5.6-6.5
	21-44	6.8-16	5.1-12	4.5-6.5
	44-48	4.7-13	3.5-9.9	4.5-6.5
	48-80	---	---	---
IoA:				
Iotla	0-12	7.5-16	5.6-12	5.1-7.3
	12-21	3.0-8.0	2.2-6.0	5.1-7.3
	21-26	3.0-8.0	2.2-6.0	5.1-7.3
	26-30	1.0-4.1	0.8-3.1	5.1-7.3
	30-50	3.6-6.8	2.7-5.1	5.1-7.3
	50-80	1.0-4.1	0.8-3.1	5.1-7.3
MaD:				
Maymead	0-4	4.2-11	3.2-8.4	4.5-5.5
	4-18	1.2-5.6	0.9-4.2	3.5-6.0
	18-33	1.2-5.6	0.9-4.2	4.5-5.5
	33-80	1.2-5.6	0.9-4.2	4.5-5.5
MeD:				
Meadowfield	0-2	3.0-13	2.2-9.9	3.5-5.5
	2-6	1.0-4.6	0.8-3.5	4.5-5.5
	6-30	2.1-5.8	1.6-4.3	4.5-5.5
	30-60	---	---	---
Fairview	0-7	3.1-5.8	2.3-4.3	3.5-6.5
	7-26	3.5-7.6	2.6-5.7	3.5-6.0
	26-38	1.5-4.1	1.1-3.1	3.5-6.0
	38-79	1.0-3.6	0.8-2.7	3.5-6.5
MoE:				
Meadowfield	0-2	3.0-13	2.2-9.9	3.5-5.5
	2-6	1.0-4.6	0.8-3.5	4.5-5.5
	6-30	2.1-5.8	1.6-4.3	4.5-5.5
	30-60	---	---	---
Rhodhiss	0-3	2.4-9.5	1.8-7.1	4.5-6.5
	3-8	1.2-7.2	0.9-5.4	4.5-6.5
	8-30	4.5-9.9	3.4-7.4	4.5-6.5
	30-80	0.5-6.1	0.4-4.6	4.5-6.5

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
MwC:				
Meadowfield	0-2	3.0-13	2.2-9.9	3.5-5.5
	2-6	1.0-4.6	0.8-3.5	4.5-5.5
	6-30	2.1-5.8	1.6-4.3	4.5-5.5
	30-60	---	---	---
Woolwine	0-4	3.0-13	2.3-9.9	3.5-6.0
	4-8	3.0-13	2.3-9.9	3.5-6.0
	8-12	3.5-7.1	2.6-5.3	4.5-5.5
	12-18	3.5-7.1	2.6-5.3	4.5-5.5
	18-31	3.5-7.1	2.6-5.3	4.5-5.5
	31-80	---	---	---
NkA:				
Nikwasi	0-24	12-32	9.4-24	4.5-6.5
	24-30	10-20	7.7-15	4.5-6.5
	30-62	0.2-3.5	0.2-2.6	4.5-6.5
NnD, NnE:				
Northcove	0-6	2.4-9.0	1.8-6.8	3.5-6.0
	6-9	1.7-6.8	1.3-5.1	3.5-6.0
	9-80	1.2-6.8	0.9-5.1	3.5-6.0
PaC2, PaD2:				
Pacolet	0-7	3.1-5.8	2.3-4.3	4.5-6.5
	7-28	3.5-7.6	2.6-5.7	4.5-6.0
	28-44	1.5-4.1	1.1-3.1	4.5-6.0
	44-80	1.0-3.6	0.8-2.7	4.5-6.0
PnC, PnD:				
Pineola	0-7	8.0-23	6.0-17	3.5-6.0
	7-20	4.5-11	3.4-8.2	3.5-6.0
	20-26	4.5-11	3.4-8.2	3.5-6.0
	26-32	1.2-5.6	0.9-4.2	3.5-6.0
	32-61	---	---	---
Qu:				
Pits	0-60	---	---	---
RhD, RhE:				
Rhodhiss	0-3	2.4-9.5	1.8-7.1	4.5-6.5
	3-8	1.2-7.2	0.9-5.4	4.5-6.5
	8-30	4.5-9.9	3.4-7.4	4.5-6.5
	30-80	0.5-6.1	0.4-4.6	4.5-6.5
RoE:				
Rhodhiss	0-3	2.4-9.5	1.8-7.1	4.5-6.5
	3-8	1.2-7.2	0.9-5.4	4.5-6.5
	8-30	4.5-9.9	3.4-7.4	4.5-6.5
	30-80	0.5-6.1	0.4-4.6	4.5-6.5
Bannertown	0-2	2.4-6.0	1.8-4.5	4.5-6.0
	2-6	1.2-4.9	0.9-3.7	3.5-5.5
	6-11	1.2-4.9	0.9-3.7	3.5-5.5
	11-24	1.2-4.9	0.9-3.7	3.5-5.5
	24-31	1.2-4.9	0.9-3.7	3.5-5.5
	31-60	---	---	---

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
RsE:				
Rion	0-5	2.4-9.5	1.8-7.1	4.5-6.5
	5-38	4.5-9.9	3.4-7.4	4.5-6.5
	38-62	4.5-7.4	3.4-5.5	4.5-6.5
Cliffside	0-7	2.9-9.5	2.2-7.1	4.5-5.5
	7-27	2.5-9.9	1.9-7.4	4.5-5.5
	27-60	---	---	---
SoC, SoD, SoE, SoF:				
Soco	0-5	3.5-22	2.6-17	3.5-5.5
	5-10	2.4-6.8	1.8-5.1	3.5-5.5
	10-34	1.2-5.6	0.9-4.2	3.5-5.5
	34-48	---	---	---
Ditney	0-5	3.5-11	2.6-8.4	3.6-5.5
	5-7	1.2-6.8	0.9-5.1	3.6-5.5
	7-27	1.2-6.8	0.9-5.1	3.6-5.5
	27-34	1.2-6.1	0.9-4.6	4.5-6.0
	34-60	---	---	---
SsC, SsD, SsE:				
Stecoah	0-2	3.5-22	2.6-17	3.5-5.5
	2-27	2.4-6.8	1.8-5.1	3.5-5.5
	27-40	2.4-6.8	1.8-5.1	3.5-5.5
	40-49	2.4-6.8	1.8-5.1	3.5-5.5
	49-80	---	---	---
Soco	0-5	3.5-22	2.6-17	3.5-5.5
	5-10	2.4-6.8	1.8-5.1	3.5-5.5
	10-34	1.2-5.6	0.9-4.2	3.5-5.5
	34-48	---	---	---
TaC, TeB:				
Tate	0-3	3.5-15	2.6-11	4.5-6.5
	3-6	2.4-11	1.8-8.1	4.5-6.5
	6-15	4.5-11	3.4-8.2	4.5-6.5
	15-26	4.5-11	3.4-8.2	4.5-6.5
	26-50	4.5-11	3.4-8.2	4.5-6.5
	50-60	1.2-7.4	0.9-5.5	4.5-6.5
ToB, ToC:				
Toast	0-12	2.4-12	1.8-8.8	3.6-5.5
	12-22	8.8-12	6.6-9.3	3.6-5.5
	22-30	8.8-12	6.6-9.3	3.6-5.5
	30-37	8.8-12	6.6-9.3	3.6-5.5
	37-42	3.8-8.6	2.8-6.5	3.6-5.5
	42-60	3.8-8.6	2.8-6.5	3.6-5.5
Ud:				
Udorthents	0-60	2.0-10	---	4.5-7.8
UnB, UnC, UnD:				
Unison	0-4	4.1-7.2	3.1-5.4	4.5-6.5
	4-10	8.8-17	6.6-13	4.5-6.0
	10-50	8.8-17	6.6-13	4.5-6.0
	50-60	3.8-7.2	2.8-6.5	4.5-6.0

Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
Ur:				
Urban land	0-6	---	---	---
Udorthents	0-60	2.0-10	---	4.5-7.8
WeC:				
Whiteoak	0-9	8.2-25	6.2-20	4.5-6.0
	9-12	2.9-5.2	2.2-3.9	4.5-5.5
	12-30	2.9-5.2	2.2-3.9	4.5-5.5
	30-55	2.9-5.2	2.2-3.9	4.5-5.5
	55-62	2.9-5.2	2.2-3.9	4.5-5.5
WhD:				
Whiteoak	0-9	8.2-25	6.2-19	4.5-6.0
	9-12	2.9-5.2	2.2-3.9	4.5-5.5
	12-30	2.9-5.2	2.2-3.9	4.5-5.5
	30-55	2.9-5.2	2.2-3.9	4.5-5.5
	55-62	2.9-5.2	2.2-3.9	4.5-5.5
WoB2, WoC2, WoD2:				
Woolwine	0-8	3.0-13	2.3-9.9	3.5-6.0
	8-18	3.5-7.1	2.6-5.3	4.5-5.5
	18-31	3.5-7.1	2.6-5.3	4.5-5.5
	31-60	---	---	---
Fairview	0-7	3.1-5.8	2.3-4.3	3.5-6.5
	7-26	3.5-7.6	2.6-5.7	3.5-6.0
	26-38	1.5-4.1	1.1-3.1	3.5-6.0
	38-79	1.0-3.6	0.8-2.7	3.5-6.5
WwB, WwC:				
Woolwine	0-8	3.0-13	2.3-9.9	3.5-6.0
	8-18	3.5-7.1	2.6-5.3	4.5-5.5
	18-31	3.5-7.1	2.6-5.3	4.5-5.5
	31-60	---	---	---
Fairview	0-7	3.1-5.8	2.3-4.3	3.5-6.5
	7-26	3.5-7.6	2.6-5.7	3.5-6.0
	26-38	1.5-4.1	1.1-3.1	3.5-6.0
	38-79	1.0-3.6	0.8-2.7	3.5-6.5
Urban land	0-6	---	---	---

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	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
AaA:										
Arkaqua	C	Very high								
			Dec-Apr	1.5-2.0	>6.0	---	---	None	Very brief	Occasional
			May	2.0-2.5	>6.0	---	---	None	---	---
			June	2.0-3.0	>6.0	---	---	None	---	---
			July-Sep	2.5-3.5	>6.0	---	---	None	---	---
			Oct-Nov	1.7-2.5	>6.0	---	---	None	---	---
AbE:										
Ashe	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Chestnut	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Buladean	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
AcF:										
Ashe	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Chestnut	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Buladean	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
AsF:										
Ashe	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Cleveland	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Rock outcrop	D	Very high								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
BaB:										
Banister------------------	C	Very high								
			Jan-Mar	1.5-3.0	>6.0	---	---	None	Very brief	Rare
			April	2.0-3.5	>6.0	---	---	None	Very brief	Rare
			May	2.5-3.5	>6.0	---	---	None	---	---
			June-Sep	3.0-6.0	>6.0	---	---	None	---	---
			October	2.5-3.5	>6.0	---	---	None	---	---
			November	1.5-3.5	>6.0	---	---	None	---	---
			December	1.5-3.5	>6.0	---	---	None	Very brief	Rare
BoB:										
Biltmore------------------	A	Very low								
			Dec-Apr	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			May-Jun	3.5-6.0	>6.0	---	---	None	---	---
			Oct-Nov	3.5-6.0	>6.0	---	---	None	---	---
BrD:										
Braddock------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
BvB:										
Brevard-------------------	B	Low								
			Dec-Apr	---	---	---	---	None	Very brief	Rare
CaB2:										
Cecil---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
CeD:										
Chestnut------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ashe----------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
CeE:										
Chestnut------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ashe----------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
ChC:										
Chestnut------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
Buladean	B	Low								
			Jan-Dec	---	---	---	---	None	---	---
ChD:										
Chestnut	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Buladean	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
CkE:										
Chestnut	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Buladean	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
CkF:										
Chestnut	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Buladean	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
CmA:										
Chewacla	C	Very high								
			Nov-May	0.5-2.0	>6.0	---	---	None	Brief	Frequent
			June	1.5-2.0	>6.0	---	---	None	---	---
			July	3.0-4.0	>6.0	---	---	None	---	---
			Aug-Sep	3.3-4.5	>6.0	---	---	None	---	---
			October	1.5-2.0	>6.0	---	---	None	---	---
CpD:										
Cliffield	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost	B	High								
			Jan-Dec	---	---	---	---	None	---	---
CpE:										
Cliffield	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost	B	High								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
CpF:										
Cliffield	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost	B	High								
			Jan-Dec	---	---	---	---	None	---	---
CvA:										
Colvard	B	Very low								
			Dec-Apr	4.0-6.0	>6.0	---	---	None	Very brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	---	---
			Oct-Nov	4.0-6.0	>6.0	---	---	None	---	---
CyE:										
Crossnore	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Jeffrey	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
CyF:										
Crossnore	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Jeffrey	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
DaB:										
Dillard	C	Medium								
			Dec-Apr	2.0-3.0	>6.0	---	---	None	Brief	Rare
			May	3.0-3.5	>6.0	---	---	None	---	---
			June	4.0-4.5	>6.0	---	---	None	---	---
			October	3.0-3.5	>6.0	---	---	None	---	---
			November	2.0-3.0	>6.0	---	---	None	---	---
DrF:										
Ditney	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Unicoi	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Rock outcrop	D	Very high								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
EdC:										
Edneytown----------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost---------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
EdD:										
Edneytown----------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost---------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
EdE:										
Edneytown----------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Pigeonroost---------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
EuF:										
Evard---------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Cowee---------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
EvC:										
Evard---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Cowee---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
EvD:										
Evard---------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Cowee---------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
EvE:										
Evard---------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
Cowee	B	High								
			Jan-Dec	---	---	---	---	None	---	---
FaB2:										
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
FaC2:										
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
FaD2:										
Fairview	B	High								
			Jan-Dec	---	---	---	---	None	---	---
FeB:										
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Urban land	---	---								
			Jan-Dec	---	---	---	---	None	---	---
FeC:										
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Urban land	---	---								
			Jan-Dec	---	---	---	---	None	---	---
FnA:										
Fluvaquents	---	---								
			Dec-Apr	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			May	1.7-2.5	>6.0	---	---	None	---	---
			June	2.0-3.0	>6.0	---	---	None	---	---
			July-Sep	2.5-3.5	>6.0	---	---	None	---	---
			October	1.7-2.5	>6.0	---	---	None	---	---
			November	1.5-1.7	>6.0	---	---	None	---	---
Udifluvents	A	---								
			Dec-Apr	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			May-Nov	3.5-6.0	>6.0	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
FoB:										
Fontaflora	A	Very low								
			Dec-Apr	3.0-5.0	>6.0	---	---	None	Very brief	Occasional
			May-June	3.5-5.0	>6.0	---	---	None	---	---
			July	4.5-5.5	>6.0	---	---	None	---	---
			Aug-Sep	5.0-6.0	>6.0	---	---	None	---	---
			October	3.5-5.0	>6.0	---	---	None	---	---
			November	3.0-5.0	>6.0	---	---	None	---	---
Ostin	A	Very low								
			Jan-Apr	2.0-3.5	>6.0	---	---	None	Very brief	Frequent
			May	2.5-3.5	>6.0	---	---	None	Very brief	Frequent
			June	3.0-4.0	>6.0	---	---	None	---	---
			July	3.5-4.0	>6.0	---	---	None	---	---
			Aug-Sep	4.0-4.2	>6.0	---	---	None	---	---
			October	2.5-3.5	>6.0	---	---	None	---	---
			Nov-Dec	2.5-3.5	>6.0	---	---	None	Very brief	Frequent
GcD:										
Greenlee	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
GrD:										
Greenlee	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Tate	B	High								
			Jan-Dec	---	---	---	---	None	---	---
GrE:										
Greenlee	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Tate	B	High								
			Jan-Dec	---	---	---	---	None	---	---
GtC:										
Greenlee	B	Low								
			Jan-Dec	---	---	---	---	None	---	---
Tate	B	Medium								
			Dec-Apr	---	---	---	---	None	Very brief	Rare

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
Ostin----------------------	A	Very low								
			Jan-Apr	2.0-3.5	>6.0	---	---	None	Very brief	Frequent
			May	2.5-3.5	>6.0	---	---	None	Very brief	Frequent
			June	3.0-4.0	>6.0	---	---	None	---	---
			July	3.5-4.0	>6.0	---	---	None	---	---
			Aug-Sep	4.0-4.2	>6.0	---	---	None	---	---
			October	2.5-3.5	>6.0	---	---	None	---	---
			Nov-Dec	2.5-3.5	>6.0	---	---	None	Very brief	Frequent
HaA:										
Hatboro--------------------	D	Very high								
			Nov-Apr	0.0-0.5	>6.0	---	---	None	Long	Frequent
			May	0.5-1.0	>6.0	---	---	None	Long	Frequent
			June	1.0-1.5	>6.0	---	---	None	---	---
			July	1.0-1.5	>6.0	---	---	None	---	---
			Aug-Sep	1.0-2.0	>6.0	---	---	None	---	---
			September	1.0-2.0	>6.0	---	---	None	---	---
			October	0.5-1.0	>6.0	---	---	None	---	---
IoA:										
Iotla----------------------	B	Very high								
			Dec-Mar	1.5-3.5	>6.0	---	---	None	Brief	Occasional
			April	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	2.5-3.5	>6.0	---	---	None	---	---
			June	3.0-6.0	>6.0	---	---	None	---	---
			July-Sep	4.0-6.0	>6.0	---	---	None	---	---
			October	2.5-3.5	>6.0	---	---	None	---	---
			November	2.0-3.5	>6.0	---	---	None	---	---
MaD:										
Maymead--------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
MeD:										
Meadowfield----------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Fairview-------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
MoE:										
Meadowfield----------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
Rhodhiss	B	High								
			Jan-Dec	---	---	---	---	None	---	---
MwC:										
Meadowfield	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
Woolwine	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
NkA:										
Nikwasi	B/D	Very high								
			Nov-Apr	0.0-0.5	>6.0	---	---	None	Very brief	Frequent
			May	0.5-1.0	>6.0	---	---	None	Very brief	Frequent
			June-July	1.0-1.5	>6.0	---	---	None	---	---
			Aug-Sep	1.0-2.0	>6.0	---	---	None	---	---
			October	0.5-1.0	>6.0	---	---	None	---	---
NnD:										
Northcove	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
NnE:										
Northcove	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
PaC2:										
Pacolet	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
PaD2:										
Pacolet	B	High								
			Jan-Dec	---	---	---	---	None	---	---
PnC:										
Pineola	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
PnD:										
Pineola	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Qu:										
Pits	---	Very high								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
RhD:										
Rhodhiss-------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
RhE:										
Rhodhiss-------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
RoE:										
Rhodhiss-------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Bannertown-----------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	---
RsE:										
Rion-----------------------	B	---								
			Jan-Dec	---	---	---	---	None	---	---
Cliffside------------------	B	---								
			Jan-Dec	---	---	---	---	None	---	---
SoC:										
Soco-----------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Ditney---------------------	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
SoD:										
Soco-----------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ditney---------------------	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
SoE:										
Soco-----------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ditney---------------------	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
SoF:										
Soco	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ditney	C	Very high								
			Jan-Dec	---	---	---	---	None	---	---
SsC:										
Stecoah	B	Low								
			Jan-Dec	---	---	---	---	None	---	---
Soco	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
SsD:										
Stecoah	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Soco	B	High								
			Jan-Dec	---	---	---	---	None	---	---
SsE:										
Stecoah	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Soco	B	High								
			Jan-Dec	---	---	---	---	None	---	---
TaC:										
Tate	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
TeB:										
Tate	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
ToB:										
Toast	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
ToC:										
Toast	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
Ud:										
Udorthents	B	High								
			Jan-Dec	---	---	---	---	None	---	---
UnB:										
Unison	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
UnC:										
Unison	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
UnD:										
Unison	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Ur:										
Urban land	---	---								
			Jan-Dec	---	---	---	---	None	---	---
Udorthents	B	High								
			Jan-Dec	---	---	---	---	None	---	---
WeC:										
Whiteoak	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
WhD:										
Whiteoak	B	High								
			Jan-Dec	---	---	---	---	None	---	---
WoB2:										
Woolwine	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
WoC2:										
Woolwine	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Fairview	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---

Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
WoD2:										
Woolwine------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
Fairview------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	---
WwB:										
Woolwine------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Fairview------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Urban land----------------	---	---								
			Jan-Dec	---	---	---	---	None	---	---
WwC:										
Woolwine------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Fairview------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	---
Urban land----------------	---	---								
			Jan-Dec	---	---	---	---	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	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
AaA:					
Arkaqua	---	---	Moderate	High	Moderate
AbE, AcF:					
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
Buladean	Bedrock (paralithic)	40-60	Moderate	Low	High
AsF:					
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
Cleveland	Bedrock (lithic)	10-20	Moderate	Low	High
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
BaB:					
Banister	---	---	None	High	High
BoB:					
Biltmore	---	---	Low	Low	Moderate
BrD:					
Braddock	---	---	Moderate	High	Moderate
BvB:					
Brevard	---	---	Moderate	Moderate	Moderate
CaB2:					
Cecil	---	---	None	High	High
CeD, CeE:					
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
ChC, ChD, CkE, CkF:					
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
Buladean	Bedrock (paralithic)	40-60	Moderate	Low	High
CmA:					
Chewacla	---	---	None	High	Moderate
CpD, CpE, CpF:					
Cliffield	Bedrock (lithic)	20-40	Moderate	Moderate	High
Pigeonroost	Bedrock (paralithic)	20-40	Moderate	Moderate	High
CvA:					
Colvard	---	---	Moderate	Low	Moderate

Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
CyE, CyF:					
Crossnore	Bedrock (paralithic)	20-40	Moderate	Low	High
Jeffrey	Bedrock (lithic)	20-40	None	Low	Moderate
DaB:					
Dillard	---	---	Moderate	Moderate	High
DrF:					
Ditney	Bedrock (lithic)	20-40	Moderate	Low	Moderate
Unicoi	Bedrock (lithic)	7-20	Moderate	Low	Moderate
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
EdC, EdD, EdE:					
Edneytown	---	---	Moderate	Moderate	Moderate
Pigeonroost	Bedrock (paralithic)	20-40	Moderate	Moderate	High
EuF, EvC, EvD, EvE:					
Evard	---	---	Moderate	Moderate	High
Cowee	Bedrock (paralithic)	20-40	Moderate	Moderate	High
FaB2, FaC2, FaD2:					
Fairview	---	---	None	High	High
FeB, FeC:					
Fairview	---	---	None	High	High
Urban land	---	---	None	---	---
FnA:					
Fluvaquents	---	---	---	---	---
Udifluvents	---	---	Low	Low	Moderate
FoB:					
Fontaflora	---	---	Low	Low	High
Ostin	---	---	Low	Low	Moderate
GcD:					
Greenlee	---	---	Low	Low	High
GrD, GrE:					
Greenlee	---	---	Low	Low	High
Tate	---	---	Moderate	Moderate	Moderate
GtC:					
Greenlee	---	---	Low	Low	High
Tate	---	---	Moderate	Moderate	Moderate
Ostin	---	---	Low	Low	Moderate

Soil Features—Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
HaA:					
Hatboro----------------	---	---	None	High	Moderate
IoA:					
Iotla------------------	---	---	Moderate	Low	Moderate
MaD:					
Maymead----------------	---	---	Moderate	Low	Moderate
MeD:					
Meadowfield------------	Bedrock (lithic)	20-40	Moderate	Moderate	High
Fairview---------------	---	---	None	High	High
MoE:					
Meadowfield------------	Bedrock (lithic)	20-40	Moderate	Moderate	High
Rhodhiss---------------	---	---	None	Moderate	High
MwC:					
Meadowfield------------	Bedrock (lithic)	20-40	Moderate	Moderate	High
Woolwine---------------	Bedrock (paralithic)	20-40	None	Moderate	High
NkA:					
Nikwasi----------------	Strongly contrasting textural stratification	20-40	Moderate	High	High
NnD, NnE:					
Northcove--------------	---	---	Low	Low	High
PaC2, PaD2:					
Pacolet----------------	---	---	None	High	High
PnC, PnD:					
Pineola----------------	Bedrock (paralithic)	20-40	Moderate	Moderate	High
Qu:					
Pits-------------------	Bedrock (lithic)	0-0	None	---	---
RhD, RhE:					
Rhodhiss---------------	---	---	None	Moderate	High
RoE:					
Rhodhiss---------------	---	---	None	Moderate	High
Bannertown-------------	Bedrock (lithic)	20-40	None	Low	High
RsE:					
Rion-------------------	---	---	None	Moderate	High
Cliffside--------------	Bedrock (lithic)	20-40	None	Moderate	High
SoC, SoD, SoE, SoF:					
Soco-------------------	Bedrock (paralithic)	20-40	Moderate	Moderate	High

Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
Ditney	Bedrock (lithic)	20-40	Moderate	Low	Moderate
SsC, SsD, SsE:					
Stecoah	Bedrock (paralithic)	40-60	Moderate	Moderate	High
Soco	Bedrock (paralithic)	20-40	Moderate	Moderate	High
TaC, TeB:					
Tate	---	---	Moderate	Moderate	Moderate
ToB, ToC:					
Toast	---	---	None	Moderate	High
Ud:					
Udorthents	---	---	None	Moderate	High
UnB, UnC, UnD:					
Unison	---	---	Moderate	High	Moderate
Ur:					
Urban land	---	---	None	---	---
Udorthents	---	---	None	Moderate	High
W:					
Water	---	---	---	---	---
WeC, WhD:					
Whiteoak	---	---	Moderate	Low	High
WoB2, WoC2, WoD2:					
Woolwine	Bedrock (paralithic)	20-40	None	Moderate	High
Fairview	---	---	None	High	High
WwB, WwC:					
Woolwine	Bedrock (paralithic)	20-40	None	Moderate	High
Fairview	---	---	None	High	High
Urban land	---	---	None	---	---

Taxanomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Arkaqua	Fine-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
Ashe	Coarse-loamy, mixed, active, mesic Typic Dystrudepts
Banister	Fine, mixed, semiactive, mesic Aquic Hapludults
Bannertown	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Biltmore	Mixed, mesic Typic Udipsamments
Braddock	Fine, mixed, semiactive, mesic Typic Hapludults
Brevard	Fine-loamy, parasesquic, mesic Typic Hapludults
Buladean	Coarse-loamy, mixed, active, mesic Typic Dystrudepts
Cecil	Fine, kaolinitic, thermic Typic Kanhapludults
Chestnut	Coarse-loamy, mixed, active, mesic Typic Dystrudepts
Chewacla	Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts
Cleveland	Loamy, mixed, active, mesic Lithic Dystrudepts
Cliffield	Loamy-skeletal, mixed, subactive, mesic Typic Hapludults
Cliffside	Loamy-skeletal, mixed, semiactive, thermic Typic Hapludults
Colvard	Coarse-loamy, mixed, active, nonacid, mesic Typic Udifluvents
Cowee	Fine-loamy, parasesquic, mesic Typic Hapludults
Crossnore	Fine-loamy, isotic, mesic Typic Dystrudepts
Dillard	Fine-loamy, mixed, semiactive, mesic Aquic Hapludults
Ditney	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Edneytown	Fine-loamy, mixed, active, mesic Typic Hapludults
Evard	Fine-loamy, parasesquic, mesic Typic Hapludults
Fairview	Fine, kaolinitic, mesic Typic Kanhapludults
Fluvaquents	Fluvaquents
Fontaflora	Sandy, mixed, mesic Typic Udifluvents
Greenlee	Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts
Hatboro	Fine-loamy, mixed, active, nonacid, mesic Typic Fluvaquents
Iotla	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
Jeffrey	Fine-loamy, isotic, mesic Typic Dystrudepts
Maymead	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Meadowfield	Loamy-skeletal, mixed, subactive, mesic Typic Hapludults
Nikwasi	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, mesic Cumulic Humaquepts
Northcove	Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts
Ostin	Sandy-skeletal, mixed, mesic Typic Udifluvents
Pacolet	Fine, kaolinitic, thermic Typic Kanhapludults
Pigeonroost	Fine-loamy, mixed, active, mesic Typic Hapludults
Pineola	Fine-loamy, mixed, active, mesic Humic Hapludults
Rhodhiss	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Rion	Fine-loamy, mixed, semiactive, thermic Typic Hapludults
Soco	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Stecoah	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Tate	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Toast	Fine, kaolinitic, mesic Typic Kanhapludults
Udifluvents	Udifluvents
Udorthents	Udorthents
Unicoi	Loamy-skeletal, mixed, semiactive, mesic Lithic Dystrudepts
Unison	Fine, mixed, semiactive, mesic Typic Hapludults
*Whiteoak	Fine-loamy, isotic, mesic Typic Dystrudepts
Woolwine	Fine, kaolinitic, mesic Typic Kanhapludults

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