United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Tennessee Agricultural
Experiment Station,
Tennessee Department of
Agriculture, Scott County,
and Scott County Soil
Conservation District

Soil Survey of Scott County Area, Tennessee

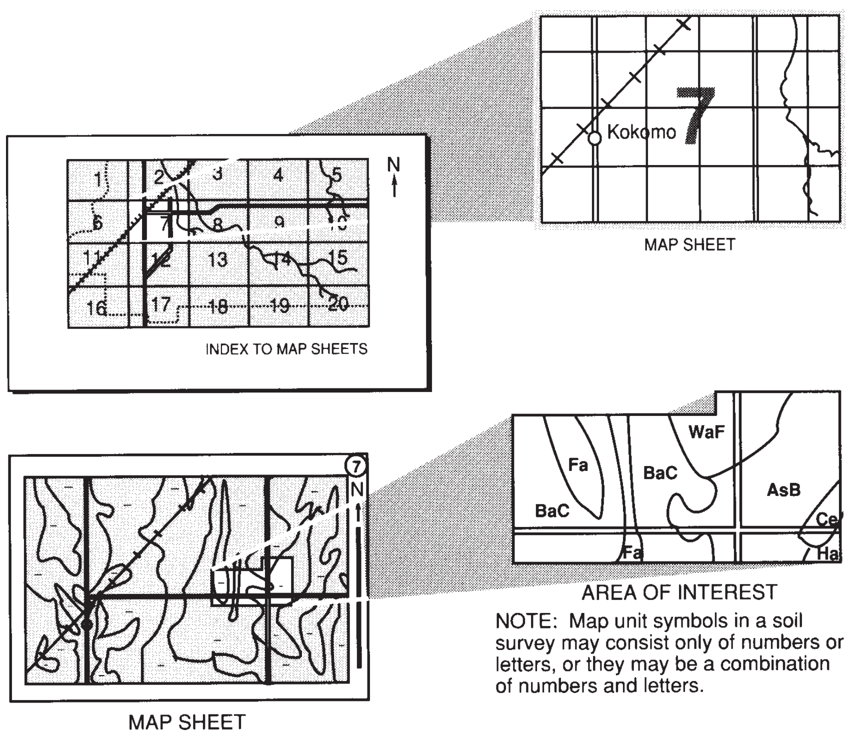
How To Use This Soil Survey

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 go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go 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.



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.

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2002. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2002. This survey was made cooperatively by the Natural Resources Conservation Service, the Tennessee Agricultural Experiment Station, the Tennessee Department of Agriculture, the Scott County Board of Commissioners, and the Scott County Soil Conservation District. The survey is part of the technical assistance furnished to the Scott County Soil Conservation District.

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

Cover: Pasture in an area of Allegheny-Cotaco complex, occasionally flooded, is in the foreground. Pasture in an area of Shelocta silt loam, 5 to 12 percent slopes, is the middle ground and to the right. An area of Gilpin-Bouldin-Petros complex, 25 to 75 percent slopes, very stony, is in the background on the mountainsides.

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

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Issued 2006

Foreword

This soil survey contains information that affects land use planning in Scott 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, 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. 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.

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Soil Survey of
Scott County Area, Tennessee

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Tennessee Agricultural Experiment Station, Tennessee Department of Agriculture, Scott County, and Scott County Soil Conservation District

Scott County is in the northeastern part of Tennessee (fig. 1). It is bordered by McCreary County, Kentucky, to the north; Campbell County, Tennessee, to the east; Morgan County, Tennessee, to the south; and Fentress County, Tennessee, to the west. The county has an area of approximately 536 square miles, or 341,400 acres. The soil survey area is 273,400 acres in size and excludes the Big South Fork Recreation Area. Scott County is located approximately 120 miles south of Lexington, Kentucky, 65 miles northwest of Knoxville, Tennessee, and 175 miles northeast of Nashville, Tennessee. In 1997, according to census data, Scott County had a population of 19,788. Huntsville, the county seat, is located on State Highway 63 and was incorporated in 1963. The town of Oneida is located on State Highway 27, approximately 5 miles south of the Tennessee–Kentucky State line. It is the largest town in the county and was incorporated in 1913 *(4)*.

Forest covers approximately 88.9 percent of Scott County. The majority of the cleared land is used for pasture and hay, crops, and urban and residential areas. A large number of the soils in the county formed under woodland and are dominantly light in color, strongly acid, and highly leached. They range in depth from shallow to very deep with loamy subsoils and have few to many rock fragments. Scott County lies entirely within the Cumberland Plateau and Mountains Major Land Resource Area (125).

General Nature of the Survey Area

This section gives general information about the county. It discusses history; natural resources and industry; physiography, relief, and drainage; transportation; and climate.

History

The survey area was probably once a hunting ground for Native Americans and a reserve set aside by the Chickasaw and Cherokee Nations.

In the years 1769 through 1771, a group of explorers called the “Long Hunters” passed through and temporarily settled in the survey area. They hunted a large

Figure 1.—Location of Scott County in Tennessee.

quantity of game and sold the furs, hides, oil, and tallow as far south as Natchez, Mississippi. The rugged topography and the lack of roads or easily navigable waterways, however, prevented settlement in the Cumberland Mountains prior to 1800. The earliest settlers were given land grants by North Carolina and Virginia as payment for their service in the Revolutionary War. When the State of Tennessee was admitted to the Union in 1796, land grants were issued to new settlers as well. Those who did not have land grants simply “squatted” or settled by what was called “cabin right,” which was later known as “tomahawk right.”

Scott County was not created until December 17, 1849. It was formed from parts of Fentress, Morgan, and Campbell Counties. It was named in honor of General Winfield Scott, a soldier in the War of 1812 and a commander of U.S. troops at Vera Cruz, Cerro Gordo, and Molino del Rey in the Mexican War *(3, 5, 13)*.

Natural Resources and Industry

Lumber has been the most profitable natural resource in Scott County. It has been the county’s leading industry since the end of the Civil War. Scott County also has been a large producer of coal since the late 1800’s and still has many large reserves. Production, however, has decreased since the coal booms of the 1970’s and 1980’s. Other natural resources include oil, natural gas, iron, and clay.

Physiography, Relief, and Drainage

Scott County lies entirely within the Cumberland Plateau and Mountains Major Land Resource Area (125). The western part of Scott County is in the Cumberland Plateau portion, and the eastern part is in the Wartburg Basin of the Cumberland Mountains. The Cumberland Plateau consists of broad rolling flats dissected by dendritic drainageways. The Cumberland Mountains area is comprised of steep, high mountains with narrow, uneven tops and narrow intermountain valleys.

The soils of the Cumberland Plateau and Mountains are underlain by interbedded shale, siltstone, and sandstone of Pennsylvanian age. Scott County is drained to the north by the Big South Fork section of the Cumberland River and its tributaries.

Transportation

The primary highway intersecting Scott County in a north–south direction is State Highway 27. State Highway 63 originates from State Highway 27 and provides an eastern route to Interstate Highway 75 in Campbell County. Highway 297 originates from State Highway 27 and provides a western route to Fentress County.

The Norfolk Southern Railway intersects the county in a north-south direction.

Scheduled air service is available at the McGhee-Tyson Airport, which is approximately 90 miles south of the county *(4)*.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Oneida, Tennessee, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 34.1 degrees F and the average daily minimum temperature is 22.2 degrees. The lowest temperature on record, which occurred on January 21, 1985, was -26 degrees. In summer, the average temperature is 71.4 degrees and the average daily maximum temperature is 83.8 degrees. The highest recorded temperature, which occurred on July 17, 1980, was 102 degrees.

Growing degree days are shown in table 1. 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 (40 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 annual precipitation is about 54.7 inches. Of this, 27 inches, or about 50 percent, usually falls in May through October. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 2.6 inches. The heaviest 1-day rainfall during the period of record was 4.8 inches, recorded on September 3, 1982. Thunderstorms occur on about 47 days each year, and most occur between May and August.

The average seasonal snowfall is about 11 inches. The greatest snow depth at any one time during the period of record was 9 inches. On the average, 3 days of the year have at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 59 percent. Humidity is higher at night, and the average at dawn is about 86 percent. The sun shines 64 percent of the time possible in summer and 42 percent in winter. The prevailing wind is from the northeast. Average windspeed is highest, between 8 and 9 miles per hour, from January to April.

How This Survey Was Made

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

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

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

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

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests *(8)*. 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.

Detailed Soil Map Units

The map units delineated on the detailed soil maps 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 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 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 and agronomic interpretations. If intensive use of a small area is planned, 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, 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, Atkins silt loam, frequently flooded, is a phase of the Atkins 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. Lily–Gilpin complex, 5 to 12 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Water is an example of a miscellaneous area.

Table 4 gives the acreage and proportionate extent of each map unit. 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 or miscellaneous areas.

Ac—Allegheny-Cotaco complex, occasionally flooded

Composition

Allegheny soil and similar inclusions: 50 to 70 percent
Cotaco soil and similar inclusions: 30 to 50 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountain valleys
Landform position: Low terraces
Shape of areas: Long and narrow
Size of areas: 10 to 50 acres
Slope range: 0 to 3 percent
Parent material: Alluvium

Soil Properties and Qualities

Drainage class: Allegheny—well drained; Cotaco—moderately well drained
Permeability: Moderate
Flooding: Occasional
Available water capacity: High
Seasonal high water table: Allegheny—at a depth of more than 6 feet; Cotaco—at a depth of 2.0 to 2.5 feet from November through May
Reaction: Very strongly acid or strongly acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Allegheny

Surface layer:
0 to 6 inches—brown friable loam

Subsurface layer:
6 to 10 inches—dark yellowish brown friable loam

Subsoil:
10 to 24 inches—dark yellowish brown friable loam
24 to 39 inches—dark yellowish brown friable clay loam
39 to 45 inches—yellowish brown friable gravelly clay loam

Substratum:
45 to 60 inches—yellowish brown very friable gravelly fine sandy loam

Cotaco

Surface layer:
0 to 6 inches—brown loam

Subsurface layer:
6 to 10 inches—dark yellowish brown friable loam

Subsoil:
10 to 24 inches—dark yellowish brown friable loam
24 to 36 inches—yellowish brown friable clay loam that has grayish and brownish mottles
36 to 45 inches—yellowish brown friable gravelly clay loam that has grayish and reddish mottles

Substratum:
45 to 60 inches—mottled light brownish gray, strong brown, and yellowish brown very friable very gravelly fine sandy loam

Contrasting Inclusions

- Small areas of Pope and Philo soils
- Small areas of Atkins soils
- Small areas of a somewhat poorly drained soil in positions similar to those of the Allegheny and Cotaco soils

Use and Management

Major use: Hay and pasture
Common woodland vegetation: Bottomland hardwoods

Cropland

Suitability: Well suited
Management measures and considerations:
- These soils have good tilth and can be worked throughout a wide range of moisture content. The root zone is very deep but is limited by a seasonal high water table during winter and early spring in areas of the Cotaco soil.
- These soils are moderately suited to winter wheat because of flooding in the winter and early spring.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Only hay and pasture plants that tolerate periodic inundation and seasonal wetness should be seeded.
- These soils are poorly suited to alfalfa because of the seasonal wetness and flooding.

Woodland

Suitability: Well suited
Management measures and considerations:
- The seedling mortality rate caused by the flooding and plant competition are the only significant management concerns. To compensate for the higher mortality rate, larger trees can be planted or more trees than normal can be planted.

Building site development

Suitability: Unsuited; limitations may be overcome by careful site selection
Management measures and considerations:
- These soils are not suited to sites for dwellings because of the flooding.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- These soils are unsuited to septic tank absorption fields because of the flooding.

Interpretive Group

Land capability classification: 2w

At—Atkins silt loam, frequently flooded

Composition

Atkins soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Flood plains
Shape of areas: Long and linear
Size of areas: 5 to 25 acres
Slope range: 0 to 2 percent
Parent material: Alluvium

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate
Flooding: Frequently
Available water capacity: High (more than 6 inches)
Seasonal high water table: At or near the surface in late winter and early spring
Reaction: Strongly acid or very strongly acid, except where the surface layer has been limed
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—grayish brown silt loam

Subsoil:
6 to 36 inches—light brownish gray and gray silt loam
36 to 46 inches—light gray silty clay loam

Substratum:
46 to 62 inches—light gray fine sandy loam

Contrasting Inclusions

- Small areas of Philo soils
- Soils that are somewhat poorly drained in the slightly higher positions

Use and Management

Major use: Pasture
Common woodland vegetation: Bottomland hardwoods

Cropland

Suitability: Poorly suited
Management measures and considerations:
- Seasonal flooding limits the production and harvesting of crops.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- Only hay and pasture plants that tolerate periodic inundation and seasonal wetness should be seeded.
- Grazing when the soil is wet results in compaction and destruction of the sod.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- The seasonal high water table restricts the use of equipment to dry periods, midsummer through early fall, when the water table is lowest.
- Seedling mortality rates may be high in areas that are subject to flooding.
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Unsuited
Management measures and considerations:
- This soil is not suited to sites for dwellings because of the wetness and flooding.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- This soil is unsuited to septic tank absorption fields because of the flooding and internal wetness.

Interpretive Group

Land capability classification: 3w

Bm—Bethesda-Mines pit complex, 10 to 80 percent slopes

Composition

Bethesda soil and similar inclusions: 50 to 90 percent
Mines pit: 10 to 40 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Hilly plateaus and mountains
Landform position: Surface-mined areas
Shape of areas: Typically long and linear
Size of areas: 5 to 200 acres

Slope range: 10 to 80 percent
Parent material: Acid regolith from surface-mining operations

Properties and Qualities of the Bethesda Soil

Drainage class: Well drained
Permeability: Moderately slow
Flooding: None
Available water capacity: Moderate (4 to 6 inches)
Seasonal high water table: None
Reaction: Strongly acid to extremely acid, except where the surface layer in reclaimed areas has been limed
Depth to bedrock: More than 60 inches

Typical Profile

Bethesda

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

Substratum:
2 to 45 inches—brown, dark yellowish brown, and yellowish brown friable very channery loam and very channery clay loam
45 to 60 inches—yellowish brown friable channery loam

Mines pit

This part of the map unit consists of deep holes dug to remove coal seams from rock strata. One side of the hole is typically a high vertical rock wall adjacent to the pit.

Contrasting Inclusions

- Small areas of Lily, Ramsey, and Gilpin soils that have not been disturbed

Use and Management

Major use: Abandoned land
Common woodland vegetation: None; some older areas have a few Virginia pine

Cropland

Suitability: Unsuited
Management measures and considerations:
- Because of the slope and the unfavorable soil properties, this map unit is unsuited to cropland.

Pasture and hayland

Suitability: Unsuited
Management measures and considerations:
- Because of the slope and the unfavorable soil properties, this map unit is unsuited to pasture and hayland.
- In some areas after reclamation, the soil is limited as pasture.

Woodland

Suitability: Unsuited
Management measures and considerations:
- The growth rate is slow, seedling mortality rates are high, and equipment use is limited on steep and very steep slopes.

Building site development

Suitability: Unsuited
Management measures and considerations:
- Because of severe limitations, including the slope, sites should be selected on other soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Because of severe limitations, including the slope, sites should be selected on other soils.

Interpretive Group

Land capability classification: Bethesda—7e; Mines pit—8

GnC—Gilpin silt loam, 5 to 12 percent slopes

Composition

Gilpin soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Ridgetops
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Slope range: 5 to 12 percent
Parent material: Shale and siltstone residuum

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Low
Seasonal high water table: None
Reaction: Strongly acid or very strongly acid throughout the profile, except where the surface layer has been limed
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow channery very friable silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Contrasting Inclusions

- Sequoia soils that have clayey textures throughout the subsoil
- Lily soils that are underlain by hard sandstone bedrock

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Using practices such as minimum tillage, including legumes and grasses in the rotation, maintaining crop residue on the surface, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Rotating grazing, using proper stocking rates, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Sites should be designed so that they conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 3e

GnD—Gilpin silt loam, 12 to 20 percent slopes

Composition

Gilpin soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 40 acres

Slope range: 12 to 20 percent
Parent material: Shale and siltstone residuum

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Low
Seasonal high water table: None
Reaction: Strongly acid or very strongly acid throughout the profile, except where the surface layer has been limed
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow channery very friable silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Contrasting Inclusions

- Sequoia soils that have clayey textures throughout the subsoil
- Lily soils that are underlain by hard sandstone bedrock

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Using practices such as minimum tillage, including legumes and grasses in the rotation, maintaining crop residue on the surface, and using other erosion-control practices reduce the risk of erosion. Site-specific recommendations are needed.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Rotating grazing, using proper stocking rates, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Moderately suited

Management measures and considerations:
- Sites should be designed so that they conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 4e

GpE—Gilpin-Petros complex, 20 to 35 percent slopes

Composition

Gilpin soil and similar inclusions: 40 to 60 percent
Petros soil and similar inclusions: 30 to 50 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Slope range: 20 to 35 percent
Parent material: Shale and siltstone residuum

Soil Properties and Qualities

Drainage class: Gilpin—well drained; Petros—excessively drained
Permeability: Gilpin—moderate; Petros—rapid
Flooding: None
Available water capacity: Gilpin—low; Petros—very low
Seasonal high water table: None
Reaction: Strongly acid or very strongly acid throughout the profile
Depth to bedrock: 20 to 40 inches

Typical Profile

Gilpin

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow very friable channery silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Petros

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

Subsoil:
2 to 8 inches—yellowish brown friable very channery silt loam
8 to 16 inches—yellowish brown friable extremely channery silt loam

Bedrock:
16 to 26 inches—rippable shale

Contrasting Inclusions

- Sequoia soils that have clayey textures throughout the subsoil
- Lily soils that are underlain by hard sandstone bedrock
- Shelocta soils in concave areas on the lower side slopes

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Unsuited
Management measures and considerations:
- The slope limits the use of equipment and causes a very severe hazard of erosion unless a good plant cover is maintained.

Pasture and hayland

Suitability: Poorly suited
Management measures and considerations:
- The slope limits most management practices and causes a very severe hazard of erosion unless a good plant cover is maintained.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Equipment use is limited because of the slope.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope greatly hinders building structures; sites should be selected on better suited soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Septic tank absorption lines should be installed in areas of the less sloping inclusions or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: Gilpin—6e; Petros—7s

GpF—Gilpin-Petros complex, 35 to 70 percent slopes

Composition

Gilpin soil and similar inclusions: 50 to 70 percent
Petros soil and similar inclusions: 20 to 40 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Side slopes
Shape of areas: Irregular
Size of areas: 100 to 500 acres
Slope range: 35 to 70 percent
Parent material: Shale and siltstone residuum

Soil Properties and Qualities

Drainage class: Gilpin—well drained; Petros—excessively drained
Permeability: Gilpin—moderate; Petros—rapid
Flooding: None
Available water capacity: Gilpin—low; Petros—very low
Seasonal high water table: None
Reaction: Strongly acid or very strongly acid throughout the profile
Depth to bedrock: 20 to 40 inches

Typical Profile

Gilpin

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow very friable channery silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Petros

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

Subsoil:
2 to 8 inches—yellowish brown friable very channery silt loam
8 to 16 inches—yellowish brown friable extremely channery silt loam

Bedrock:
16 to 26 inches—rippable shale

Contrasting Inclusions

- Bouldin soils in concave positions below bluffs
- Shelocta soils in concave areas and on the lower side slopes
- Areas of rock outcrops of sandstone along shoulder slopes or on nose slopes

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Unsuited
Management measures and considerations:
- The slope limits the use of equipment and causes a very severe hazard of erosion unless a good plant cover is maintained.

Pasture and hayland

Suitability: Unsuited
Management measures and considerations:
- The slope limits most management practices and causes a very severe hazard of erosion unless a good plant cover is maintained.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Equipment use is limited because of the slope.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope greatly hinders building structures; sites should be selected on better suited soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Septic tank absorption lines should be installed in areas of inclusions with lesser slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: Gilpin—7e; Petros—7s

GsF—Gilpin-Bouldin-Petros complex, 25 to 75 percent slopes, very stony

Composition

Gilpin soil and similar inclusions: 30 to 40 percent
Bouldin soil and similar inclusions: 25 to 35 percent
Petros soil and similar inclusions: 20 to 30 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Mountains and hilly plateaus
Landform position: Deep gorges and side slopes

Shape of areas: Irregular
Size of areas: 50 to 1,000 acres
Slope range: 25 to 75 percent
Parent material: Colluvium from sandstone and shale and residuum from shale and siltstone

Soil Properties and Qualities

Drainage class: Gilpin and Bouldin—well drained; Petros—excessively drained
Permeability: Gilpin—moderate; Bouldin—moderately rapid; Petros—rapid
Flooding: None
Available water capacity: Gilpin and Bouldin—low; Petros—very low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: Gilpin—20 to 40 inches; Bouldin—more than 60 inches; Petros—10 to 20 inches
Surface stoniness: Gilpin—0.5 to 1 percent; Bouldin—1 to 3 percent; Petros—less than 0.1 percent

Typical Profile

Gilpin

Surface layer:
0 to 3 inches—very dark grayish brown very friable silt loam

Subsurface layer:
3 to 6 inches—yellowish brown very friable silt loam

Subsoil:
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow friable channery silty clay loam that has brownish and reddish mottles

Bedrock:
25 to 35 inches—rippable shale

Bouldin

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

Subsurface layer:
2 to 17 inches—yellowish brown very friable channery loam

Subsoil:
17 to 30 inches—yellowish brown friable very channery loam
30 to 80 inches—strong brown friable extremely flaggy clay loam

Petros

Surface layer:
0 to 2 inch—dark grayish brown very friable channery silt loam

Subsoil:
2 to 8 inches—yellowish brown friable very channery silt loam
8 to 16 inches—yellowish brown friable extremely channery silt loam

Bedrock:
16 to 26 inches—rippable shale bedrock

Contrasting Inclusions

- Rock outcrops on the upper side slopes
- Shelocta soils in positions similar to those of the Bouldin soil
- Lily soils on narrow benches

Use and Management

Major use: Woodland
Common woodland vegetation: Cove hardwoods

Cropland

Suitability: Unsuited
Management measures and considerations:
- Because of the slope and the stones and cobbles on the surface, tillage is impractical.

Pasture and hayland

Suitability: Unsuited
Management measures and considerations:
- Because of the slope and the stones and cobbles on the surface, many management practices are limited.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Equipment use is limited because of the slope.
- Stones on the surface can interfere with felling, yarding, and other logging operations that involve the use of equipment.
- Reforestation after harvest must be carefully managed in order to reduce plant competition.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope and the large number of stones on the surface severely limit most uses.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Contamination of ground water is possible because the high content of sand and coarse fragments do not sufficiently filter effluent.
- Septic tank absorption lines should be installed on inclusions with lesser slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: Gilpin—7e; Bouldin and Petros—7s

LbB—Lily loam, 2 to 5 percent slopes

Composition

Lily soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 2 to 5 percent
Parent material: Residuum from sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Contrasting Inclusions

- Lonewood soils that are more than 40 inches deep to hard bedrock
- Gilpin and Wernock soils that are underlain by soft bedrock
- Ramsey soils that are less than 20 inches deep to hard bedrock

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Well suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 2e

LbC—Lily loam, 5 to 12 percent slopes

Composition

Lily soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope range: 5 to 12 percent
Parent material: Residuum from sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Contrasting Inclusions

- Gilpin soils that are underlain by soft bedrock
- Shelocta soils that are very deep; in concave areas

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and using other erosion-control practices reduce the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 3e

LbD—Lily loam, 12 to 20 percent slopes

Composition

Lily soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus

Landform position: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 200 acres
Slope range: 12 to 20 percent
Parent material: Residuum from sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Contrasting Inclusions

- Ramsey soils that are less than 20 inches deep to bedrock
- Gilpin soils that are underlain by soft bedrock
- Sandstone rock outcrops in some areas

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Poorly suited
Management measures and considerations:
- Using practices such as minimum tillage, long rotations of grasses and legumes, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.
- Seedling survival rates are less on the drier, south-facing slopes.

- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.

Building site development

Suitability: Poorly suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.
- The slope greatly hinders building structures; sites should be selected on better suited soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.
- Septic tank absorption lines should be installed in areas of inclusions with less slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: 4e

LgC—Lily-Gilpin complex, 5 to 12 percent slopes

Composition

Lily soil and similar inclusions: 60 to 70 percent
Gilpin soil and similar inclusions: 25 to 35 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope range: 5 to 12 percent
Parent material: Residuum from sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Lily—moderately rapid; Gilpin—moderate
Flooding: None
Available water capacity: Lily—moderate; Gilpin—low
Seasonal high water table: None
Reaction: Lily—very strongly acid or strongly acid; Gilpin—strongly acid or very strongly acid throughout the profile, except where the surface layer has been limed
Depth to bedrock: 20 to 40 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Gilpin

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow very friable channery silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Contrasting Inclusions

- Small areas of Sequoia soils
- Small areas of Ramsey soils

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 3e

LgD—Lily-Gilpin complex, 12 to 20 percent slopes

Composition

Lily soil and similar inclusions: 50 to 65 percent
Gilpin soil and similar inclusions: 30 to 40 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope range: 12 to 20 percent
Parent material: Residuum from sandstone and shale

Soil Properties and Qualities

Drainage class: Lily—well drained; Gilpin—moderate
Permeability: Moderately rapid
Flooding: None
Available water capacity: Lily—moderate; Gilpin—low
Seasonal high water table: None
Reaction: Lily—very strongly acid or strongly acid; Gilpin—strongly acid or very strongly acid throughout the profile, except where the surface layer has been limed
Depth to bedrock: 20 to 40 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Gilpin

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam

21 to 25 inches—brownish yellow very friable channery silty clay loam that has reddish and brownish mottles

Bedrock:
25 to 35 inches—rippable shale

Contrasting Inclusions

- Small areas of Sequoia soils
- Small areas of Ramsey soils
- Small areas of Petros soils

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 4e

LgE—Lily-Gilpin complex, 20 to 35 percent slopes

Composition

Lily soil and similar inclusions: 50 to 60 percent
Gilpin soil and similar inclusions: 30 to 40 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Slope range: 20 to 35 percent
Parent material: Shale and sandstone residuum

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Lily—moderately rapid; Gilpin—moderate
Flooding: None
Available water capacity: Lily—moderate; Gilpin—low
Seasonal high water table: None
Reaction: Lily—very strongly acid or strongly acid; Gilpin—strongly acid or very strongly acid throughout the profile, except where the surface layer has been limed
Depth to bedrock: 20 to 40 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Gilpin

Surface layer:
0 to 3 inches—dark grayish brown very friable silt loam

Subsoil:
3 to 6 inches—yellowish brown very friable silt loam
6 to 21 inches—yellowish brown friable silty clay loam
21 to 25 inches—brownish yellow very friable channery silty clay loam that has reddish and brownish mottles

Bedrock:
25 inches—rippable shale

Contrasting Inclusions

- Small areas of Sequoia soils
- Small areas of Ramsey soils
- Small areas of Petros soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Unsuited
Management measures and considerations:
- The slope limits the use of equipment and causes a very severe hazard of erosion unless a good plant cover is maintained.

Pasture and hayland

Suitability: Poorly suited
Management measures and considerations:
- The slope limits most management practices and causes a very severe hazard of erosion unless a good plant cover is maintained.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Equipment use is limited because of the slope.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope greatly hinders building structures; sites should be selected on better suited soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Septic tank absorption lines should be installed in areas of inclusions with lesser slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: 6e

LmC—Lily-Ramsey complex, 5 to 12 percent slopes

Composition

Lily soil and similar inclusions: 55 to 65 percent
Ramsey soil and similar inclusions: 25 to 35 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Slope range: 5 to 12 percent
Parent material: Residuum from sandstone

Soil Properties and Qualities

Drainage class: Lily—well drained; Ramsey—somewhat excessively drained
Permeability: Lily—moderately rapid; Ramsey—rapid
Flooding: None
Available water capacity: Lily—moderate; Ramsey—very low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: Lily—20 to 40 inches; Ramsey—10 to 20 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Ramsey

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

Subsurface layer:
2 to 4 inches—brown very friable loam

Subsoil:
4 to 10 inches—yellowish brown very friable fine sandy loam
10 to 16 inches—yellowish brown very friable gravelly sandy loam

Bedrock:
16 inches—hard sandstone bedrock

Contrasting Inclusions

- Small areas of Lonewood soils
- Small areas of Wernock soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Poorly suited
Management measures and considerations:
- The very low available water capacity and the shallow root zone of the Ramsey soil are the main limitations affecting cropland.
- The Lily soil is moderately suited to crops.
- Erosion is a severe limitation on both soils.

Pasture and hayland

Suitability: Moderately suited

Management measures and considerations:
- The Ramsey soil is poorly suited to pasture and hayland. The very low available water capacity and the shallow root zone are the main limitations.
- The Lily soil is well suited to pasture and hay. It is best suited to tall fescue for pasture.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility, the low available water capacity, and the moderately deep to shallow rooting zone.
- Windthrow is a hazard because of the shallow rooting zone.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: Lily—3e; Ramsey—6e

LmD—Lily-Ramsey complex, 12 to 20 percent slopes

Composition

Lily soil and similar inclusions: 50 to 60 percent
Gilpin soil and similar inclusions: 35 to 45 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope range: 12 to 20 percent
Parent material: Residuum from sandstone and shale

Soil Properties and Qualities

Drainage class: Lily—well drained; Ramsey—somewhat excessively drained
Permeability: Lily—moderately rapid; Ramsey—rapid
Flooding: None
Available water capacity: Lily—moderate; Ramsey—very low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: Lily—20 to 40 inches; Ramsey—10 to 20 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone

Ramsey

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

Subsurface layer:
2 to 4 inches—brown very friable loam

Subsoil:
4 to 10 inches—yellowish brown very friable fine sandy loam
10 to 16 inches—yellowish brown very friable gravelly sandy loam

Bedrock:
16 inches—hard sandstone bedrock

Contrasting Inclusions

- Small areas of Lonewood soils
- Small areas of Wernock soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Poorly suited
Management measures and considerations:
- The very low available water capacity and the shallow root zone in areas of the Ramsey soil are the main limitations affecting cropland.
- The Lily soil is moderately suited to crops.
- Erosion is a severe limitation for both soils.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- The Ramsey soil is poorly suited to pasture and hayland. The very low available water capacity and the shallow root zone are the main limitations.
- The Lily soil is well suited to pasture and hay. It is best suited to tall fescue for pasture.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility, the low available water capacity, and the moderately deep to shallow rooting zone.

- Windthrow is a hazard because of the shallow rooting zone.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: Lily—4e; Ramsey—6e

LmE—Lily-Ramsey complex, 20 to 35 percent slopes

Composition

Lily soil and similar inclusions: 45 to 55 percent
Ramsey soil and similar inclusions: 35 to 45 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Highly dissected uplands
Landform position: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Slope range: 20 to 35 percent
Parent material: Sandstone residuum

Soil Properties and Qualities

Drainage class: Lily—well drained; Ramsey—somewhat excessively drained
Permeability: Lily—moderately rapid; Ramsey—rapid
Flooding: None
Available water capacity: Lily—moderate; Ramsey—very low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: Lily—20 to 40 inches; Ramsey—10 to 20 inches

Typical Profile

Lily

Surface layer:
0 to 3 inches—brown friable loam

Subsoil:
3 to 9 inches—yellowish brown friable loam
9 to 30 inches—yellowish brown friable clay loam

Bedrock:
30 inches—hard sandstone bedrock

Ramsey

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

Subsurface layer:
2 to 4 inches—brown very friable loam

Subsoil:
4 to 10 inches—yellowish brown very friable fine sandy loam
10 to 16 inches—yellowish brown very friable gravelly sandy loam

Bedrock:
16 inches—hard sandstone bedrock

Contrasting Inclusions

- Small areas of Lonewood soils
- Small areas of Wernock soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Unsuited
Management measures and considerations:
- The slope limits the use of equipment and causes a very severe hazard of erosion unless a good plant cover is maintained.

Pasture and hayland

Suitability: Poorly suited
Management measures and considerations:
- The slope limits most management practices and causes a very severe hazard of erosion unless a good plant cover is maintained.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Equipment use is limited because of the slope.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope greatly hinders building structures; sites should be selected on better suited soils.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Septic tank absorption lines should be installed in areas of inclusions with lesser slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: Lily—6e; Ramsey—7e

LoB—Lonewood silt loam, 2 to 5 percent slopes

Composition

Lonewood soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus
Landform position: Ridgetops and broad upland interfluves
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope range: 2 to 5 percent
Parent material: Silty mantle over residuum from interbedded shale and sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: High
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid, except in limed areas
Depth to bedrock: 40 to 60 inches or more

Typical Profile

Surface layer:
0 to 2 inch—brown silt loam

Subsoil:
2 to 8 inches—yellowish brown very friable silt loam
8 to 28 inches—yellowish brown friable silty clay loam
28 to 55 inches—strong brown and yellowish red friable clay loam

Bedrock:
55 to 60 inches—soft sandstone bedrock

Contrasting Inclusions

- Small areas of Lily soils
- Small areas of Gilpin soils
- Small areas of Wernock soils

Use and Management

Major use: Pasture and woodland
Common woodland vegetation: Oak-hickory type

Cropland

Suitability: Well suited
Management measures and considerations:
- Most climatically adapted crops can be grown.
- Using practices such as minimum tillage, maintaining crop residue on the surface,

including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Overgrazing reduces plant cover, compacts the soil, causes erosion, and encourages weed growth. Deferred grazing, proper stocking rates, and a good fertilization program help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- The low soil strength is a severe limitations affecting local roads and streets. This limitation may be overcome by providing suitable subgrade or base material.

Septic tank absorption fields

Suitability: Moderately suited
Management measures and considerations:
- Increasing the size of the septic tank absorption area compensates for the slower percolation rate.

Interpretive Group

Land capability classification: 2e

LoC—Lonewood silt loam, 5 to 12 percent slopes

Composition

Lonewood soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus
Landform position: Ridgetops and broad upland interfluves
Shape of areas: Irregular
Size of areas: 5 to 50 acres
Slope range: 5 to 12 percent
Parent material: Silty mantle over residuum from interbedded shale and sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: High
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 40 to 60 inches or more

Typical Profile

Surface layer:
0 to 2 inches—brown silt loam

Subsoil:
2 to 8 inches—yellowish brown very friable silt loam
8 to 28 inches—yellowish brown friable silty clay loam
28 to 55 inches—strong brown and yellowish red friable clay loam

Bedrock:
55 to 60 inches—soft sandstone bedrock

Contrasting Inclusions

- Small areas of Lily soils
- Small areas of Gilpin soils
- Small areas of Wernock soils

Use and Management

Major use: Pasture and woodland
Common woodland vegetation: Oak-hickory type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Most climatically adapted crops can be grown.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Overgrazing reduces plant cover, compacts the soil, causes erosion, and encourages weed growth. Deferred grazing, proper stocking rates, and a good fertilization program help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Management measures and considerations:
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- The low soil strength is a severe limitation affecting local roads and streets. This limitation may be overcome by providing suitable subgrade or base material.
- Sites should be designed so that they conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Management measures and considerations:
- Increasing the size of the septic tank absorption area compensates for the slower percolation rate.

- Because of the slope, septic tank absorption field lines should be installed on the contour.

Interpretive Group

Land capability classification: 3e

Pp—Pope-Philo complex, frequently flooded

Composition

Pope soil and similar inclusions: 45 to 60 percent
Philo soil and similar inclusions: 40 to 55 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountain valleys
Landform position: Flood plains
Shape of areas: Long and narrow
Size of areas: 10 to 50 acres
Slope range: 0 to 3 percent
Parent material: Alluvium

Soil Properties and Qualities

Drainage class: Pope—well drained; Philo—moderately well drained
Permeability: Moderate
Flooding: Frequent
Available water capacity: Pope—high (more than 6 inches); Philo—low (2 to 4 inches)
Seasonal high water table: Pope—at a depth of more than 6 feet; Philo—at a depth of 1.5 to 3.0 feet
Reaction: Very strongly acid or strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Pope

Surface layer:
0 to 5 inches—dark brown very friable loam
5 to 8 inches—dark yellowish brown very friable loam

Subsoil:
8 to 43 inches—dark yellowish brown loam

Substratum:
43 to 60 inches—dark yellowish brown very gravelly sandy loam

Philo

Surface layer:
0 to 6 inches—brown very friable loam

Subsoil:
6 to 36 inches—dark yellowish brown friable loam

Substratum:
36 to 48 inches—yellowish brown friable fine sandy loam
48 to 60 inches—gray very friable gravelly sandy loam

Contrasting Inclusions

- Soils that have clay loam textures in the subsoil
- Small areas of Atkins soils

Use and Management

Major use: Woodland
Common woodland vegetation: Bottomland hardwoods

Cropland

Suitability: Poorly suited
Management measures and considerations:
- The seasonal flooding limits the production and harvesting of crops.
- Stones or cobbles on or near the soil surface limit tillage.

Pasture and hayland

Suitability: Poorly suited
Management measures and considerations:
- Only hay and pasture plants that tolerate periodic inundation and seasonal wetness should be seeded.
- Stones or cobbles on the surface limit many management practices.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Seedling mortality rates may be high in areas that are subject to flooding.
- Large amounts of rock fragments in the soil reduce seedling survival rates. To compensate for the higher seedling mortality rates, larger trees can be planted or more trees than normal can be planted.
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Unsuited
Management measures and considerations:
- These soils are not suited to sites for dwellings because of the flooding.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- These soils are unsuited to septic tank absorption fields because of the flooding.

Interpretive Group

Land capability classification: 2w

SeB—Sequoia silt loam, 2 to 5 percent slopes

Composition

Sequoia soil and similar inclusions: 80 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains

Landform position: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 2 to 5 percent
Parent material: Residuum from shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flooding: None
Available water capacity: Low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
2 to 5 inches—dark yellowish brown friable silt loam

Subsoil:
5 to 9 inches—yellowish brown friable silty clay loam
9 to 16 inches—strong brown firm silty clay
16 to 23 inches—strong brown firm channery silty clay

Bedrock:
23 to 33 inches—rippable shale

Contrasting Inclusions

- Gilpin soils that are less clayey in the subsoil than the Sequoia soil
- Lily soils that are less than 40 inches deep to hard bedrock
- Ramsey soils that are less than 20 inches deep to hard bedrock

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- This soil is moderately suited to row crops. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are limitations.
- The soil has fair suitability for small grains.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- This soil is moderately suited to pasture and hay crops. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are limitations.

Woodland

Suitability: Moderately suited

Management measures and considerations:
- The clayey subsoil, the moderately deep root zone, and the low available water capacity are limitations affecting woodland.

Building site development

Suitability: Poorly suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock and the clayey subsoil.

Interpretive Group

Land capability classification: 3e

SeC—Sequoia silt loam, 5 to 12 percent slopes

Composition

Sequoia soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus and mountains
Landform position: Broad ridgetops and footslopes
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 5 to 12 percent
Parent material: Residuum from shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flooding: None
Available water capacity: Low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
2 to 5 inches—dark yellowish brown friable silt loam

Subsoil:
5 to 9 inches—yellowish brown friable silty clay loam
9 to 16 inches—strong brown firm silty clay
16 to 23 inches—strong brown firm channery silty clay

Bedrock:
23 to 33 inches—rippable shale

Contrasting Inclusions

- Gilpin soils that are less clayey in the subsoil than the Sequoia soil
- Lily soils that are less than 40 inches deep to hard bedrock
- Ramsey soils that are less than 20 inches deep to hard bedrock

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- This soil is moderately suited to row crops. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are limitations.
- The soil has fair suitability for small grains.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- This soil is moderately suited to pasture and hay crops. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are limitations.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- The clayey subsoil, the moderately deep root zone, and the low available water capacity are limitations affecting woodland.

Building site development

Suitability: Poorly suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock and the clayey subsoil.

Interpretive Group

Land capability classification: 4e

SeD—Sequoia silt loam, 12 to 20 percent slopes

Composition

Sequoia soil and similar inclusions: 80 to 90 percent

Setting

Physiographic area: Cumberland Plateau and Mountains

Landscape: Rolling to hilly plateaus and mountains
Landform position: Broad ridgetops and footslopes
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 12 to 20 percent
Parent material: Residuum from shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flooding: None
Available water capacity: Low
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
2 to 5 inches—dark yellowish brown friable silt loam

Subsoil:
5 to 9 inches—yellowish brown friable silty clay loam
9 to 16 inches—strong brown firm silty clay
16 to 23 inches—strong brown firm channery silty clay

Bedrock:
23 to 33 inches—rippable shale

Contrasting Inclusions

- Gilpin soils that are less clayey in the subsoil than the Sequoia soil
- Lily soils that are less than 40 inches deep to hard bedrock
- Ramsey soils that are less than 20 inches deep to hard bedrock

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Unsuited
Management measures and considerations:
- This soil is moderately suited to row crops.
- Erosion is a severe hazard. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are additional limitations.
- The soil has fair suitability for small grains.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- This soil is moderately suited to pasture and hay crops. The moderate depth, the low available water capacity, and the clayey subsoil with moderately slow permeability are limitations.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- The clayey subsoil, the moderately deep root zone, and the low available water capacity are limitations affecting woodland.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock and the clayey subsoil.

Interpretive Group

Land capability classification: 6e

ShC—Shelocta silt loam, 5 to 12 percent slopes

Composition

Shelocta soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Mountains and hilly uplands
Landform position: Side slopes and footslopes
Shape of areas: Irregular
Size of areas: 5 to 50 acres
Slope range: 5 to 12 percent
Parent material: Colluvium from sandstone and shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid, except where the surface layer has been limed
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 3 inches—very dark brown very friable silt loam

Subsurface layer:
3 to 10 inches—yellowish brown friable silt loam

Subsoil:
10 to 21 inches—yellowish brown friable silty clay loam
21 to 65 inches—yellowish brown friable channery silty clay loam

Bedrock:
65 to 75 inches—rippable shale

Contrasting Inclusions

- The moderately deep Gilpin soils
- Soils that have stones on the surface; in drainageways
- Areas of rock outcrops on the upper side slopes

Use and Management

Major use: Woodland and pasture
Common woodland vegetation: Oak-hickory type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Using practices such as minimum tillage, including legumes and grasses in the rotation, maintaining crop residue on the surface, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- Because of coarse fragments in the surface layer, seedbed preparation is difficult.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Rotating grazing, mowing and clipping, applying fertilizer and lime, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- This soil has few limitations affecting forest management.
- Undesirable plants may prevent adequate reforestation by seedlings unless intensive site preparation and maintenance are used.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Sites should be designed so that they conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Management measures and considerations:
- Because of the slope, lines for septic tank absorption fields should be installed on the contour.

Interpretive Group

Land capability classification: 3e

ShD—Shelocta silt loam, 12 to 20 percent slopes

Composition

Shelocta soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Mountains and hilly uplands
Landform position: Side slopes and footslopes
Shape of areas: Irregular
Size of areas: 10 to 100 acres
Slope range: 12 to 20 percent
Parent material: Colluvium from sandstone and shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 3 inches—very dark brown very friable silt loam

Subsurface layer:
3 to 10 inches—yellowish brown friable silt loam

Subsoil:
10 to 21 inches—yellowish brown friable silty clay loam
21 to 65 inches—yellowish brown friable channery silty clay loam

Bedrock:
65 to 75 inches—rippable shale

Contrasting Inclusions

- Small areas of Bouldin soils
- Areas of rock outcrops on the upper side slopes
- Small areas of Gilpin soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-hickory type

Cropland

Suitability: Unsuited
Management measures and considerations:
- The severe hazard of erosion due to slope is a limitation affecting row crops.

Pasture and hayland

Suitability: Moderately suited
Management measures and considerations:
- Rotating grazing, mowing and clipping, and applying fertilizer and lime maintain the quality and quantity of forage.

Woodland

Suitability: Moderately suited

Management measures and considerations:
- The slope is a limitation affecting forest management.
- Constructing diversions and water turnouts and seeding cuts and fills protect roads and landings from erosion.
- Reforestation after harvest must be carefully managed to reduce plant competition.

Building site development

Suitability: Poorly suited
Management measures and considerations:
- Sites should be designed so that they conform to the natural slope.
- The slope hinders the building of streets and roads.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Because of the slope, lines of septic tank absorption field lines should be installed on better suited soils.

Interpretive Group

Land capability classification: 4e

ShE—Shelocta silt loam, 20 to 35 percent slopes

Composition

Shelocta soil and similar inclusions: 85 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Mountains and hilly uplands
Landform position: Side slopes and footslopes
Shape of areas: Irregular
Size of areas: 10 to 100 acres
Slope range: 20 to 35 percent
Parent material: Colluvium from sandstone and shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 3 inches—very dark brown very friable silt loam

Subsurface layer:
3 to 10 inches—yellowish brown friable silt loam

Subsoil:
10 to 21 inches—yellowish brown friable silty clay loam
21 to 65 inches—yellowish brown friable channery silty clay loam

Bedrock:
65 to 75 inches—rippable shale

Contrasting Inclusions

- Small areas of Bouldin soils
- Areas of rock outcrops on the upper side slopes
- Small areas of Gilpin soils

Use and Management

Major use: Woodland
Common woodland vegetation: Oak-hickory type

Cropland

Suitability: Unsuited
Management measures and considerations:
- Because of a very severe hazard of erosion on moderately steep to very steep slopes, this soil is unsuited to row crops.

Pasture and hayland

Suitability: Unsuited
Management measures and considerations:
- Management of pasture and hayland is difficult because of the slope.

Woodland

Suitability: Moderately suited
Management measures and considerations:
- Roads and skid trails should have water turnouts, water bars, or broad-based dips so that water and sediment are directed away from roads and streams.
- Water and sediment should be directed into duff layers or filter strips.
- Cuts and fills need to be seeded to permanent cover.
- Equipment use is limited because of the slope.
- Reforestation after harvest must be carefully managed to reduce plant competition.

Building site development

Suitability: Unsuited
Management measures and considerations:
- The slope greatly hinders building structures; sites should be selected on better suited soils.
- The slope hinders the building of streets and roads.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- Septic tank absorption lines should be installed in areas of inclusions with lesser slopes or sites should be selected on better suited soils.

Interpretive Group

Land capability classification: 6e

W—Water

This map unit consists of areas inundated with water for most of the year and several small lakes and ponds around Oneida, including the Conservation League Lake, Lake Elizabeth, Howard H. Baker Lake, Cooper Lake, Lays Lake, Ronald King

Lake, Pine Creek Number One Lake, and Laxton Lake. The major rivers in the survey area include the South Fork of the Cumberland River, the Obed River, and the New River.

This map unit is not assigned any interpretations.

WrB—Wernock silt loam, 2 to 5 percent slopes

Composition

Wernock soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus
Landform position: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 2 to 5 percent
Parent material: Residuum from shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
2 to 12 inches—yellowish brown very friable silt loam

Subsoil:
12 to 35 inches—yellowish brown friable silty clay loam

Bedrock:
35 to 45 inches—rippable shale

Contrasting Inclusions

- Small areas of Lonewood soils
- Small areas of Lily soils

Use and Management

Major use: Hay and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Well suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface,

including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 2e

WrC—Wernock silt loam, 5 to 12 percent slopes

Composition

Wernock soil and similar inclusions: 70 to 95 percent

Setting

Physiographic area: Cumberland Plateau and Mountains
Landscape: Rolling to hilly plateaus
Landform position: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Slope range: 5 to 12 percent
Parent material: Residuum from shale

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flooding: None
Available water capacity: Moderate
Seasonal high water table: None
Reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
2 to 12 inches—yellowish brown very friable silt loam

Subsoil:
12 to 35 inches—yellowish brown friable silty clay loam

Bedrock:
35 to 45 inches—rippable shale

Contrasting Inclusions

- Small areas of Lonewood soils and small areas of Lily soils

Use and Management

Major use: Hay and pasture
Common woodland vegetation: Oak-pine type

Cropland

Suitability: Moderately suited
Management measures and considerations:
- Most crops respond to applications of lime and fertilizer.
- Using practices such as minimum tillage, maintaining crop residue on the surface, including legumes and grasses in the rotation, and other erosion-control practices reduces the risk of erosion. Site-specific recommendations are needed.
- The amount of water available to plants is reduced because of the limited depth to bedrock.

Pasture and hayland

Suitability: Well suited
Management measures and considerations:
- Fertilizing, mowing and clipping, and avoiding overgrazing maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Management measures and considerations:
- Reforestation is limited mainly by the low fertility.
- Seedling survival rates are less on the drier, south-facing slopes.

Building site development

Suitability: Moderately suited
Management measures and considerations:
- Excavation is hindered by the limited depth to bedrock.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- Installation is hindered and the percolation rate is reduced by the limited depth to bedrock.

Interpretive Group

Land capability classification: 3e

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; for forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; 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 help locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Environmental 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 some of 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, slightly limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, 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 Cooperative Extension Service.

In 2000, according to the U.S. Census of Agriculture, approximately 14,663 acres, or 4.3 percent, of Scott County was used for crops and pasture. Of the 14,663 total cropland acres, 6,929 acres were used exclusively for hay, pasture, grass silage, and green chop. The rest was used for rotational cropland, including hay, pasture, small grains, tobacco, and row crops. In 2002, about 5,974 pounds of tobacco were harvested in Scott County.

In some parts of the survey area, the soils are suited to commonly grown crops such as corn and tobacco. In the less sloping areas, moderately deep to very deep, well drained soils, such as Lily, Lonewood, and Wernock soils, are well suited to most row crops. In the more sloping areas, Lily, Gilpin, Wernock, Lonewood, and Shelocta soils are commonly used for hay and pasture.

The soils in Scott County are better suited to pasture than to row crops. Most of the soils are too steep for intensive row cropping. Crops yields could be increased by applying the latest crop production technology to all cropland in the county. This soil survey can help to facilitate the application of such technology.

The management systems needed on cropland are those that protect or improve the soil, help to control erosion, and minimize the pollution of water by nutrients, soil particles, and pesticides carried by runoff. Soil erosion is a major hazard on most of the soils used for crops or pasture in Scott County. It is a hazard where slopes are more than 2 percent. Lily, Wernock, Sequoia, and Lonewood are examples of soils that have slopes of more than 2 percent. As the slope increases, the hazard of erosion and the difficulty of controlling erosion also increase.

The loss of soil material through erosion is damaging for several reasons. When the surface layer of a soil is lost, most of the available plant nutrients and organic matter are lost, the root zone becomes thinner, and the amount of available water is reduced. As a result, the productivity and yields of a soil are reduced. Controlling erosion helps to prevent pollutants, such as pesticides, sediment, and nutrients, from entering ponds, rivers, and streams. In addition to improving water quality and soil quality, controlling erosion reduces the amount of sandstone bedrock exposure in fields that are subject to high amounts of erosion.

Wetness is a management concern on a small amount of the acreage in the county used for crops and pasture. Areas of Atkins soils are poorly drained and rarely used for crop production.

Many of the soils in the county are extremely acid to slightly acid unless limed. Applications of ground limestone are needed to raise the pH level sufficiently for the production of some crops. Most soils in the county also respond well to the application of commercial fertilizer. Additions of lime and fertilizer should be based on the results of soil tests, the needs of the crop, and a realistic yield expectation. The Cooperative

Extension Service can test soils, provide soil test results, and make recommendations for the type and amount of fertilizer and lime to apply.

In 2002, Scott County had approximately 5,508 cows and calves *(6)*. The majority of the hay and pasture in the county is a mixture of grasses and legumes. Much of the hay is grown in rotation with pasture. The main grasses are tall fescue, orchardgrass, and timothy. The most common legumes are white clover, red clover, alfalfa, annual lespedeza, and sericea lespedeza. Legumes should be included in the seeding mixture when establishing pasture. The majority of the hay that is harvested is the surplus growth of grass-legume pastures. Hay should be cut at the stage of growth that provides the best quality feed and does not damage the grass-legume stand. The less sloping, deep and very deep, well drained soils should be planted with the highest producing crops, such as corn silage, alfalfa, orchardgrass, and timothy. To help minimize erosion, the sod-forming grasses, such as tall fescue, should be planted on the steeper soils. The areas of poorly drained soils, such as Atkins, should be planted in tall fescue and white clover.

Yields per Acre

The average yields per acre that can be expected of the principal crops grown under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The 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 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 residues, manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide more information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for production of field crops *(12)*. Crops that require special management are excluded. The soils are grouped according to their limitations for crop production, the risk of damage by erosion if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major land shaping that would change slope, depth, or other characteristics of the soils, nor do they include major reclamation projects. Capability classification is not an interpretation designed to show suitability and limitations of groups of soils for forestry, for engineering, or for environmental or residential purposes.

In the capability system, soils are generally grouped at two levels—capability class and subclass.

Capability classes, the broadest groups, are designated by 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, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them unsuitable for cultivation and that restrict their use mainly to pasture, 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 are unsuited to commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s* 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); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In classes 1 and 8 there are no subclasses. Class 5 contains only the subclasses indicated by *w* or *s* because the soils in class 5 are subject to little or no erosion. They have other significant limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The acreage of soils in each capability class or subclass is shown in table 6. The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in the yields table.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. 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, pasture, forest, or idle land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops where 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. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it is not frequently flooded during the growing season or is protected from flooding. Slope ranges 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 parts of the survey area has been the loss of prime farmland to industrial and residential uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, less productive, and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 7. This list does not constitute a recommendation for a particular land use. On some soils included in the list, 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. The extent of each listed map unit is shown in table 4. The location of each is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Forest Productivity and Management

All of Scott County was originally forested. Presently, woodland comprises approximately 303,500 acres, or 88.9 percent, of the land area in the county. About 232,000 acres of the woodland is privately owned, and about 70,800 acres is in State forests or national recreational areas.

Large areas of woodland are on the steeper mountainsides and in deep gorges of the Cumberland Mountains portion of the county. Soils in these areas range from very deep, stony soils to moderately deep or shallow soils that are underlain by shale bedrock. Bouldin, Gilpin, and Petros soils are the dominant soils in these areas. The steep and very steep side slopes, large stones, and depth to bedrock are limitations affecting woodland. The soils generally are covered by a mixture of red oak, yellow-poplar, hickory, and sugar maple. White pine and eastern hemlock are prevalent in the deep gorges and moist coves on the mountainsides.

Other areas of woodland are located in the rolling to hilly areas of the Cumberland Plateau portion of Scott County. The soils are generally moderately deep to very deep, are underlain by sandstone and shale bedrock, and are infertile. Wernock, Lily, Gilpin, and Lonewood soils are the dominant soils in this portion of the county. Many areas on the plateau are planted in loblolly pine, which is used in pulpwood production.

A small acreage of highly productive woodland is on flood plains in the county. Very deep, well drained soils, such as Allegheny and Pope, are dominant in these areas. Yellow-poplar, basswood, hemlock, white pine, and red maple are the dominant trees. The dominant forest type is oak-hickory. Important associate forest types include loblolly pine-shortleaf pine and oak-pine. The woodland in Scott County is valuable not only because it produces timber and pulpwood but also because it provides wildlife habitat, recreation, natural areas, erosion control, and watershed protection.

The tables in this section can help forest owners or managers plan the use of soils for timber production. They show the potential productivity of the soils and rate the soils according to the limitations that affect various aspects of forest management.

Forest Productivity

In table 8, 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. Common trees are those that forest managers generally favor in intermediate or improvement cuttings and are selected on the basis of soil suitability, growth rate, quality, value, and current marketability. More detailed information regarding site index is available in the "National Forestry Manual" *(10)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forest Management

In table 9, parts I through V, interpretive ratings are given for various aspects of forest management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice 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 practice. 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 practice. Overcoming these unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the table indicate the 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 specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00). Rating class terms for fire damage, utilized in substory management, 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 for forest management practices. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual” *(10)*, which is available at the local office 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, 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, 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 forestry 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 well suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table or bedrock, soil reaction, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreation

Hunting and fishing are common outdoor recreational activities in Scott County. The abundant wooded areas provide good habitat for deer, squirrel, and wild turkey. Some landowners lease areas to individuals for hunting upland game, primarily deer. Crop fields and meadows provide excellent cover for quail, mourning dove, rabbit, and deer.

The soils of the survey area are rated in table 10, parts I and II, 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. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and 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 0.00 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 table 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 table 10 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a fragipan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a fragipan; 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

Michael E. Zeman, Biologist, Natural Resources Conservation Service, helped prepare this section.

Wildlife is an important natural resource in Scott County. It provides a source of revenue through recreational opportunities such as sport hunting, photography, and fishing. Popular game species include bobwhite quail, whitetail deer, eastern wild turkey, cottontail rabbit, mourning dove, ruffed grouse, gray squirrel, and fox squirrel.

Whitetail deer is the most popular game animal in the county. Deer populations are moderate and have grown considerably over the past 30 years. Harvest records from the Tennessee Wildlife Resources Agency (TWRA) indicate that approximately 150 deer were harvested in the mid 1970’s and more than 1,200 were harvested in 2004. The highest populations of deer in the county likely occur where hardwood ridges of mixed white oak and red oak are interspersed with grain crops, where cropland fields have winter covers of wheat or cereal ryes, and where grasslands are managed with clovers.

Although eastern wild turkey was eliminated from the county by the 1950’s, it has been reintroduced. Huntable populations now occur due to the TWRA restoration program and management of the habitat. More than 300 birds were harvested in 2004. The turkey population is still growing, with an approximate 7 percent increase from 2003 to 2004, based on harvest records.

Small game species recognized as “edge” or early successional species include bobwhite quail, mourning dove, and cottontail rabbit. These species have low populations in the county. The highest concentrations of bobwhite quail are in areas where cropland is adjacent to brushy fencerows or in idle areas of native warm-season grasses and “hard seed” producing annual plants. The mourning dove is both a resident and migrant, and the highest numbers occur in fall near grain-producing crop fields. The cottontail rabbit is most common in agricultural areas intermixed with low brushy cover and native warm-season grasses.

The ruffed grouse is fairly common in the larger blocks of hardwood ridges of the county where development and expansive conversion to loblolly pines have not occurred. Highest concentrations occur where early successional stages of hardwood forest, intermixed with mature hardwoods, provide good habitat for brood foraging and winter escape cover.

The county has three species of squirrels, and all occur in good numbers. Both the gray squirrel and the primarily nocturnal southern flying squirrel occur in good to excellent numbers throughout the hardwood forests of the county. The fox squirrel generally inhabits areas along woodland edges and woody fencerows near agricultural areas. Squirrel populations can vary significantly from year to year depending on the production of hard mast, such as acorns, hickory nuts, and beechnuts.

Waterfowl numbers are considered low in the county due to the low amount of wetlands and agricultural fields and the distances from principal flyways. The most common species that migrate through the county include the wood duck, mallard, and bluewing teal, which utilize farm ponds and small lakes for resting and roosting. The wood duck and resident greater Canada goose frequently use farm ponds for nesting in spring where nesting habitat is available. Several species of furbearers inhabit the county. Wetland furbearers include mink, muskrat, and beaver. They can be found in moderate numbers along sluggish streams, small lakes, and farm ponds. Upland furbearers are common throughout the county and include such species as bobcat, opossum, raccoon, gray fox, striped skunk, and coyote.

Many nongame species occur in abundance throughout the county. Different species of songbirds, both resident and migratory, are associated with different plant communities. Common woodland birds include the Carolina chickadee, tufted titmouse, pileated woodpecker, and warblers. Common openland birds include robins, meadowlarks, and various sparrows. Common birds of prey include the red-tailed hawk, sparrow hawk, barred owl, and screech owl. Common reptiles and amphibians include the eastern box turtle, rat snakes, copperhead snakes, bullfrogs, and woodland salamanders. Common small mammals include the hispid cotton rat, moles, voles, shrews, and other rodents. The relative abundance of nongame species is dependent upon the type and quality of the habitat available to the species.

State and federally listed threatened or endangered wildlife species that may occur in the county include several species of mussels such as the Cumberland elktoe, fish, and several species of plants. Many of the plants, such as Cumberland rosemary and mountain witch alder, are associated with the Cumberland Mountains area in the county.

The county has many constructed farm ponds that provide recreational opportunities through the stocking of fish in addition to their common livestock use. Common stocked fish species include largemouth bass, bluegill sunfish, redear sunfish, and channel catfish. The water in ponds is typically acidic due to the pH of the soil. As a result, the production of fish may be limited. Few privately owned ponds are being intensively managed for the high production of fish. Almost all of the soils in the

Scott County are very limited for pond construction due to the steepness of slopes, the depth to bedrock, or seepage problems. The best soils for pond construction are Gilpin, Lonewood, and Wernock soils in areas that have less than 12 percent slopes and deeper depths to bedrock.

Scott County has a total of approximately 265 miles of warm-water streams. Major streams in the county and tributaries to the Cumberland River include the New River, Pine Creek, and Buffalo Creek. These and other streams provide about 711 acres of aquatic habitat and support populations of largemouth bass, smallmouth bass, rock bass, bluegill, green sunfish, channel catfish, and several species of minnows and darters. Cold-water streams that support species such as rainbow trout and brown trout occur in the county, primarily within the Big South Fork National River and Recreation Area. This natural area consists of 125,310 acres managed by the National Park Service. It has many outdoor recreational activities associated with wildlife that are available to the public.

Excluding artificial wetlands, such as upland farm ponds, the county has very few wetlands. The county has only one hydric soil—Atkins silt loam, frequently flooded. There are approximately 350 acres in the county mapped as this flood plain soil. In a natural state, the wetlands on Atkins soils are forested. Many of these areas were converted to pastureland years ago, but the few areas of remaining bottomland hardwoods provide some of the most productive wildlife habitat in the county. Bottomland hardwoods are considered valuable for improving the water quality of streams because they remove nutrients and trap sediments from upland runoff, lower water temperatures through shading, and provide leaf litter that serves as the foundation for aquatic food chains.

Conservation practices improve or provide quality wildlife habitat. On cropland, planned crop rotations and crop residue management provide food and winter cover for many species of wildlife. On grasslands, deferred grazing of livestock and fencing help to protect food plots, nesting cover, and fish habitat by providing streambank protection. Field borders, filter strips, and forested riparian buffers along streams help to protect water quality and provide food, cover, and travel lanes for many species of wildlife. Native warm-season grasses can provide excellent nesting and other benefits if they are used in field borders and filter strips. Selective thinning of woodlands can be carried out in a manner that protects den trees and the better mast-producing trees. Other practices that can improve wildlife habitat include upland wildlife habitat management, wildlife wetland habitat management, early successional habitat development and management, fishpond management, prescribed grazing, livestock exclusion, and woodland improvement. Conversely, some conservation practices can be harmful to wildlife. These most often include indiscriminate burning, indiscriminate use of pesticides, heavy grazing, complete mowing during the nesting season, clean fall plowing, extensive clearcutting of timber, draining and clearing of wetlands, and the removal of den and all mast-producing trees.

Technical assistance in the planning or application of wildlife conservation practices can be obtained from the Natural Resources Conservation Service; the University of Tennessee, Agricultural Extension Service; the Tennessee Wildlife Resources Agency; and the Tennessee Division of Forestry.

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 the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 11, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and 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 tall fescue, bermudagrass, orchardgrass, ladino clover, annual lespedeza, 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 tall bluestem, goldenrod, beggarweed, panicum, carpetgrass, switchgrass, greenbrier, and eastern grama.

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, wild cherry, sweetgum, hawthorn, dogwood, hickory, and blackberry. 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 rooting zone, available water capacity, and wetness. Examples of coniferous plants are pine and eastern redcedar.

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, wild rice, rushes, sedges, cattails, 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, groundhog, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, opossum, skunk, and whitetail deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, blue heron, shore birds, muskrat, otter, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban and residential development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils have been included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

State ordinances and local regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Complying with local ordinances and regulations should be a consideration 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, soil wetness, depth to a water table, ponding, slope, flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

In a general way, 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, fill material, and topsoil; plan drainage systems, ponds, terraces, and other structures for soil and water conservation; 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 about the soils in this survey area, depending upon the intended use and the degree of confidence required.

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

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction modifications, performance after construction, and maintenance. Table 12, parts I and II, 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 table 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. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and 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 0.00 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, 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 depth to a water table, ponding, flooding, slope, depth to bedrock or a fragipan, hardness of bedrock or a fragipan, 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, 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 depth to a water table, ponding, flooding, slope, depth to bedrock or a fragipan, hardness of bedrock or a fragipan, 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 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 (tar). 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 and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a fragipan, hardness of bedrock or a fragipan, and the amount and size of rock fragments. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), linear extensibility (shrink-swell potential), depth to a water table, and ponding or flooding.

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 fragipan, hardness of bedrock or a fragipan, 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 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 fragipan; 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

Table 13, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfills. 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. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and 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 0.00 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 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 concerns. Permeability, depth to a water table, ponding, depth to bedrock or a restrictive layer, and flooding affect absorption of the effluent.

Stones and boulders, hard bedrock, or a dense fragipan interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent in downslope areas in addition to installation difficulties.

Some soils are underlain by loose sand, gravel, or highly 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 or seepage may occur in downslope areas.

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 fragipan, 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 very 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 highly 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 overflows the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and fragipans 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 fragipan 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 fragipan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, 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, an onsite investigation is needed.

Hard bedrock, creviced bedrock, or highly fractured rock 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 fragipan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if highly fractured bedrock or a 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 or in fractured bedrock layers in the steeper areas and cause 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 off-site, 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. Some of these properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock, 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 or any root-restricting layer 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

Table 14, parts I and II, give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated as *good, fair,* or *poor* source 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 numerical ratings in these columns indicate the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and *gravel* 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 table 14, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable 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 topsoil, reclamation material, and roadfill. 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 topsoil, reclamation material, or roadfill. 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 in such a way that the reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined or borrowed areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion, stability of the surface and subsoil, and the productive potential of the reconstructed soil. Some of these properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; content of organic matter; and other features that dominantly affect fertility and productivity.

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, 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

Table 15 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 limitations are considered *not limited* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *somewhat limited* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *very limited* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits 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 ascertained 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 the tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 16 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated in inches.

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 a mass of the soil. "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 gravel 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 *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical and Chemical Properties

Table 17 shows estimates of some physical and 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 in inches.

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 table 17, 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, agronomic, residential, and commercial 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, root penetration, 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 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 movement of water, roots, and air. Depending on soil texture, a bulk density of more than 1.4 restricts water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability, as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The estimates in the table indicate the approximate rate of water movement, in inches per hour (in/hr), when the soil is saturated and under atmospheric pressure. They are based on soil characteristics observed in the field, especially structure, porosity, and texture. Permeability is a major consideration 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 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, and bulk density, depth to bedrock or a restrictive layer, 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 a 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 and other structures, roads, and plant roots. Special design and materials are needed to help overcome this limitation in building structures, roads, and other permanent installations.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 17, 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 residues to the soil, using no-till planting practices, maintaining the soil in permanent vegetative cover for long periods, spreading mulch on the surface, and leaving duff on the surface after timber operations. 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 plants and soil organisms.

Erosion factors are shown in table 17 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 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 water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

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 a 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

Table 18 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 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.

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. Table 18 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 gray colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Flooding is the temporary inundation of an area caused by overflowing streams or rivers, 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 and on records from local and flood-gauging stations.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historically recorded 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

Table 19 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 and chemical properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable rooting environment. Examples are bedrock, fragipans, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

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 *(9, 11)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. 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 an 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, mineral content, soil temperature regime, clay activity, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, semiactive, 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.

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” *(7)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(11)* and in “Keys to Soil Taxonomy” *(9)*. 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.

Allegheny Series

The Allegheny series consists of very deep, well drained soils that formed in loamy alluvium. These gently sloping soils are on low stream terraces in the Cumberland Plateau and Mountains. Slopes range from 0 to 3 percent.

Typical pedon of Allegheny loam in an area of Allegheny-Cotaco complex, occasionally flooded; in Scott County; on a stream terrace 125 feet southwest of the Adkins Cemetery at the mouth of Phillip Adkins Hollow, 3.3 miles south of the intersection of Lower Jellico Creek Road and Gum Flats Road, at the community of Ketchen; lat. 36 degrees 32 minutes 06 seconds N. and long. 84 degrees 20 minutes 51 seconds W.; USGS Ketchen Quadrangle:

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak medium granular structure; very friable; few fine roots; moderately acid; gradual smooth boundary.

BE—6 to 10 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; friable; few fine roots; few fine tubular pores; strongly acid; gradual smooth boundary.

Bt1—10 to 24 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; many fine and medium tubular pores; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—24 to 39 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; many fine and medium tubular pores and few vesicular pores; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

BC—39 to 45 inches; yellowish brown (10YR 5/4) gravelly clay loam; weak fine subangular blocky structure; friable; many fine and medium tubular pores; 15 percent fragments of sandstone as much as 2 inches across; strongly acid; clear smooth boundary.

C—45 to 60 inches; yellowish brown (10YR 5/4) gravelly fine sandy loam; massive; very friable; 30 percent fragments of sandstone as much as 3 inches across; very strongly acid.

The thickness of the solum ranges from 30 to more than 60 inches. The depth to bedrock is more than 60 inches. The content of sandstone fragments ranges from 0 to 15 percent in the A horizon, from 0 to 30 percent in the Bt horizon, and from 0 to 35 percent in the BC and C horizons. Reaction is mainly strongly acid or very strongly acid, but the surface layer is less acid in limed areas.

The Ap horizon has hue of 10YR and value and chroma of 3 or 4. Texture is loam or, in places, silt loam.

The BA or BE horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is loam or clay loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. Texture is loam or clay loam. In some pedons, the horizon has redoximorphic features in shades of brown below a depth of 24 inches.

The BC horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In some pedons, the horizon has redoximorphic features in shades of brown, yellow, or gray below a depth of about 40 inches. The fine-earth texture is loam, clay loam, fine sandy loam, or sandy loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. The content of brown or gray redoximorphic features ranges from none to common. The fine-earth texture is sandy loam, fine sandy loam, or loam.

Atkins Series

The Atkins series consists of very deep, poorly drained soils that formed in mixed alluvium weathered from shale and sandstone. These nearly level soils are on flood plains and in depressions along major streams and rivers that drain the Cumberland Plateau and Mountains. Slopes range from 0 to 3 percent.

Typical pedon of Atkins silt loam, frequently flooded; in Scott County; on the flood plain of Roaring Paunch Creek, about 400 feet west of Alderville Road and 0.4 mile south of the intersection of Pleasant Grove Road and Alderville Road, about 1 mile south of the community of Pleasant Grove; lat. 36 degrees 33 minutes 57 seconds N. and long. 84 degrees 24 minutes 26 seconds W.; USGS Winfield Quadrangle:

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; moderate medium granular structure; friable; many fine and very fine roots; many prominent reddish brown (5YR 4/4) iron accumulations lining root channels; moderately acid; clear smooth boundary.

Bg1—6 to 24 inches; light brownish gray (10YR 6/2) silt loam; weak medium subangular blocky structure; friable; common fine roots; many prominent reddish brown (5YR 4/4) iron accumulations lining root channels; few fine manganese concretions; very strongly acid; gradual smooth boundary.

Bg2—24 to 36 inches; gray (10YR 6/1) silt loam; weak coarse subangular blocky structure; friable; common very fine roots; common prominent reddish brown (5YR 4/4) iron accumulations lining root channels and infused into the matrix; few fine manganese concretions; very strongly acid; gradual smooth boundary.

Bg3—36 to 46 inches; light gray (10YR 7/1) silty clay loam; weak coarse subangular blocky structure; friable; few very fine roots; few manganese concretions; common medium prominent yellowish brown (10YR 5/6) iron accumulations infused into the matrix; very strongly acid; gradual smooth boundary.

Cg—46 to 62 inches; light gray (10YR 7/1) fine sandy loam; massive; friable; very strongly acid.

The thickness of the solum ranges from 25 to 50 inches. The depth to bedrock is more than 6 feet. Rock fragments commonly do not occur. Reaction is mainly strongly acid or very strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. Texture is loam or, in places, silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. Texture is silt loam, loam, clay loam, or silty clay loam. Redoximorphic features in shades of brown or red are common in most pedons.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. In some pedons, the horizon has redoximorphic features in shades of brown or red. Texture is loam, fine sandy loam, or sandy loam.

Bethesda Series

The Bethesda series consists of very deep, well drained, sloping to very steep soils that formed in acid regolith from surface-mined operations. Slopes range from 10 to 80 percent.

Typical pedon of Bethesda channery loam, 10 to 80 percent slopes; in Cumberland County; on a reclaimed strip mine on a hillslope 300 feet southwest of Tennessee

Highway 68 (Atlas Sheet 43), 1.3 mile south of the community of Grassy Cove; lat. 35 degrees 49 minutes 37 seconds N. and long. 84 degrees 54 minutes 14 seconds W.; USGS Grassy Cove Quadrangle:

A—0 to 2 inches; dark grayish brown (10YR 4/2) channery loam; weak medium granular structure; friable; 20 percent shale and coal fragments less than 3 inches across; very strongly acid; clear smooth boundary.

C1—2 to 23 inches; brown (10YR 4/3) very channery loam; massive; friable; 40 percent shale and coal fragments less than 3 inches across; very strongly acid; gradual smooth boundary.

C2—23 to 38 inches; dark yellowish brown (10YR 4/4) very channery clay loam; massive; friable; 40 percent shale and coal fragments less than 3 inches across; strongly acid; gradual smooth boundary.

C3—38 to 45 inches; yellowish brown (10YR 5/4) very channery loam; massive; friable; 50 percent shale fragments less than 3 inches across; very strongly acid; gradual smooth boundary.

C4—45 to 60 inches; yellowish brown (10YR 5/4) channery loam; massive; friable; 25 percent sandstone fragments as much as 6 inches across; very strongly acid.

The depth to sandstone or shale bedrock is more than 60 inches. The content of fragments ranges from 0 to 50 percent in the A horizon and from 35 to 80 percent in the C horizon. Fragments commonly range from 2 millimeters to 38 centimeters in size but may include stones and boulders. Reaction mainly ranges from strongly acid to extremely acid throughout the profile, but the surface layer is less acid in reclaimed areas that have been limed.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 to 6. The fine-earth texture is loam.

The C horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 to 6. The fine-earth texture is loam, clay loam, silt loam, or silty clay loam.

Bouldin Series

The Bouldin series consists of very deep, well drained soils that formed in colluvium weathered from acid sandstone. These steep and very steep soils are on convex side slopes and footslopes commonly below sandstone escarpments in the Cumberland Plateau and Mountains. Slopes range from 25 to 80 percent.

Typical pedon of Bouldin cobbly loam in an area of Gilpin-Bouldin-Petros complex, 25 to 75 percent slopes, very stony; in Scott County; on a south-facing mountain slope along Capuchin Creek, 2,000 feet (airline) northeast of the intersection of Jellico Creek Road and Capuchin Creek Road, about 3 miles east of the community of Ketchen; lat. 36 degrees 34 minutes 32 seconds N. and long. 84 degrees 16 minutes 38 seconds W.; USGS Ketchen Quadrangle:

A—0 to 2 inches; dark grayish brown (10YR 4/2) flaggy loam; weak fine granular structure; very friable; many fine medium and coarse roots; 25 percent sandstone fragments as much as 14 inches across; strongly acid; clear smooth boundary.

BE—2 to 17 inches; yellowish brown (10YR 5/4) channery loam; weak fine subangular blocky structure; very friable; many fine, medium, and coarse roots; 30 percent sandstone fragments as much as 8 inches across; strongly acid; clear smooth boundary.

Bt1—17 to 30 inches; yellowish brown (10YR 5/6) very channery loam; weak medium subangular blocky structure; friable; many fine and medium roots; few faint clay films; 50 percent sandstone fragments as much as 10 inches across; strongly acid; gradual smooth boundary.

Bt2—30 to 42 inches; strong brown (7.5YR 5/6) extremely flaggy clay loam; weak

medium subangular blocky structure; friable; few faint clay films; 60 percent rock fragments as much as 15 inches across; strongly acid; gradual smooth boundary.
Bt3—42 to 80 inches; strong brown (7.5YR 5/6) extremely stony clay loam; weak medium subangular blocky structure; friable; few faint clay films; 65 percent sandstone fragments as much as 24 inches across; strongly acid.

The thickness of the solum and the depth to bedrock are more than 60 inches. Sandstone fragments, including channers, flagstones, and stones, make up 15 to 75 percent of the solum. Fragments in the upper part of the solum are dominantly less than 10 inches across, and those in the lower part range to 24 inches across. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The fine-earth texture is fine sandy loam or loam.

The BE horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. The fine-earth texture is fine sandy loam or loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The fine-earth texture is loam or clay loam.

The BC horizon (if it occurs) has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6. The fine-earth texture is loam or clay loam. In some pedons, the horizon has lithochromic mottles in shades of brown, red, or gray below a depth of about 40 inches.

Cotaco Series

The Cotaco series consists of very deep, moderately well drained soils that formed in loamy alluvium. These gently sloping soils are on low stream terraces in the Cumberland Plateau and Mountains. Slopes range from 0 to 3 percent.

Typical pedon of Cotaco loam in an area of Allegheny-Cotaco complex, occasionally flooded; in Scott County; on a stream terrace 185 feet southwest of the Adkins Cemetery at the mouth of Phillip Adkins Hollow, 3.3 miles south of the intersection of Lower Jellico Creek Road and Gum Flats Road, at the community of Ketchen; lat. 36 degrees 32 minutes 05 seconds N. and long. 84 degrees 20 minutes 51 seconds W.; USGS Ketchen Quadrangle:

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak medium granular structure; very friable; few fine roots; moderately acid; gradual smooth boundary.
BE—6 to 10 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; friable; few fine roots; few fine tubular pores; strongly acid; gradual smooth boundary.
Bt1—10 to 24 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; many fine and medium tubular pores; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.
Bt2—24 to 36 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; friable; many fine and medium tubular pores and few vesicular pores; few faint clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions and common medium prominent strong brown (7.5YR 5/6) iron accumulations on faces of peds; strongly acid; gradual smooth boundary.
BC—36 to 45 inches; yellowish brown (10YR 5/4) gravelly clay loam; weak fine subangular blocky structure; friable; many fine and medium tubular pores; many medium distinct light brownish gray (10YR 6/2) iron depletions and many medium prominent yellowish red (5YR 5/8) soft nodules of iron accumulation in the matrix; 25 percent sandstone fragments as much as 2 inches across; strongly acid; clear smooth boundary.
C—45 to 60 inches; 35 percent light brownish gray (10YR 6/2), 35 percent strong

brown (7.5YR 5/6), and 30 percent yellowish brown (10YR 5/4) variegated very gravelly fine sandy loam; massive; very friable; common yellowish red (5YR 5/8) weakly cemented iron concretions and black (N 2.5/0) strongly cemented manganese concretions and stains throughout the matrix; areas with light brownish gray colors are iron depletions and areas with strong brown colors are iron accumulations; 40 percent sandstone fragments as much as 3 inches across; very strongly acid.

The thickness of the solum ranges from 30 to more than 60 inches. The depth to bedrock is more than 60 inches. The content of sandstone fragments ranges from 0 to 30 percent in the solum and from 0 to 50 percent in the C horizon. Reaction is mainly strongly acid or very strongly acid, but the surface layer is less acid in limed areas.

The Ap horizon has hue of 10YR and value and chroma of 3 or 4. Texture is loam or silt loam.

The BE horizon or BA horizon (if it occurs) has hue of 10YR, value of 4 to 6, and chroma of 3 to 6. Texture is loam or silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. Texture is loam, clay loam, or silty clay loam. Redoximorphic features are common below a depth of 24 inches.

The BC horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6. The fine-earth texture is loam, clay loam, fine sandy loam, or sandy loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 1 to 8. The fine-earth texture is sandy loam, fine sandy loam, or loam.

Gilpin Series

The Gilpin series consists of moderately deep, well drained soils that formed in residuum weathered from shale and siltstone. These sloping to very steep soils are on side slopes and ridgetops in the Cumberland Plateau and Mountains. Slopes range from 5 to 80 percent.

Typical pedon of Gilpin silt loam in an area of Gilpin-Petros complex, 35 to 70 percent slopes; in Scott County; on a ridgetop about 100 feet northeast of Ridge Road, 0.3 mile east of the intersection of Brimstone Road and Ridge Road, about 1 mile southeast of the community of Robbins; lat. 36 degrees 20 minutes 37 seconds N. and long. 84 degrees 34 minutes 38 seconds W.; USGS Robbins Quadrangle:

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; very friable; many fine and medium roots; 5 percent shale channers as much as 1/2 inch across; strongly acid; abrupt smooth boundary.

BE—3 to 6 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; very friable; common fine and few medium roots; 5 percent shale channers as much as 1/2 inch across; strongly acid; gradual smooth boundary.

Bt1—6 to 12 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; 5 percent shale channers as much as 1/2 inch across; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—12 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine and few medium roots; 10 percent shale channers as much as 1 inch across; common faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—21 to 25 inches; brownish yellow (10YR 6/6) channery silty clay loam; common fine and medium prominent yellowish red (5YR 5/6) and pale brown (10YR 6/3) lithochromic mottles; weak medium subangular blocky structure; very friable; few

fine and medium roots; 15 percent shale channers as much as 1 inch across; extremely acid; abrupt wavy boundary.
Cr—25 to 35 inches; rippable shale.

The thickness of the solum ranges from 18 to 36 inches. The depth to rippable bedrock ranges from 20 to 40 inches. The content of shale channers ranges from 5 to 20 percent in the A and B horizons. Reaction mainly ranges from strongly acid to extremely acid throughout the profile, but the surface layer is less acid in limed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Texture is loam or, in places, silt loam.

The BE horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 5. Texture is loam or silt loam.

The Bt horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. Texture is silt loam, loam, or silty clay loam.

The BC horizon has colors and textures similar to those of the Bt horizon.

The Cr horizon is mostly rippable shale that grades to hard bedrock. It has many lithochromic mottles in shades of red or brown. Texture is loam or silty clay loam.

Lily Series

The Lily series consists of moderately deep, well drained soils that formed in residuum weathered from acid sandstone. These gently sloping to steep soils are on ridgetops and side slopes in the Cumberland Plateau and Mountains. Slopes range from 2 to 35 percent.

Typical pedon of Lily loam in an area of Lily-Ramsey complex, 5 to 12 percent slopes; in Scott County; on a ridgetop in the Scott State Forest, 1,000 feet northwest of the intersection of Bandy Creek Road and Tennessee Highway 297 (Leatherwood Road), about 1 mile by road northwest of the Leatherwood Ford on the South Fork of the Cumberland River; lat. 36 degrees 28 minutes 46 seconds N. and long. 84 degrees 40 minutes 54 seconds W.; USGS Honey Creek Quadrangle:

A—0 to 3 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
BE—3 to 9 inches; yellowish brown (10YR 5/4) loam; moderate medium granular structure; friable; many fine, medium, and coarse roots; very strongly acid; gradual smooth boundary.
Bt1—9 to 18 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.
Bt2—18 to 30 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; abrupt smooth boundary.
R—30 inches; sandstone bedrock.

The thickness of the solum and the depth to hard sandstone bedrock range from 20 to 40 inches. The content of sandstone fragments ranges from 0 to 30 percent in the A and B horizons and is as much as 35 percent in the C horizon. Reaction is mainly very strongly acid or strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The A or Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is loam.

The BE horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is loam or clay loam.

The BC or C horizon, if it occurs, has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8. Texture is fine sandy loam, sandy loam, loam, or clay loam.

Lonewood Series

The Lonewood series consists of deep and very deep, well drained soils that formed in a loamy mantle 1 to 3 feet thick and the underlying residuum weathered from interbedded shale and sandstone. These gently sloping and sloping soils are on broad ridgetops and smooth side slopes in the Cumberland Plateau. Slopes range from 2 to 12 percent.

Typical pedon of Lonewood silt loam, 2 to 5 percent slopes; in Scott County; on a ridgetop in the Scott State Forest, 550 feet southwest of Bandy Creek Campground past the swimming pool by a trail, 1.25 miles northwest of the intersection of Bandy Creek Road and Tennessee Highway 297 (Leatherwood Road), about 2.3 miles by road northwest of the Leatherwood Ford on the South Fork of the Cumberland River; lat. 36 degrees 29 minutes 12 seconds N. and long. 84 degrees 41 minutes 31 seconds W.; USGS Honey Creek Quadrangle:

A—0 to 2 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

BE—2 to 8 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bt1—8 to 20 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common fine and medium and few coarse roots; few faint clay films; strongly acid; gradual smooth boundary.

Bt2—20 to 28 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; few faint clay films; strongly acid; gradual smooth boundary.

2Bt3—28 to 37 inches; strong brown (7.5YR 4/6) clay loam; common medium prominent light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) lithochromic mottles; moderate medium subangular blocky structure; friable; few roots; common discontinuous clay films on faces of peds; strongly acid; gradual smooth boundary.

2Bt4—37 to 50 inches; strong brown (7.5YR 5/6) clay loam; few medium distinct yellowish brown (10YR 5/6) lithochromic mottles; moderate medium subangular blocky structure; friable; common discontinuous clay films; 5 percent sandstone fragments as much as 2 inches across; very strongly acid; gradual smooth boundary.

2BC—50 to 55 inches; yellowish red (5YR 5/8) clay loam; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) lithochromic mottles; weak coarse subangular blocky structure; friable; 10 percent sandstone fragments as much as 3 inches across; very strongly acid; abrupt smooth boundary.

2Cr—55 to 60 inches; weathered sandstone.

2R—60 inches; sandstone bedrock.

The thickness of the solum ranges from 40 to 65 inches. The depth to hard sandstone or shale bedrock ranges from 40 to more than 60 inches. Fragments of sandstone and shale that are less than 2 inches across make up 0 to 5 percent of the A, BE, and Bt horizons and 0 to 10 percent of the 2Bt and 2BC horizons. Reaction is mainly very strongly acid or strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Texture is loam or, in places, silt loam.

The BE horizon or E horizon, if it occurs, has colors and textures similar to those of the Bt horizon.

The Bt horizon has hue of 10YR to 5YR, value of 5, and chroma of 4 to 8. Texture is loam, silt loam, silty clay loam, or clay loam. The 2Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 6 to 8. In most pedons, the horizon has lithochromic mottles in shades of brown, yellow, or red. Texture is silty clay loam or clay loam.

The 2BC horizon has colors and textures similar to those in the lower part of the 2Bt horizon.

Petros Series

The Petros series consists of shallow, excessively drained soils that formed in residuum weathered from interbedded shale and siltstone. These sloping to very steep soils are on side slopes and ridgetops in the Cumberland Plateau and Mountains. Slopes range from 20 to 80 percent.

Typical pedon of Petros silt loam in an area of Gilpin-Bouldin-Petros complex, 25 to 75 percent slopes, very stony; in Scott County; on a north-facing mountainside about 1/2 mile southeast of Lone Mountain via a logging road, about 1,600 feet west of USGS benchmark in Mill Creek, about 0.5 mile southeast of the community of Lone Mountain; lat. 36 degrees 15 minutes 19 seconds N. and long. 84 degrees 29 minutes 3 seconds W.; USGS Norma Quadrangle:

A—0 to 2 inches; dark grayish brown (10YR 4/2) channery silt loam; weak fine granular structure; very friable; many fine and medium roots; 20 percent shale channers as much as 1/2 inch across; strongly acid; abrupt smooth boundary.

Bw1—2 to 8 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; 45 percent shale channers as much as 6 inches across; strongly acid; gradual smooth boundary.

Bw2—8 to 16 inches; yellowish brown (10YR 5/6) extremely channery silt loam; weak fine subangular blocky structure; friable; common fine and medium and few coarse roots; 65 percent shale channers as much as 6 inches across; strongly acid; abrupt smooth boundary.

Cr—16 to 26 inches; rippable shale.

The thickness of the solum and the depth to rippable bedrock range from 10 to 20 inches. The content of shale channers ranges from 15 to 35 percent in the A horizon and from 35 to 80 percent in the Bw horizon. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The fine-earth texture is loam or silt loam.

The E horizon (if it occurs) has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The fine-earth texture is loam or silt loam.

The Bw horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. The fine-earth texture is silt loam or silty clay loam.

Philo Series

The Philo series consists of very deep, moderately well drained soils that formed in coarse textured alluvial sediments. These nearly level soils are on flood plains of streams and rivers that drain the Cumberland Plateau and Mountains. Slopes range from 0 to 3 percent.

Typical pedon of Philo loam in an area of Pope-Philo complex, frequently flooded; in

Morgan County; in a field on the flood plain of the Emory River, 1,500 feet south of a bridge over Maden Branch on Gobey Road, about 1 mile northeast of the community of Elizabeth; lat. 36 degrees 09 minutes 36 seconds N. and long. 84 degrees 33 minutes 59 seconds W.; USGS Gobey Quadrangle:

Ap—0 to 6 inches; dark brown (10YR 4/3) loam; moderate fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bw1—6 to 27 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bw2—27 to 36 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; few fine and medium roots; few fine distinct light brownish gray (10YR 6/2) iron depletions and few medium distinct strong brown (7.5YR 5/6) iron accumulations in the matrix; 5 percent rounded and subrounded gravel as much as 3 inches across; very strongly acid; gradual wavy boundary.

C—36 to 48 inches; yellowish brown (10YR 5/4) fine sandy loam; very friable; common medium distinct light brownish gray (10YR 6/2) iron depletions and few medium distinct strong brown (7.5YR 5/6) iron accumulations in the matrix; 10 percent rounded and subrounded gravel as much as 3 inches across; very strongly acid; clear smooth boundary.

Cg—48 to 60 inches; gray (10YR 5/1) gravelly sandy loam; very friable; common medium prominent yellowish red (5YR 5/6) iron accumulations in the matrix (area with gray color is iron depleted); 30 percent rounded and subrounded gravel as much as 3 inches across; very strongly acid.

The thickness of the solum ranges from 30 to 48 inches. The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 20 percent above a depth of 40 inches and from 0 to 75 percent below a depth of 40 inches. Reaction is mainly strongly acid or very strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is loam or silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Texture is loam, fine sandy loam, or silt loam. Redoximorphic features in shades of brown, gray, or red are common in most pedons.

The C horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is sandy loam or fine sandy loam.

The Cg horizon has hue of 7.5YR to 2.5Y or is neutral in hue, has value of 4 to 6, and has chroma of 1 to 8. Redoximorphic features in shades of brown, red, or gray are common. The fine-earth texture is sandy loam, fine sandy loam, loam, or silt loam.

Pope Series

The Pope series consists of very deep, well drained soils that formed in coarse textured alluvial sediments. These nearly level soils are on flood plains of streams and rivers that drain the Cumberland Plateau and Mountains. Slopes range from 0 to 3 percent.

Typical pedon of Pope loam in an area of Pope-Philo complex, frequently flooded; in Morgan County; in a field on the flood plain of the Emory River, 1,000 feet south of a bridge over Maden Branch on Gobey Road, about 1 mile northeast of the community of Elizabeth; lat. 36 degrees 09 minutes 36 seconds N. and long. 84 degrees 33 minutes 59 seconds W.; USGS Gobey Quadrangle:

Ap—0 to 5 inches; dark brown (10YR 4/3) loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
Bw1—5 to 8 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.
Bw2—8 to 25 inches; dark yellowish brown (10YR 4/6) loam; weak fine subangular blocky structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.
Bw3—25 to 43 inches; dark yellowish brown (10YR 4/6) loam; weak fine subangular blocky structure; very friable; common fine and medium roots; 5 percent rounded and subrounded gravel as much as 3 inches across; very strongly acid; gradual wavy boundary.
C—43 to 60 inches; yellowish brown (10YR 5/4) very gravelly sandy loam; few medium distinct strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/6) soft iron masses in the matrix; massive; very friable; 40 percent rounded and subrounded gravel as much as 3 inches across; very strongly acid.

The thickness of the solum ranges from 30 to 60 inches. The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 30 percent above a depth of 40 inches and from 0 to 75 percent below a depth of 40 inches. Reaction is mainly strongly acid or very strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is loam or silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Texture is loam, fine sandy loam, or silt loam.

The C horizon has hue of 10YR, value of 4 or 6, and chroma of 2 to 4. Texture is sandy loam or fine sandy loam.

Ramsey Series

The Ramsey series consists of shallow, somewhat excessively drained soils that formed in residuum weathered from acid sandstone. These sloping to steep soils are on rolling hillslopes and upper side slopes in the Cumberland Plateau and Mountains. Slopes range from 5 to 35 percent.

Typical pedon of Ramsey loam in an area of Lily-Ramsey complex, 5 to 12 percent slopes; in Scott County; on a ridgetop in Scott State Forest, 1,000 feet northwest of the intersection of Bandy Creek Road and Tennessee Highway 297 (Leatherwood Road), about 1 mile by road northwest of the Leatherwood Ford on the South Fork of the Cumberland River; lat. 36 degrees 28 minutes 45 seconds N. and long. 84 degrees 40 minutes 54 seconds W.; USGS Honey Creek Quadrangle:

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine and medium roots; 3 percent sandstone fragments as much as 2 inches across; strongly acid; clear smooth boundary.
E—2 to 4 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; very friable; common fine and medium roots; 3 percent sandstone fragments as much as 2 inches across; strongly acid; clear smooth boundary.
Bw1—4 to 10 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; 5 percent sandstone fragments as much as 3 inches across; strongly acid; gradual smooth boundary.
Bw2—10 to 16 inches; yellowish brown (10YR 5/6) channery sandy loam; weak fine subangular blocky structure; very friable; common fine and medium roots; 15

percent sandstone fragments as much as 3 inches across; strongly acid; abrupt smooth boundary.
R—16 inches; sandstone bedrock.

The thickness of the solum and the depth to hard sandstone bedrock range from 10 to 20 inches. The content of sandstone fragments ranges from 0 to 35 percent throughout the profile. Reaction is strongly acid or very strongly acid.

The A and E horizons have hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Texture is loam or fine sandy loam.

The Bw horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. The fine-earth texture is loam, fine sandy loam, or sandy loam.

The C horizon (if it occurs) has hue of 10YR and value and chroma of 4 to 6. The fine-earth texture is loam, sandy loam, or loamy sand.

Sequoia Series

The Sequoia series consists of moderately deep, well drained soils that formed in residuum weathered from acid shale. These gently sloping to moderately steep soils are on side slopes and ridgetops in the Cumberland Plateau and Mountains. Slopes range from 2 to 20 percent.

Typical pedon of Sequoia silt loam, 12 to 20 percent slopes; in Scott County; on a ridgetop in a cut along Owens Road, 900 feet southwest of the intersection of Anderson Hollow Road and Owens Road, about 0.7 mile east of the community of Jeffers; lat. 36 degrees 22 minutes 24 seconds N. and long. 84 degrees 22 minutes 44 seconds W.; USGS Norma Quadrangle:

A—0 to 2 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.
BE—2 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; many fine and medium and few coarse roots; strongly acid; clear smooth boundary.
Bt1—5 to 9 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; few faint discontinuous clay films on faces of peds; strongly acid; gradual smooth boundary.
Bt2—9 to 16 inches; strong brown (7.5YR 5/8) silty clay; strong fine angular and subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual smooth boundary.
BC—16 to 23 inches; strong brown (7.5YR 5/6) channery silty clay; common medium distinct yellowish brown (10YR 5/8) and few fine distinct pale brown (10YR 6/3) lithochromic mottles; strong fine angular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; 20 percent shale channers as much as 6 inches across; strongly acid; gradual smooth boundary.
Cr—23 to 33 inches; rippable shale.

The thickness of the solum and the depth to rippable bedrock range from 20 to 40 inches. The content of shale channers ranges from 0 to 10 percent in the A horizon and from 0 to 20 percent in the B horizon. Reaction is mainly very strongly acid or strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 6. Texture is silt loam.

The BE horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 8.

Lithochromic mottles in shades of brown or red are common in the lower part of the horizon. Texture is silty clay loam, silty clay, or clay.

The BC horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 1 to 6. Lithochromic mottles occur in most pedons in shades of red, brown, yellow, or gray. Texture is clay or silty clay.

Shelocta Series

The Shelocta series consists of very deep, well drained soils that formed in colluvium weathered from acid shale and sandstone. These sloping to steep soils are on concave side slopes and footslopes in the Cumberland Plateau and Mountains. Slopes range from 5 to 35 percent.

Typical pedon of Shelocta silt loam, 20 to 35 percent slopes; in Scott County; on a north-facing side slope, 100 feet east of a logging road south of Green Branch, 600 feet southeast of the confluence of Smoky Creek and Green Branch, about 2.4 miles south of the community of Hembree; lat. 36 degrees 12 minutes 08 seconds N. and long. 84 degrees 25 minutes 04 seconds W.; USGS Fork Mountain Quadrangle:

A—0 to 3 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

BE—3 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bt1—10 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; 10 percent shale and sandstone channers as much as 3 inches across; strongly acid; gradual smooth boundary.

Bt2—21 to 50 inches; yellowish brown (10YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; 15 percent shale and sandstone channers as much as 3 inches across; strongly acid; gradual smooth boundary.

Bt3—50 to 65 inches; yellowish brown (10YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; 30 percent shale channers as much as 3 inches across; strongly acid; gradual smooth boundary.

Cr—65 to 75 inches; rippable shale.

The thickness of the solum and the depth to rippable or hard bedrock are more than 60 inches. The content of shale and sandstone fragments ranges to 35 percent in the A and B horizons and is as much as 70 percent in the C horizon. Reaction is mainly strongly acid or very strongly acid throughout the profile, but the surface layer is less acid in limed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Texture is silt loam or loam.

The BE and Bt horizons have hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is silt loam or silty clay loam.

The BC horizon (if it occurs) has colors and textures similar to those of the Bt horizon.

Wernock Series

The Wernock series consists of moderately deep, well drained soils that formed in residuum weathered from shale, siltstone, and sandstone. These gently sloping and sloping soils are on ridge crests and broad upland interfluves in the Cumberland Plateau. Slopes range from 2 to 12 percent.

Typical pedon of Wernock silt loam, 2 to 5 percent slopes; in Scott County; on a ridgetop east of the head of Black Wolfe Creek, 100 feet south of Ridge Road, 2.3 miles northwest of the intersection of Indian Fork Creek Road and Rainbow Mine Road, about 2.3 miles (airline) west of the community of Hughett; lat. 36 degrees 18 minutes 52 seconds N. and long. 84 degrees 32 minutes 59 seconds W.; USGS Robbins Quadrangle:

A—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; many fine and few medium roots; very strongly acid; abrupt smooth boundary.

BE—2 to 12 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; very friable; many fine and medium and few coarse roots; very strongly acid; gradual smooth boundary.

Bt1—12 to 19 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium and few coarse roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—19 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine, medium, and coarse roots; common faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—27 to 35 inches; brownish yellow (10YR 6/6) silty clay loam; common fine and medium distinct yellowish red (5YR 5/6) lithochromic mottles; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; 10 percent shale channers as much as 1 inch across; extremely acid; abrupt wavy boundary.

Cr—35 to 45 inches; rippable shale.

The thickness of the solum and the depth to rippable bedrock range from 20 to 40 inches. The content of shale channers ranges from 0 to 10 percent in the A and B horizons and from 5 to 15 percent in the BC horizon. Reaction mainly ranges from strongly acid to extremely acid throughout the profile, but the surface layer is less acid in limed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Texture is silt loam.

The BE horizon has colors and textures similar to those of the Bt horizon.

The Bt horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. Texture is silty clay loam.

The BC horizon has colors and textures similar to those in the lower part of the Bt horizon.

The C horizon (if it occurs) has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. Lithochromic mottles in shades of red or brown occur in some pedons. Texture is silt loam or silty clay loam.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

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.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

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.

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.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

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

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

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.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

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 millimeters 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.

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.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

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.

Conglomerate. A coarse-grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

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.

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.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff or surface flow of water from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

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.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material in order to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

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.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

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.

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.

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.

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 the soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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.

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.

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.

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:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation. —Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

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.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Masses. 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.

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

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

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

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.

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.

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

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

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

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

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.)

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.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

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.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

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.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging 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.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

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.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The 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.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

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.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, and then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 12 percent
Strongly sloping	12 to 20 percent
Moderately steep	20 to 35 percent
Steep	35 to 60 percent
Very steep	60 percent and higher

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 separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

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.

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).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

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.

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). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

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.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

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.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-90 at Oneida, Tennessee)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	42.8	19.5	31.1	68	-15	48	4.34	2.79	5.74	9	5.0
February-	47.4	22.5	35.0	73	-6	72	4.11	2.36	5.66	8	3.6
March----	58.2	31.3	44.8	80	7	209	5.55	3.34	7.53	10	0.4
April----	68.4	39.4	53.9	87	21	415	4.69	2.91	6.30	9	0.1
May------	75.3	47.6	61.4	88	29	648	5.16	3.23	6.91	9	0.0
June-----	82.0	56.5	69.2	92	39	851	4.41	2.41	6.17	8	0.0
July-----	85.1	60.9	73.0	95	48	1,009	5.38	2.83	7.62	9	0.0
August---	84.2	59.7	71.9	94	46	974	4.20	2.15	5.99	7	0.0
September	78.8	53.3	66.0	91	34	765	3.84	2.20	5.31	7	0.0
October--	68.4	40.5	55.0	86	21	459	4.09	2.00	5.90	6	0.0
November-	58.4	32.4	45.4	79	11	209	4.47	2.91	5.89	9	0.5
December-	47.8	24.5	36.1	70	-3	85	4.40	2.33	6.23	8	1.5
Yearly:											
Average	66.5	40.7	53.6	---	---	---	---	---	---	---	---
Extreme	102	-26	---	96	-16	---	---	---	---	---	---
Total--	---	---	---	---	---	5,745	54.65	47.68	60.74	99	11.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Oneida, Tennessee)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 oF or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 20	May 5	May 18
2 years in 10 later than--	Apr. 14	Apr. 29	May 12
5 years in 10 later than--	Apr. 3	Apr. 16	May 1
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 8	Sept. 27
2 years in 10 earlier than--	Oct. 23	Oct. 13	Oct. 2
5 years in 10 earlier than-	Nov. 4	Oct. 22	Oct. 11

Table 3.—Growing Season

(Recorded in the period 1961-90 at Oneida, Tennessee)

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	189	168	139
8 years in 10	197	175	147
5 years in 10	214	188	163
2 years in 10	231	202	179
1 year in 10	240	209	187

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
Ac	Allegheny-Cotaco complex, occasionally flooded	13,956	5.1
At	Atkins silt loam, frequently flooded	355	0.1
Bm	Bethesda-Mines pit complex, 10 to 80 percent slopes	19,519	7.1
GnC	Gilpin silt loam, 5 to 12 percent slopes	2,558	0.9
GnD	Gilpin silt loam, 12 to 20 percent slopes	10,531	3.9
GpE	Gilpin-Petros complex, 20 to 35 percent slopes	25,925	9.5
GpF	Gilpin-Petros complex, 35 to 70 percent slopes	29,048	10.6
GsF	Gilpin-Bouldin-Petros complex, 25 to 75 percent slopes, very stony	82,768	30.3
LbB	Lily loam, 2 to 5 percent slopes	2,470	0.9
LbC	Lily loam, 5 to 12 percent slopes	2,698	1.0
LbD	Lily loam, 12 to 20 percent slopes	855	0.3
LgC	Lily-Gilpin complex, 5 to 12 percent slopes	7,315	2.7
LgD	Lily-Gilpin complex, 12 to 20 percent slopes	12,232	4.5
LgE	Lily-Gilpin complex, 20 to 35 percent slopes	9,221	3.4
LmC	Lily-Ramsey complex, 5 to 12 percent slopes	1,100	0.4
LmD	Lily-Ramsey complex, 12 to 20 percent slopes	4,372	1.6
LmE	Lily-Ramsey complex, 20 to 35 percent slopes	3,611	1.3
LoB	Lonewood silt loam, 2 to 5 percent slopes	130	*
LoC	Lonewood silt loam, 5 to 12 percent slopes	169	*
Pp	Pope-Philo complex, frequently flooded	6,235	2.3
SeB	Sequoia silt loam, 2 to 5 percent slopes	102	*
SeC	Sequoia silt loam, 5 to 12 percent slopes	594	0.2
SeD	Sequoia silt loam, 12 to 20 percent slopes	1,062	0.4
ShC	Shelocta silt loam, 5 to 12 percent slopes	2,153	0.8
ShD	Shelocta silt loam, 12 to 20 percent slopes	3,514	1.3
ShE	Shelocta silt loam, 20 to 35 percent slopes	3,112	1.1
W	Water	3,400	1.2
WrB	Wernock silt loam, 2 to 5 percent slopes	10,599	3.9
WrC	Wernock silt loam, 5 to 12 percent slopes	13,796	5.0
	Total	273,400	100.0

* Less than 0.1 percent.

Table 5.—Yields per Acre of Crops and 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	Corn	Grass-legume hay	Pasture	Soybeans	Tobacco
		Bu	Tons	AUM	Bu	Lbs
Ac-------------------- Allegheny-Cotaco	2w	115.00	3.50	6.30	35.00	2,600.00
At-------------------- Atkins	3w	---	2.50	4.50	30.00	---
Bm:		---	---	---	---	---
Bethesda-------------	7e					
Mines pit------------	8					
GnC------------------- Gilpin	3e	85.00	3.00	5.40	30.00	2,300.00
GnD------------------- Gilpin	4e	80.00	2.50	4.50	25.00	2,000.00
GpE:		---	---	---	---	---
Gilpin---------------	6e					
Petros---------------	7s					
GpF:		---	---	---	---	---
Gilpin---------------	7e					
Petros---------------	7s					
GsF:		---	---	---	---	---
Gilpin---------------	7e					
Bouldin--------------	7s					
Petros---------------	7s					
LbB------------------- Lily	2e	95.00	4.00	7.20	35.00	2,500.00
LbC------------------- Lily	3e	85.00	3.50	---	30.00	2,300.00
LbD------------------- Lily	4e	70.00	3.00	5.40	25.00	1,900.00
LgC------------------- Lily-Gilpin	3e	90.00	3.50	6.30	30.00	2,300.00
LgD------------------- Lily-Gilpin	4e	70.00	3.00	5.40	25.00	1,950.00
LgE------------------- Lily-Gilpin	6e	---	---	3.50	---	---
LmC:		80.00	3.00	5.40	25.00	1,600.00
Lily-----------------	3e					
Ramsey---------------	6e					
LmD:		60.00	2.50	4.50	25.00	1,500.00
Lily-----------------	4e					
Ramsey---------------	6e					

Table 5.—Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Corn	Grass-legume hay	Pasture	Soybeans	Tobacco
		Bu	Tons	AUM	Bu	Lbs
LmE:		---	---	3.60	---	---
Lily	6e					
Ramsey	7e					
LoB Lonewood	2e	110.00	4.00	7.20	38.00	2,600.00
LoC Lonewood	3e	90.00	3.50	6.30	35.00	2,400.00
Pp Pope-Philo	2w	110.00	3.50	6.30	35.00	2,200.00
SeB Sequoia	3e	65.00	3.00	5.40	35.00	1,750.00
SeC Sequoia	4e	55.00	2.50	4.50	30.00	1,650.00
SeD Sequoia	6e	50.00	2.00	3.60	25.00	1,550.00
ShC Shelocta	3e	100.00	3.50	6.30	30.00	2,300.00
ShD Shelocta	4e	80.00	3.00	5.40	25.00	2,000.00
ShE Shelocta	6e	---	---	4.50	---	---
W. Water						
WrB Wernock	2e	110.00	4.00	7.20	35.00	2,800.00
WrC Wernock	3e	90.00	3.50	6.30	30.00	2,600.00

Table 6.—Acreage by Capability Class and Subclass

Capability class	Capability subclass	Acreage
Unclassified	---	3,400
2	e	11,749
2	w	18,484
3	e	26,749
3	w	320
4	e	27,927
6	e	30,145
7	e	63,934
7	s	63,154
8	---	3,904

Table 7.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
Ac	Allegheny-Cotaco complex, occasionally flooded
At	Atkins silt loam, frequently flooded (if drained and either protected from flooding or not frequently flooded during the growing season)
LbB	Lily loam, 2 to 5 percent slopes
LoB	Lonewood silt loam, 2 to 5 percent slopes
Pp	Pope-Philo complex, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
SeB	Sequoia silt loam, 2 to 5 percent slopes
WrB	Wernock silt loam, 2 to 5 percent slopes

Table 8.—Forestland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ac:				
Allegheny	black oak	78	57	black oak, shortleaf pine, Virginia pine, white oak, yellow-poplar
	shortleaf pine	95	129	
	Virginia pine	72	114	
	white oak	70	52	
	yellow-poplar	93	95	
Cotaco	black oak	87	62	black oak, sweetgum, Virginia pine, white oak, yellow-poplar
	sweetgum	86	90	
	Virginia pine	81	129	
	white oak	80	57	
	yellow-poplar	95	100	
At:				
Atkins	eastern cottonwood	89	95	eastern cottonwood, pin oak, sweetgum, yellow-poplar
	pin oak	100	90	
	sweetgum	90	81	
	yellow-poplar	90	90	
Bm:				
Bethesda	eastern redcedar	45	52	eastern redcedar, Virginia pine
	Virginia pine	60	70	
Mines pit	eastern redcedar	45	52	---
	Virginia pine	60	70	
GnC:				
Gilpin	northern red oak	80	57	northern red oak, yellow-poplar
	yellow-poplar	90	100	
GnD:				
Gilpin	northern red oak	80	57	northern red oak, yellow-poplar
	yellow-poplar	90	100	
GpE:				
Gilpin	northern red oak	80	57	black oak, northern red oak, white oak, yellow-poplar
	yellow-poplar	90	100	
Petros	black oak	60	43	black oak, chestnut oak, shortleaf pine, Virginia pine
	chestnut oak	55	38	
	Virginia pine	60	86	
GpF:				
Gilpin	northern red oak	80	71	northern red oak, yellow-poplar
	yellow-poplar	90	100	
Petros	black oak	60	43	black oak, chestnut oak, shortleaf pine, Virginia pine
	chestnut oak	---	---	
	Virginia pine	60	86	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
GsF:				
Gilpin	black oak	60	43	black oak, northern red oak, white oak, yellow-poplar
	northern red oak	80	57	
	white oak	75	57	
	yellow-poplar	90	100	
Bouldin	northern red oak	75	57	northern red oak, shortleaf pine, Virginia pine, white oak, yellow-poplar
	shortleaf pine	55	90	
	Virginia pine	60	81	
	white oak	50	38	
	yellow-poplar	90	86	
Petros	black oak	60	43	black oak, chestnut oak, shortleaf pine, southern red oak, Virginia pine
	chestnut oak	55	38	
	shortleaf pine	55	90	
	southern red oak	60	43	
	Virginia pine	60	86	
LbB:				
Lily	scarlet oak	77	43	scarlet oak, shortleaf pine, Virginia pine, white oak
	shortleaf pine	63	100	
	Virginia pine	80	114	
	white oak	73	57	
LbC:				
Lily	scarlet oak	77	43	scarlet oak, shortleaf pine, Virginia pine, white oak
	shortleaf pine	63	100	
	Virginia pine	80	114	
	white oak	73	57	
LbD:				
Lily	scarlet oak	77	43	scarlet oak, shortleaf pine, Virginia pine, white oak
	shortleaf pine	63	100	
	Virginia pine	80	114	
	white oak	73	57	
LgC:				
Lily	scarlet oak	77	43	scarlet oak, shortleaf pine, Virginia pine, white oak
	shortleaf pine	63	100	
	Virginia pine	80	114	
	white oak	73	57	
Gilpin	northern red oak	80	57	northern red oak, yellow-poplar
	yellow-poplar	90	100	
LgD:				
Lily	scarlet oak	77	43	scarlet oak, shortleaf pine, Virginia pine, white oak
	shortleaf pine	63	100	
	Virginia pine	80	114	
	white oak	73	57	
Gilpin	northern red oak	80	57	northern red oak, yellow-poplar
	yellow-poplar	90	100	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
LgE:				
Lily	scarlet oak	77	43	scarlet oak,
	shortleaf pine	63	100	shortleaf pine,
	Virginia pine	80	114	Virginia pine,
	white oak	73	57	white oak
Gilpin	northern red oak	80	57	northern red oak,
	yellow-poplar	90	100	yellow-poplar
LmC:				
Lily	scarlet oak	77	43	scarlet oak,
	shortleaf pine	63	100	shortleaf pine,
	Virginia pine	80	114	Virginia pine,
	white oak	73	57	white oak
Ramsey	northern red oak	50	29	northern red oak,
	shortleaf pine	50	72	shortleaf pine,
	Virginia pine	50	77	Virginia pine
LmD:				
Lily	scarlet oak	77	43	scarlet oak,
	shortleaf pine	63	100	shortleaf pine,
	Virginia pine	80	114	Virginia pine,
	white oak	73	57	white oak
Ramsey	northern red oak	50	29	northern red oak,
	shortleaf pine	50	72	shortleaf pine,
	Virginia pine	50	77	Virginia pine
LmE:				
Lily	scarlet oak	77	43	scarlet oak,
	shortleaf pine	63	100	shortleaf pine,
	Virginia pine	80	114	Virginia pine,
	white oak	73	57	white oak
Ramsey	northern red oak	50	29	northern red oak,
	shortleaf pine	50	72	shortleaf pine,
	Virginia pine	50	77	Virginia pine
LoB:				
Lonewood	northern red oak	70	62	northern red oak,
	shortleaf pine	70	114	shortleaf pine,
	Virginia pine	70	114	Virginia pine,
	white oak	70	57	white oak, yellow-
	yellow-poplar	90	90	poplar
LoC:				
Lonewood	northern red oak	70	62	northern red oak,
	shortleaf pine	70	114	shortleaf pine,
	Virginia pine	70	114	Virginia pine,
	white oak	70	57	white oak, yellow-
	yellow-poplar	90	95	poplar

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Pp:				
Pope	American sycamore	75	81	American sycamore, northern red oak, sweetgum, white oak, yellow-poplar
	northern red oak	80	62	
	sweetgum	75	86	
	white oak	80	57	
	yellow-poplar	96	100	
Philo	American sycamore	75	81	American sycamore, northern red oak, sweetgum, white oak, yellow-poplar
	northern red oak	80	62	
	sweetgum	75	86	
	white oak	80	57	
	yellow-poplar	96	100	
SeB:				
Sequoia	northern red oak	70	57	northern red oak, shortleaf pine, Virginia pine
	shortleaf pine	63	100	
	Virginia pine	71	114	
SeC:				
Sequoia	northern red oak	70	57	northern red oak, shortleaf pine, Virginia pine
	shortleaf pine	63	100	
	Virginia pine	71	114	
SeD:				
Sequoia	northern red oak	70	57	northern red oak, shortleaf pine, Virginia pine
	shortleaf pine	63	100	
	Virginia pine	71	114	
ShC:				
Shelocta	black oak	80	107	black oak, scarlet oak, white oak, yellow-poplar
	scarlet oak	80	43	
	white oak	70	57	
	yellow-poplar	100	57	
ShD:				
Shelocta	black oak	80	107	black oak, scarlet oak, white oak, yellow-poplar
	scarlet oak	80	43	
	white oak	70	57	
	yellow-poplar	100	57	
ShE:				
Shelocta	black oak	80	107	black oak, scarlet oak, white oak, yellow-poplar
	scarlet oak	80	43	
	white oak	70	57	
	yellow-poplar	100	57	
W.				
Water				
WrB:				
Wernock	black oak	71	57	black oak, chestnut oak, scarlet oak, shortleaf pine, white oak
	chestnut oak	71	57	
	scarlet oak	73	57	
	shortleaf pine	70	114	
	white oak	71	57	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WrC:				
Wernock	black oak	71	57	black oak, chestnut oak, scarlet oak, shortleaf pine, white oak
	chestnut oak	71	57	
	scarlet oak	73	57	
	shortleaf pine	70	114	
	white oak	71	57	

Table 9.—Forest Management, Part I

(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	Pct. of map unit	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
Ac:							
Allegheny-------	55	Moderate		Moderately suited		Severe	
		Flooding	0.50	Flooding	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Cotaco----------	35	Moderate		Moderately suited		Severe	
		Flooding	0.50	Flooding	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
At:							
Atkins----------	90	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Wetness	1.00		
				Low strength	0.50		
Bm:							
Bethesda--------	75	Severe		Poorly suited		Severe	
		Landslides	1.00	Landslides	1.00	Low strength	1.00
		Slope	1.00	Slope	1.00		
		Low strength	0.50	Low strength	0.50		
Mines pit-------	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin----------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
GnD:							
Gilpin----------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
GpE:							
Gilpin----------	55	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
		Low strength	0.50	Low strength	0.50		
Petros----------	40	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
GpF:							
Gilpin----------	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	1.00	Landslides	1.00		
		Low strength	0.50	Low strength	0.50		

Table 9.—Forest Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Petros----------	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	1.00	Landslides	1.00		
GsF:							
Gilpin----------	35	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	1.00	Landslides	1.00		
		Low strength	0.50	Low strength	0.50		
Bouldin---------	30	Severe		Poorly suited		Slight	
		Landslides	1.00	Slope	1.00	Strength	0.10
		Slope	1.00	Landslides	1.00		
		Stoniness	0.50	Rock fragments	1.00		
Petros----------	25	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	1.00	Landslides	1.00		
LbB:							
Lily------------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
		Restrictive layer	0.50				
LbC:							
Lily------------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
		Restrictive layer	0.50	Slope	0.50		
LbD:							
Lily------------	85	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				
LgC:							
Lily------------	65	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
		Restrictive layer	0.50	Slope	0.50		
Gilpin----------	30	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
LgD:							
Lily------------	60	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				
Gilpin----------	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Table 9.—Forest Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
LgE:							
Lily------------	55	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
		Restrictive layer	0.50	Low strength	0.50		
		Low strength	0.50				
Gilpin----------	35	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
		Low strength	0.50	Low strength	0.50		
LmC:							
Lily------------	60	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
		Restrictive layer	0.50	Slope	0.50		
Ramsey----------	35	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Low strength	0.50	Low strength	1.00
				Slope	0.50		
LmD:							
Lily------------	55	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				
Ramsey----------	35	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
LmE:							
Lily------------	50	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
		Restrictive layer	0.50	Low strength	0.50		
		Low strength	0.50				
Ramsey----------	40	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Restrictive layer	1.00	Landslides	1.00		
		Slope	0.50	Low strength	0.50		
LoB:							
Lonewood--------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
LoC:							
Lonewood--------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
Pp:							
Pope------------	50	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Table 9.—Forest Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
Pp:							
Philo-----------	45	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
SeB:							
Sequoia---------	90	Slight		Moderately suited		Severe	
				Low strength	0.50	Low strength	1.00
SeC:							
Sequoia---------	90	Slight		Moderately suited		Severe	
				Low strength	0.50	Low strength	1.00
				Slope	0.50		
SeD:							
Sequoia---------	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stickiness/slope	0.50	Low strength	0.50		
		Low strength	0.50				
ShC:							
Shelocta--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
ShD:							
Shelocta--------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
ShE:							
Shelocta--------	90	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
		Low strength	0.50	Low strength	0.50		
W:							
Water-----------	100	Not rated		Not rated		Not rated	
WrB:							
Wernock---------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
WrC:							
Wernock---------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		

Table 9.—Forest Management, Part II

(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	Pct. of map unit	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
Ac:							
Allegheny-------	55	Slight		Slight		Moderately suited	
						Flooding	0.50
						Low strength	0.50
Cotaco----------	35	Slight		Slight		Moderately suited	
						Flooding	0.50
						Low strength	0.50
At:							
Atkins----------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Wetness	1.00
						Low strength	0.50
Bm:							
Bethesda--------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Landslides	1.00
						Slope	1.00
						Low strength	0.50
Mines pit-------	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin----------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
GnD:							
Gilpin----------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
GpE:							
Gilpin----------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
Petros----------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
GpF:							
Gilpin----------	65	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50

Table 9.—Forest Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Petros	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
GsF:							
Gilpin	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
Bouldin	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Rock fragments	1.00
Petros	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
LbB:							
Lily	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
LbC:							
Lily	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
LbD:							
Lily	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
LgC:							
Lily	65	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
Gilpin	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
LgD:							
Lily	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Gilpin	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
LgE:							
Lily	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50

Table 9.—Forest Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LgE:							
Gilpin----------	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
LmC:							
Lily------------	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
Ramsey----------	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
						Slope	0.50
LmD:							
Lily------------	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Ramsey----------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
LmE:							
Lily------------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
Ramsey----------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
LoB:							
Lonewood--------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
LoC:							
Lonewood--------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
Pp:							
Pope------------	50	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
Philo-----------	45	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
SeB:							
Sequoia---------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50

Table 9.—Forest Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
SeC:							
Sequoia	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
SeD:							
Sequoia	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
ShC:							
Shelocta	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50
ShD:							
Shelocta	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
ShE:							
Shelocta	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
W:							
Water	100	Not rated		Not rated		Not rated	
WrB:							
Wernock	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
WrC:							
Wernock	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Low strength	0.50
						Slope	0.50

Table 9.—Forest Management, Part III

(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	Pct. of map unit	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
Ac:							
Allegheny	55	Well suited		Well suited		Moderately suited	
						Low strength	0.50
Cotaco	35	Well suited		Well suited		Moderately suited	
						Low strength	0.50
At:							
Atkins	90	Well suited		Well suited		Moderately suited	
						Low strength	0.50
Bm:							
Bethesda	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
GnD:							
Gilpin	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
GpE:							
Gilpin	55	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
Petros	40	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.75		
GpF:							
Gilpin	65	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
Petros	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
GsF:							
Gilpin	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50

Table 9.—Forest Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	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
GsF:							
Bouldin----------	30	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
Petros-----------	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
LbB:							
Lily-------------	85	Well suited		Well suited		Moderately suited	
						Low strength	0.50
LbC:							
Lily-------------	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
LbD:							
Lily-------------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
LgC:							
Lily-------------	65	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Gilpin-----------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
LgD:							
Lily-------------	60	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
Gilpin-----------	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
LgE:							
Lily-------------	55	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
Gilpin-----------	35	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
LmC:							
Lily-------------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Ramsey-----------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
LmD:							
Lily-------------	55	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
Ramsey-----------	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50

Table 9.—Forest Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	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
LmE:							
Lily	50	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
Ramsey	40	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
LoB:							
Lonewood	85	Well suited		Well suited		Moderately suited	
						Low strength	0.50
LoC:							
Lonewood	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Pp:							
Pope	50	Well suited		Well suited		Moderately suited	
						Low strength	0.50
Philo	45	Well suited		Well suited		Moderately suited	
						Low strength	0.50
SeB:							
Sequoia	90	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
SeC:							
Sequoia	90	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
SeD:							
Sequoia	85	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		
ShC:							
Shelocta	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
ShD:							
Shelocta	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
ShE:							
Shelocta	90	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forest Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	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
WrB:							
Wernock----------	90	Well suited		Well suited		Moderately suited	
						Low strength	0.50
WrC:							
Wernock----------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50

Table 9.—Forest Management, Part IV

(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	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ac:					
Allegheny	55	Well suited		Well suited	
Cotaco	35	Well suited		Well suited	
At:					
Atkins	90	Well suited		Well suited	
Bm:					
Bethesda	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Mines pit	20	Not rated		Not rated	
GnC:					
Gilpin	90	Well suited		Well suited	
GnD:					
Gilpin	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
GpE:					
Gilpin	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Petros	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
GpF:					
Gilpin	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Petros	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
GsF:					
Gilpin	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Bouldin	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	1.00	Rock fragments	0.50
Petros	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		

Table 9.—Forest Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
LbB:					
Lily----------------	85	Well suited		Poorly suited	
				Restrictive layer	0.50
LbC:					
Lily----------------	85	Well suited		Poorly suited	
				Restrictive layer	0.50
LbD:					
Lily----------------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
LgC:					
Lily----------------	65	Well suited		Poorly suited	
				Restrictive layer	0.50
Gilpin--------------	30	Well suited		Well suited	
LgD:					
Lily----------------	60	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
Gilpin--------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
LgE:					
Lily----------------	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
Gilpin--------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
LmC:					
Lily----------------	60	Well suited		Poorly suited	
				Restrictive layer	0.50
Ramsey--------------	30	Well suited		Unsuited	
				Restrictive layer	1.00
LmD:					
Lily----------------	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
Ramsey--------------	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
LmE:					
Lily----------------	50	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
Ramsey--------------	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50

Table 9.—Forest Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
LoB:					
Lonewood	85	Well suited		Well suited	
LoC:					
Lonewood	85	Well suited		Well suited	
Pp:					
Pope	50	Well suited		Well suited	
Philo	45	Well suited		Well suited	
SeB:					
Sequoia	90	Poorly suited		Well suited	
		Stickiness; high plasticity index	0.50		
SeC:					
Sequoia	90	Poorly suited		Well suited	
		Stickiness; high plasticity index	0.50		
SeD:					
Sequoia	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50		
ShC:					
Shelocta	90	Well suited		Well suited	
ShD:					
Shelocta	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
ShE:					
Shelocta	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
W:					
Water	100	Not rated		Not rated	
WrB:					
Wernock	90	Well suited		Well suited	
WrC:					
Wernock	90	Well suited		Well suited	

Table 9.—Forest Management, Part V

(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	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Potential for damage to soil by fire: Value	Potential for seedling mortality: Rating class and limiting features	Potential for seedling mortality: Value
Ac:					
Allegheny	55	Low		Low	
		Texture/coarse fragments	0.10		
Cotaco	35	Low		Low	
		Texture/coarse fragments	0.10		
At:					
Atkins	90	Low		High	
		Texture/coarse fragments	0.10	Wetness	1.00
Bm:					
Bethesda	75	Moderate		Low	
		Texture/coarse fragments	0.50		
Mines pit	20	Not rated		Not rated	
GnC:					
Gilpin	90	Low		Low	
		Texture/coarse fragments	0.10		
GnD:					
Gilpin	90	Low		Low	
		Texture/coarse fragments	0.10		
GpE:					
Gilpin	55	Low		Low	
		Texture/coarse fragments	0.10		
Petros	40	Low		Low	
GpF:					
Gilpin	65	Low		Low	
Petros	25	High		Low	
		Texture/slope/ surface depth/ coarse fragments	1.00		

Table 9.—Forest Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
GsF:					
Gilpin	35	Low		Low	
Bouldin	30	Moderate		Low	
		Texture/coarse fragments	0.50		
Petros	25	High		Low	
		Texture/slope/ surface depth/ coarse fragments	1.00		
LbB:					
Lily	85	Low		Low	
LbC:					
Lily	85	Low		Low	
LbD:					
Lily	85	Low		Low	
LgC:					
Lily	65	Low		Low	
Gilpin	30	Low		Low	
		Texture/coarse fragments	0.10		
LgD:					
Lily	60	Low		Low	
Gilpin	35	Low		Low	
		Texture/coarse fragments	0.10		
LgE:					
Lily	55	Low		Low	
Gilpin	35	Low		Low	
		Texture/coarse fragments	0.10		
LmC:					
Lily	60	Low		Low	
Ramsey	30	Low		Low	
LmD:					
Lily	55	Low		Low	
Ramsey	40	Low		Low	
LmE:					
Lily	50	Low		Low	
Ramsey	40	Low		Low	

Table 9.—Forest Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
LoB:					
Lonewood	85	Low		Low	
		Texture/coarse fragments	0.10		
LoC:					
Lonewood	85	Low		Low	
		Texture/coarse fragments	0.10		
Pp:					
Pope	50	Low		Low	
		Texture/coarse fragments	0.10		
Philo	45	Low		Low	
		Texture/coarse fragments	0.10		
SeB:					
Sequoia	90	Moderate		Low	
		Texture/coarse fragments	0.50		
SeC:					
Sequoia	90	Moderate		Low	
		Texture/coarse fragments	0.50		
SeD:					
Sequoia	85	Moderate		Low	
		Texture/coarse fragments	0.50		
ShC:					
Shelocta	90	Low		Low	
ShD:					
Shelocta	90	Low		Low	
ShE:					
Shelocta	90	Low		Low	
W:					
Water	100	Not rated		Not rated	
WrB:					
Wernock	90	Low		Low	
		Texture/coarse fragments	0.10		
WrC:					
Wernock	90	Low		Low	
		Texture/coarse fragments	0.10		

Table 10.—Recreation, Part I

(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	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ac:							
Allegheny	55	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
Cotaco	35	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.19	Flooding	0.60
		Depth to saturated zone	0.39			Depth to saturated zone	0.39
						Gravel content	0.22
At:							
Atkins	90	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
Bm:							
Bethesda	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.21	Restricted permeability	0.21	Gravel content	1.00
		Gravel content	0.08	Gravel content	0.08	Restricted permeability	0.21
						Content of large stones	0.03
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
GnD:							
Gilpin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
GpE:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
Petros	40	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
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00

Table 10.—Recreation, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
Petros	25	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
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
GsF:							
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too stony	0.19	Too stony	0.19	Depth to bedrock	0.84
						Gravel content	0.50
						Too stony	0.19
Bouldin	30	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	0.02	Content of large stones	0.02	Content of large stones	0.99
						Gravel content	0.86
Petros	25	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
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
LbB:							
Lily	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
						Depth to bedrock	0.46
LbC:							
Lily	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.46
LbD:							
Lily	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
LgC:							
Lily	65	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.46
Gilpin	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50

Table 10.—Recreation, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
LgD:							
Lily	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
LgE:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Gravel content	0.50
LmC:							
Lily	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.46
Ramsey	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.22
LmD:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
Ramsey	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Gravel content	0.22
LmE:							
Lily	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
Ramsey	40	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
						Gravel content	0.22
LoB:							
Lonewood	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
LoC:							
Lonewood	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00

Table 10.—Recreation, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Pp:							
Pope-------------	50	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
						Gravel content	0.06
Philo------------	45	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Depth to saturated zone	0.07	Depth to saturated zone	0.03	Depth to saturated zone	0.07
						Gravel content	0.06
SeB:							
Sequoia----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Depth to bedrock	0.95
						Slope	0.50
						Restricted permeability	0.26
SeC:							
Sequoia----------	90	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Slope	1.00
						Depth to bedrock	0.95
		Slope	0.04	Slope	0.04	Restricted permeability	0.26
SeD:							
Sequoia----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Depth to bedrock	0.95
						Restricted permeability	0.26
ShC:							
Shelocta---------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.22
ShD:							
Shelocta---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
ShE:							
Shelocta---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
W:							
Water------------	100	Not rated		Not rated		Not rated	
WrB:							
Wernock----------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.28
						Depth to bedrock	0.10
WrC:							
Wernock----------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
						Depth to bedrock	0.10

Table 10.—Recreation, Part II

(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	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
Ac:							
Allegheny	55	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
Cotaco	35	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Depth to saturated zone	0.19
At:							
Atkins	90	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
Bm:							
Bethesda	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.08
						Content of large stones	0.03
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.84
						Slope	0.04
						Droughty	0.03
GnD:							
Gilpin	90	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Depth to bedrock	0.84
						Droughty	0.03
GpE:							
Gilpin	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
						Depth to bedrock	0.84
						Droughty	0.03
Petros	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
						Gravel content	0.32

Table 10.—Recreation, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.84
						Droughty	0.03
Petros	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
						Gravel content	0.32
GsF:							
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too stony	0.19	Too stony	0.19	Depth to bedrock	0.84
						Droughty	0.03
Bouldin	30	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	0.99
		Content of large stones	0.02	Content of large stones	0.02	Droughty	0.34
Petros	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
						Gravel content	0.32
LbB:							
Lily	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
LbC:							
Lily	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
						Slope	0.04
LbD:							
Lily	85	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Depth to bedrock	0.46
LgC:							
Lily	65	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
						Slope	0.04
Gilpin	30	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.84
						Slope	0.04
						Droughty	0.03
LgD:							
Lily	60	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Depth to bedrock	0.46

Table 10.—Recreation, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LgD:							
Gilpin----------	35	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Depth to bedrock	0.84
						Droughty	0.03
LgE:							
Lily------------	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
						Depth to bedrock	0.46
Gilpin----------	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
						Depth to bedrock	0.84
						Droughty	0.03
LmC:							
Lily------------	60	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
						Slope	0.04
Ramsey----------	30	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.04
LmD:							
Lily------------	55	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Depth to bedrock	0.46
Ramsey----------	40	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Depth to bedrock	1.00
						Droughty	1.00
						Slope	1.00
LmE:							
Lily------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
						Depth to bedrock	0.46
Ramsey----------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
LoB:							
Lonewood--------	85	Not limited		Not limited		Not limited	
LoC:							
Lonewood--------	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
Pp:							
Pope------------	50	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00

Table 10.—Recreation, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
Pp:							
Philo	45	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Depth to saturated zone	0.03
SeB:							
Sequoia	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.95
						Droughty	0.29
SeC:							
Sequoia	90	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.95
						Droughty	0.29
						Slope	0.04
SeD:							
Sequoia	85	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.02			Depth to bedrock	0.95
						Droughty	0.29
ShC:							
Shelocta	90	Not limited		Not limited		Somewhat limited	
						Slope	0.04
ShD:							
Shelocta	90	Not limited		Not limited		Very limited	
						Slope	1.00
ShE:							
Shelocta	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
W:							
Water	100	Not rated		Not rated		Not rated	
WrB:							
Wernock	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.10
WrC:							
Wernock	90	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.10
						Slope	0.01

Table 11.—Wildlife Habitat

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wildlife	Woodland wildlife	Wetland wildlife
Ac:										
Allegheny	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Cotaco	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
At:										
Atkins	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
Bm:										
Bethesda	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
Mines pit.										
GnC:										
Gilpin	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
GnD:										
Gilpin	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
GpE:										
Gilpin	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Petros	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
GpF:										
Gilpin	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Petros	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
GsF:										
Gilpin	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Bouldin	Very poor	Very poor	Fair	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Petros	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
LbB:										
Lily	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LbC:										
Lily	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 11.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wildlife	Woodland wildlife	Wetland wildlife
LbD:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LgC:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Gilpin----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
LgD:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Gilpin----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
LgE:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Gilpin----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
LmC:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ramsey----------	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor
LmD:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ramsey----------	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor
LmE:										
Lily------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ramsey----------	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor
LoB:										
Lonewood--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LoC:										
Lonewood--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 11.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wildlife	Woodland wildlife	Wetland wildlife
Pp:										
Pope	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Philo	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
SeB:										
Sequoia	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SeC:										
Sequoia	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SeD:										
Sequoia	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ShC:										
Shelocta	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
ShD:										
Shelocta	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
ShE:										
Shelocta	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
W.										
Water										
WrB:										
Wernock	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
WrC:										
Wernock	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 12.—Building Site Development, Part I

(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	Pct. of map unit	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
Ac:							
Allegheny	55	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Cotaco	35	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
At:							
Atkins	90	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
Bm:							
Bethesda	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	92	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Depth to soft bedrock	0.84	Slope	1.00
				Slope	0.04		
GnD:							
Gilpin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		
GpE:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		
Petros	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
GpF:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		

Table 12.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Petros	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
GsF:							
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		
Bouldin	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.35	Content of large stones	0.35	Content of large stones	0.35
Petros	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
LbB:							
Lily	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
LbC:							
Lily	85	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to hard bedrock	0.46
LbD:							
Lily	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to hard bedrock	0.46
LgC:							
Lily	65	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to hard bedrock	0.46
Gilpin	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Depth to soft bedrock	0.84	Slope	1.00
				Slope	0.04		
LgD:							
Lily	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to hard bedrock	0.46

Table 12.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
LgD:							
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		
LgE:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.84		
LmC:							
Lily	60	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to hard bedrock	0.46
Ramsey	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
LmD:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to hard bedrock	0.46
Ramsey	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to hard bedrock	1.00
LmE:							
Lily	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
Ramsey	40	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
LoB:							
Lonewood	85	Not limited		Not limited		Not limited	
LoC:							
Lonewood	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00

Table 12.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	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
Pp:							
Pope------------	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Philo-----------	45	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.07	Depth to saturated zone	1.00	Depth to saturated zone	0.07
SeB:							
Sequoia---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Depth to soft bedrock	0.95	Shrink-swell	0.50
				Shrink-swell	0.50		
SeC:							
Sequoia---------	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Depth to soft bedrock	0.95	Slope	1.00
		Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
				Slope	0.04		
SeD:							
Sequoia---------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to soft bedrock	0.95	Shrink-swell	0.50
				Shrink-swell	0.50		
ShC:							
Shelocta--------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
ShD:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
ShE:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
W:							
Water-----------	100	Not rated		Not rated		Not rated	
WrB:							
Wernock---------	90	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.10		
WrC:							
Wernock---------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Depth to soft bedrock	0.10	Slope	1.00
				Slope	0.01		

Table 12.—Building Site Development, Part II

(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	Pct. of map unit	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
Ac:							
Allegheny	65	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60		
Cotaco	35	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Depth to saturated zone	0.19	Cutbanks cave	1.00	Depth to saturated zone	0.19
				Flooding	0.60		
At:							
Atkins	90	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
				Cutbanks cave	0.10		
Bm:							
Bethesda	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Gravel content	0.08
						Content of large stones	0.03
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04	Droughty	0.03
GnD:							
Gilpin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03
GpE:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03

Table 12.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
GpE:							
Petros----------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Gravel content	0.32
GpF:							
Gilpin----------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03
Petros----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Gravel content	0.32
GsF:							
Gilpin----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03
Bouldin---------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.35	Content of large stones	0.35	Content of large stones	0.99
				Cutbanks cave	0.10	Droughty	0.34
Petros----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Gravel content	0.32
LbB:							
Lily------------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to bedrock	0.46
				Cutbanks cave	0.10		
LbC:							
Lily------------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to bedrock	0.46
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
LbD:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to bedrock	0.46
				Cutbanks cave	0.10		

Table 12.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LgC:							
Lily	65	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to bedrock	0.46
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
Gilpin	30	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04	Droughty	0.03
LgD:							
Lily	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to bedrock	0.46
				Cutbanks cave	0.10		
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03
LgE:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to bedrock	0.46
				Cutbanks cave	0.10		
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.84	Depth to bedrock	0.84
				Cutbanks cave	0.10	Droughty	0.03
LmC:							
Lily	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to bedrock	0.46
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
Ramsey	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
LmD:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Slope	1.00	Depth to bedrock	0.46
				Cutbanks cave	0.10		

Table 12.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LmD:							
Ramsey----------	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
LmE:							
Lily------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.46			Depth to bedrock	0.46
				Slope	1.00		
				Cutbanks cave	0.10		
Ramsey----------	40	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	Droughty	1.00
				Cutbanks cave	0.10		
LoB:							
Lonewood--------	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
LoC:							
Lonewood--------	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.04
		Slope	0.04	Slope	0.04		
Pp:							
Pope------------	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Flooding	0.80		
Philo-----------	45	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Depth to saturated zone	0.03			Depth to saturated zone	0.03
				Cutbanks cave	1.00		
				Flooding	0.80		
SeB:							
Sequoia---------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.95	Depth to bedrock	0.95
		Shrink-swell	0.50			Droughty	0.29
				Cutbanks cave	0.10		
				Too clayey	0.02		
SeC:							
Sequoia---------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.95	Depth to bedrock	0.95
		Shrink-swell	0.50			Droughty	0.29
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
				Too clayey	0.02		

Table 12.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
SeD:							
Sequoia---------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.95	Depth to bedrock	0.95
		Shrink-swell	0.50			Droughty	0.29
				Cutbanks cave	0.10		
				Too clayey	0.02		
ShC:							
Shelocta--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
ShD:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
ShE:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
W:							
Water-----------	100	Not rated		Not rated		Not rated	
WrB:							
Wernock---------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.10
				Depth to soft bedrock	0.10		
WrC:							
Wernock---------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.10
		Slope	0.01	Depth to soft bedrock	0.10	Slope	0.01
				Slope	0.01		

Table 13.—Sanitary Facilities, Part I

(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	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Septic tank absorption fields: Value	Sewage lagoons: Rating class and limiting features	Sewage lagoons: Value
Ac:					
Allegheny	55	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
Cotaco	35	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50		
At:					
Atkins	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.78		
Bm:					
Bethesda	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Seepage	0.53
Mines pit	20	Not rated		Not rated	
GnC:					
Gilpin	92	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.50	Slope	1.00
		Slope	0.04	Seepage	0.53
GnD:					
Gilpin	90	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	0.53

Table 13.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
GpE:					
Gilpin	55	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	0.53
Petros	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
GpF:					
Gilpin	65	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	0.53
Petros	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
GsF:					
Gilpin	35	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	0.53
Bouldin	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Content of large stones	0.35	Content of large stones	0.78
Petros	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
LbB:					
Lily	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Seepage	1.00
				Slope	0.32
LbC:					
Lily	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00

Table 13.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
LbD:					
Lily----------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
LgC:					
Lily----------------	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00
Gilpin--------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.50	Slope	1.00
		Slope	0.04	Seepage	0.53
LgD:					
Lily----------------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
Gilpin--------------	35	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	0.53
LgE:					
Lily----------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Gilpin--------------	35	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	0.53
LmC:					
Lily----------------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00
Ramsey--------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.04		

Table 13.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
LmD:					
Lily----------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
Ramsey--------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Filtering capacity	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slope	1.00		
LmE:					
Lily----------------	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Ramsey--------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
		Seepage	1.00		
LoB:					
Lonewood------------	85	Somewhat limited		Somewhat limited	
		Depth to bedrock	0.52	Seepage	0.53
		Restricted permeability	0.46	Slope	0.32
				Depth to soft bedrock	0.08
LoC:					
Lonewood------------	85	Somewhat limited		Very limited	
		Depth to bedrock	0.52	Slope	1.00
		Restricted permeability	0.46	Seepage	0.53
		Slope	0.04	Depth to soft bedrock	0.08
Pp:					
Pope----------------	50	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
Philo---------------	45	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.46		

Table 13.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SeB:					
Sequoia	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Slope	0.32
SeC:					
Sequoia	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.04	Slope	1.00
SeD:					
Sequoia	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
ShC:					
Shelocta	90	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.04	Seepage	1.00
ShD:					
Shelocta	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
ShE:					
Shelocta	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
W:					
Water	100	Not rated		Not rated	
WrB:					
Wernock	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.18
WrC:					
Wernock	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.46	Slope	1.00
		Slope	0.01	Seepage	0.53

Table 13.—Sanitary Facilities, Part II

(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	Pct. of map unit	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
Ac:							
Allegheny	65	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Seepage	1.00			Seepage	0.50
		Too clayey	0.50				
Cotaco	35	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Seepage	1.00				
At:							
Atkins	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00				
Bm:							
Bethesda	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
						Gravel content	0.42
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	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	Slope	0.04	Too clayey	0.50
		Slope	0.04			Slope	0.04
GnD:							
Gilpin	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
GpE:							
Gilpin	55	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
Petros	40	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	1.00			Gravel content	1.00
						Seepage	0.22

Table 13.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Gilpin----------	65	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
Petros----------	25	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	1.00			Gravel content	1.00
						Seepage	0.22
GsF:							
Gilpin----------	35	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
Bouldin---------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Content of large stones	0.82
		Content of large stones	0.82			Seepage	0.52
		Too clayey	0.50			Too clayey	0.50
Petros----------	25	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	1.00			Gravel content	1.00
						Seepage	0.22
LbB:							
Lily------------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
LbC:							
Lily------------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
		Slope	0.04	Slope	0.04	Slope	0.04
LbD:							
Lily------------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Seepage	0.52
LgC:							
Lily------------	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
		Slope	0.04	Slope	0.04	Slope	0.04

Table 13.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LgC:							
Gilpin	30	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	Slope	0.04	Too clayey	0.50
		Slope	0.04			Slope	0.04
LgD:							
Lily	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Seepage	0.52
Gilpin	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
LgE:							
Lily	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
Gilpin	35	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
LmC:							
Lily	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
		Slope	0.04	Slope	0.04	Slope	0.04
Ramsey	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.04	Seepage	0.52
		Slope	0.04			Slope	0.04
LmD:							
Lily	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Seepage	0.52
Ramsey	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	1.00	Slope	1.00
		Slope	1.00			Seepage	0.52
LmE:							
Lily	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52

Table 13.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LmE:							
Ramsey----------	40	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	1.00			Seepage	0.52
LoB:							
Lonewood--------	85	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.08	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.08
LoC:							
Lonewood--------	85	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.08	Too clayey	0.50
		Too clayey	0.50	Slope	0.04	Depth to bedrock	0.08
		Slope	0.04			Slope	0.04
Pp:							
Pope------------	50	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.22
		Seepage	1.00	Seepage	1.00		
Philo-----------	45	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.68
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00				
SeB:							
Sequoia---------	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
SeC:							
Sequoia---------	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04
SeD:							
Sequoia---------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
						Slope	1.00
ShC:							
Shelocta--------	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
		Too clayey	0.50	Slope	0.04	Seepage	0.22
		Slope	0.04			Gravel content	0.20
						Slope	0.04

Table 13.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
ShD:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
		Too clayey	0.50			Seepage	0.22
						Gravel content	0.20
ShE:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
		Too clayey	0.50			Seepage	0.22
						Gravel content	0.20
W:							
Water-----------	100	Not rated		Not rated		Not rated	
WrB:							
Wernock---------	90	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
WrC:							
Wernock---------	90	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	Slope	0.01	Too clayey	0.50
		Slope	0.01			Slope	0.01

Table 14.—Construction Materials, Part I

(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	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Ac:					
Allegheny	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cotaco	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
At:					
Atkins	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
Bm:					
Bethesda	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Mines pit	20	Not rated		Not rated	
GnC:					
Gilpin	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GnD:					
Gilpin	90	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
GpE:					
Gilpin	55	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Petros	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.32	Thickest layer	0.00
GpF:					
Gilpin	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Petros	25	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.32	Bottom layer	0.00

Table 14.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
GsF:					
Gilpin	35	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Bouldin	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Petros	25	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.32	Thickest layer	0.00
LbB:					
Lily	85	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
LbC:					
Lily	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LbD:					
Lily	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LgC:					
Lily	65	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Gilpin	30	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
LgD:					
Lily	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Gilpin	35	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
LgE:					
Lily	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Gilpin	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 14.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
LmC:					
Lily	60	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Ramsey	30	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
LmD:					
Lily	55	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Ramsey	40	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.04
LmE:					
Lily	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ramsey	40	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.04
LoB:					
Lonewood	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LoC:					
Lonewood	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pp:					
Pope	50	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
Philo	45	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.02
SeB:					
Sequoia	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SeC:					
Sequoia	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 14.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
SeD:					
Sequoia	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ShC:					
Shelocta	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ShD:					
Shelocta	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
ShE:					
Shelocta	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
W:					
Water	100	Not rated		Not rated	
WrB:					
Wernock	90	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
WrC:					
Wernock	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 14.—Construction Materials, Part II

(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	Pct. of map unit	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
Ac:							
Allegheny	55	Fair		Good		Fair	
		Too acid	0.12			Too acid	0.59
						Hard to reclaim, rock fragments	0.95
Cotaco	35	Fair		Fair		Fair	
		Too acid	0.12	Depth to saturated zone	0.53	Depth to saturated zone	0.53
		Water erosion	0.99			Too acid	0.59
						Rock fragments	0.88
						Hard to reclaim, rock fragments	0.95
At:							
Atkins	90	Fair		Poor		Poor	
		Too acid	0.32	Depth to saturated zone	0.00	Depth to saturated zone	0.00
						Too acid	0.88
Bm:							
Bethesda	75	Fair		Poor		Poor	
		Low content of organic matter	0.02	Slope	0.00	Rock fragments	0.00
		Too acid	0.12			Hard to reclaim, rock fragments	0.00
		Droughty	0.97			Slope	0.00
						Hard to reclaim, dense layer	0.05
						Too acid	0.59
Mines pit	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin	90	Fair		Poor		Fair	
		Low content of organic matter	0.12	Depth to bedrock	0.00	Depth to bedrock	0.16
		Droughty	0.14	Low strength	0.00	Too clayey	0.57
		Depth to bedrock	0.16			Too acid	0.59
		Too acid	0.50			Slope	0.96
		Too clayey	0.98			Rock fragments	0.97
GnD:							
Gilpin	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
		Droughty	0.14	Depth to bedrock	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Slope	0.98	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97

Table 14.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
GpE:							
Gilpin	55	Fair		Poor		Poor	
		Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
		Droughty	0.14	Slope	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Depth to bedrock	0.00	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97
Petros	40	Poor		Poor		Poor	
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.12			Slope	0.00
		Too acid	0.50			Too acid	0.88
GpF:							
Gilpin	65	Fair		Poor		Poor	
		Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
		Droughty	0.14	Slope	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Depth to bedrock	0.00	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97
Petros	25	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Low content of organic matter	0.12			Depth to bedrock	0.00
		Too acid	0.50			Too acid	0.88
GsF:							
Gilpin	35	Fair		Poor		Poor	
		Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.14	Low strength	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Slope	0.00	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97
Bouldin	30	Poor		Poor		Poor	
		Low content of organic matter	0.00	Slope	0.00	Slope	0.00
		Too acid	0.50	Cobble content	0.45	Hard to reclaim (rock fragments)	0.00
		Stone content	0.50	Stone content	0.50	Rock fragments	0.00
		Cobble content	0.82			Too acid	0.88
		Droughty	0.89				
Petros	25	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
		Low content of organic matter	0.12			Depth to bedrock	0.00
		Too acid	0.50			Too acid	0.88

Table 14.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LbB:							
Lily	85	Fair		Poor		Fair	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Depth to bedrock	0.54
		Too acid	0.50			Too acid	0.59
		Depth to bedrock	0.54				
		Droughty	0.56				
LbC:							
Lily	85	Fair		Poor		Fair	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Depth to bedrock	0.54
		Too acid	0.50			Too acid	0.59
		Depth to bedrock	0.54			Slope	0.96
		Droughty	0.56				
LbD:							
Lily	85	Fair		Poor		Poor	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.98	Depth to bedrock	0.54
		Depth to bedrock	0.54			Too acid	0.59
		Droughty	0.56				
LgC:							
Lily	65	Fair		Poor		Fair	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Depth to bedrock	0.54
		Too acid	0.50			Too acid	0.59
		Depth to bedrock	0.54			Slope	0.96
		Droughty	0.56				
Gilpin	30	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to bedrock	0.16
		Droughty	0.14	Depth to bedrock	0.00	Too clayey	0.57
		Depth to bedrock	0.16			Too acid	0.59
		Too acid	0.50			Slope	0.96
		Too clayey	0.98			Rock fragments	0.97
LgD:							
Lily	60	Fair		Poor		Poor	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.98	Depth to bedrock	0.54
		Depth to bedrock	0.54			Too acid	0.59
		Droughty	0.56				
Gilpin	35	Fair		Poor		Poor	
		Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
		Droughty	0.14	Depth to bedrock	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Slope	0.98	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97

Table 14.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LgE:							
Lily	55	Fair		Poor		Poor	
		Low content of organic matter	0.18	Slope	0.00	Slope	0.00
		Too acid	0.50	Depth to bedrock	0.00	Depth to bedrock	0.54
		Depth to bedrock	0.54			Too acid	0.59
		Droughty	0.56				
Gilpin	35	Fair		Poor		Poor	
		Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.14	Slope	0.00	Depth to bedrock	0.16
		Depth to bedrock	0.16	Low strength	0.00	Too clayey	0.57
		Too acid	0.50			Too acid	0.59
		Too clayey	0.98			Rock fragments	0.97
LmC:							
Lily	60	Fair		Poor		Fair	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Depth to bedrock	0.54
		Too acid	0.50			Too acid	0.59
		Depth to bedrock	0.54			Slope	0.96
		Droughty	0.56				
Ramsey	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Rock fragments	0.08
		Low content of organic matter	0.00			Slope	0.96
		Too acid	0.50			Too acid	0.98
LmD:							
Lily	55	Fair		Poor		Poor	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.98	Depth to bedrock	0.54
		Depth to bedrock	0.54			Too acid	0.59
		Droughty	0.56				
Ramsey	40	Poor		Poor		Poor	
		Low content of organic matter	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Slope	0.98	Slope	0.00
		Droughty	0.00			Rock fragments	0.08
		Too acid	0.50			Too acid	0.98
LmE:							
Lily	50	Fair		Poor		Poor	
		Low content of organic matter	0.18	Slope	0.00	Slope	0.00
		Too acid	0.50	Depth to bedrock	0.00	Depth to bedrock	0.54
		Depth to bedrock	0.54			Too acid	0.59
		Droughty	0.56				

Table 14.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
LmE:							
Ramsey	40	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
						Rock fragments	0.08
		Depth to bedrock	0.00			Too acid	0.98
		Too acid	0.50				
LoB:							
Lonewood	85	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Too acid	0.88
				Depth to bedrock	0.92		
		Too acid	0.50				
		Water erosion	0.99				
LoC:							
Lonewood	85	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Too acid	0.88
				Depth to bedrock	0.92	Slope	0.96
		Too acid	0.50				
		Water erosion	0.99				
Pp:							
Pope	50	Poor		Good		Poor	
		Low content of organic matter	0.00			Hard to reclaim (rock fragments)	0.00
		Too acid	0.12			Too acid	0.98
		Water erosion	0.99				
Philo	45	Fair		Fair		Fair	
		Too acid	0.54	Depth to saturated zone	0.76	Depth to saturated zone	0.76
		Water erosion	0.99			Hard to reclaim, rock fragments	0.92
						Rock fragments	0.97
						Too acid	0.98
SeB:							
Sequoia	90	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.02	Low strength	0.00	Depth to bedrock	0.05
		Depth to bedrock	0.05	Shrink-swell	0.87	Rock fragments	0.72
		Low content of organic matter	0.12			Too acid	0.88
		Too acid	0.50				
		Water erosion	0.99				
SeC:							
Sequoia	90	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.02	Low strength	0.00	Depth to bedrock	0.05
		Depth to bedrock	0.05	Shrink-swell	0.87	Rock fragments	0.72
		Low content of organic matter	0.12			Too acid	0.88
						Slope	0.96
		Too acid	0.50				
		Water erosion	0.99				

Table 14.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	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
SeD:							
Sequoia	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.05	Shrink-swell	0.87	Depth to bedrock	0.05
		Low content of organic matter	0.12	Slope	0.98	Rock fragments	0.72
						Too acid	0.88
		Too acid	0.50				
		Water erosion	0.99				
ShC:							
Shelocta	90	Fair		Good		Poor	
		Low content of organic matter	0.12			Rock fragments	0.00
						Hard to reclaim, rock fragments	0.02
		Too acid	0.50				
						Too acid	0.88
						Slope	0.96
ShD:							
Shelocta	90	Fair		Good		Poor	
		Low content of organic matter	0.12			Rock fragments	0.00
						Slope	0.00
		Too acid	0.50			Hard to reclaim, rock fragments	0.02
						Too acid	0.88
ShE:							
Shelocta	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Slope	0.00	Rock fragments	0.00
						Slope	0.00
		Too acid	0.50			Hard to reclaim, rock fragments	0.02
						Too acid	0.88
W:							
Water	100	Not rated		Not rated		Not rated	
WrB:							
Wernock	90	Poor		Poor		Fair	
		Low content of organic matter	0.00	Depth to bedrock	0.00	Too clayey	0.53
				Low strength	0.00	Too acid	0.88
		Too acid	0.68			Depth to bedrock	0.90
		Too clayey	0.68				
		Depth to bedrock	0.90				
		Water erosion	0.99				
WrC:							
Wernock	90	Poor		Poor		Fair	
		Low content of organic matter	0.00	Low strength	0.00	Too clayey	0.53
				Depth to bedrock	0.00	Too acid	0.88
		Too acid	0.68			Depth to bedrock	0.90
		Too clayey	0.68			Slope	0.99
		Depth to bedrock	0.90				
		Water erosion	0.99				

Table 15.—Water Management

(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	Pct. of map unit	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
Ac:							
Allegheny-------	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
Cotaco----------	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
				Depth to saturated zone	0.99	Depth to water	0.01
At:							
Atkins----------	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	1.00		
				Seepage	0.01		
Bm:							
Bethesda--------	75	Somewhat limited		Not limited		Very limited	
		Slope	0.97			No ground water	1.00
		Seepage	0.72				
Mines pit-------	20	Not rated		Not rated		Not rated	
GnC:							
Gilpin----------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.26	Thin layer	0.96		
GnD:							
Gilpin----------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.26	Thin layer	0.96		
		Slope	0.04				
GpE:							
Gilpin----------	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Slope	0.41	Thin layer	0.96		
		Depth to bedrock	0.26				
Petros----------	40	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.61	Thin layer	1.00	No ground water	1.00
		Slope	0.41	Seepage	0.32		
GpF:							
Gilpin----------	65	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.97	No ground water	1.00
		Seepage	0.72	Thin layer	0.96		
		Depth to bedrock	0.26				

Table 15.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	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
GpF:							
Petros----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	No ground water	1.00
		Depth to bedrock	0.61	Seepage	0.32		
GsF:							
Gilpin----------	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.97	No ground water	1.00
		Seepage	0.72	Thin layer	0.96		
		Depth to bedrock	0.26				
Bouldin---------	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Content of large stones	0.35	No ground water	1.00
		Slope	1.00				
Petros----------	25	Somewhat limited		Very limited		Very limited	
		Slope	0.94	Thin layer	1.00	No ground water	1.00
		Depth to bedrock	0.61	Seepage	0.32		
LbB:							
Lily------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
LbC:							
Lily------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
LbD:							
Lily------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
		Slope	0.04				
LgC:							
Lily------------	65	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
Gilpin----------	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.26	Thin layer	0.96		
LgD:							
Lily------------	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
		Slope	0.04				
Gilpin----------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.26	Thin layer	0.96		
		Slope	0.04				

Table 15.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	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
LgE:							
Lily------------	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
		Slope	0.41				
Gilpin----------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Slope	0.41	Thin layer	0.96		
		Depth to bedrock	0.26				
LmC:							
Lily------------	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
Ramsey----------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
				Seepage	0.04		
LmD:							
Lily------------	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
		Slope	0.04				
Ramsey----------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.04	Seepage	0.04		
LmE:							
Lily------------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
		Depth to bedrock	0.86	Thin layer	0.86		
		Slope	0.41				
Ramsey----------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.41	Seepage	0.04		
LoB:							
Lonewood--------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.01	Thin layer	0.02		
LoC:							
Lonewood--------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.97	No ground water	1.00
		Depth to bedrock	0.01	Thin layer	0.02		
Pp:							
Pope------------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
				Seepage	0.04		

Table 15.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	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
Pp:							
Philo	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
				Depth to saturated zone	0.95	Depth to water	0.02
				Seepage	0.02		
SeB:							
Sequoia	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.34	Thin layer	0.99	No ground water	1.00
		Seepage	0.03	Hard to pack	0.01		
SeC:							
Sequoia	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.34	Thin layer	0.99	No ground water	1.00
		Seepage	0.03	Hard to pack	0.01		
SeD:							
Sequoia	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.34	Thin layer	0.99	No ground water	1.00
		Slope	0.04	Hard to pack	0.01		
		Seepage	0.03				
ShC:							
Shelocta	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	No ground water	1.00
ShD:							
Shelocta	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	No ground water	1.00
		Slope	0.03				
ShE:							
Shelocta	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	No ground water	1.00
		Slope	0.41				
W:							
Water	100	Not rated		Not rated		Not rated	
WrB:							
Wernock	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.95	No ground water	1.00
		Depth to bedrock	0.04	Thin layer	0.70		
WrC:							
Wernock	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.95	No ground water	1.00
		Depth to bedrock	0.04	Thin layer	0.70		

Table 16.—Engineering Index Properties

(Absence of an entry indicates that 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	
Ac:												
Allegheny-------	0-6	Loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	65-100	55-95	15-35	NP-10
	6-39	Clay loam, loam	CL-ML, SM, SC, ML, CL	A-4, A-6	0	0	90-100	80-100	65-95	35-80	15-40	NP-15
	39-45	Clay loam, loam, sandy loam, gravelly clay loam	CL, ML, SC, SM, CL-ML, GC	A-4, A-6	0	0	68-92	57-90	46-90	20-72	15-35	NP-15
	45-60	Gravelly fine sandy loam	SM, GC-GM, SC, SC-SM	A-2-4, A-2, A-4	0	0-45	55-100	55-100	50-95	15-45	15-30	NP-10
Cotaco----------	0-6	Loam	CL-ML, ML, SC-SM, SM	A-4	0	0	80-100	75-95	55-85	35-80	15-30	NP-7
	6-36	Clay loam, loam	CL	A-6, A-4	0	0	95-100	85-100	75-90	65-85	29-48	10-23
	36-45	Gravelly clay loam	SC, SM, GC, CL	A-4, A-6	0	0-10	60-100	50-95	40-90	20-80	15-40	NP-15
	45-60	Very gravelly fine sandy loam	SM, SC-SM, SC, GC-GM	A-2-4, A-2, A-4	0	0-45	55-100	55-100	50-95	15-45	15-30	NP-10
At:												
Atkins----------	0-36	Silt loam	SM, CL-ML, CL, ML, SC	A-4, A-6	0	0	90-100	80-100	60-95	45-75	20-40	3-20
	36-46	Silty clay loam, silt loam	ML, CL, SC, SM	A-4, A-6	0	0	90-100	85-100	65-100	45-85	20-40	3-20
	46-62	Fine sandy loam	CL-ML, SM, CL, GM, ML	A-2, A-4, A-6	0	0	60-100	60-100	50-95	30-85	20-40	1-15
Bm:												
Bethesda--------	0-23	Channery loam	CL-ML, GC-GM, GM, ML	A-4, A-6	0-20	0-15	65-90	55-80	50-80	35-75	25-40	4-14
	23-45	Very channery loam, very channery clay loam very channery silt loam	CL, GC-GM, ML, GM	A-2, A-4, A-6, A-7	0-20	10-30	45-80	25-65	25-65	20-60	24-50	3-23
	45-60	Channery loam, channery clay loam	CL, GC-GM, GM, ML	A-2, A-4, A-6, A-7	10-20	10-30	45-80	25-65	25-65	20-60	24-50	3-23

Table 16.—Engineering Index 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	
Bm: Mines pit.												
GnC: Gilpin----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	CL, SC, GC, CL-ML	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
GnD: Gilpin----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	CL, CL-ML, GC, SC	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
GpE: Gilpin----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	CL, CL-ML, GC, SC	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
GpE:												
Petros----------	0-2	Channery silt loam	CL, CL-ML, GM, ML	A-4	0	0-15	60-80	55-75	50-70	40-60	15-30	NP-8
	2-8	Very channery silt loam	GC, GC-GM, GM, GP-GM	A-1, A-2, A-4, A-6	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	8-16	Extremely channery silt loam	GM, GP-GM, GC, GC-GM	A-4	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	16-26	Weathered bedrock			---	---	---	---	---	---	---	---
GpF:												
Gilpin----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	GC, CL-ML, CL, SC	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
Petros----------	0-2	Channery silt loam	CL-ML, GM, ML, CL	A-4	0	0-15	60-80	55-75	50-70	40-60	15-30	NP-8
	2-8	Very channery silt loam	GC, GC-GM, GM, GP-GM	A-1, A-2, A-4, A-6	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	8-16	Extremely channery silt loam	GM, GP-GM, GC-GM, GC	A-4	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	16-26	Weathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
GsF:												
Gilpin----------	0-6	Silt loam	CL-ML, CL	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	SC, GC, CL-ML, CL	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
Bouldin---------	0-17	Flaggy loam	GM, ML, SC-SM, SM, GC-GM	A-2, A-4	0-20	10-30	65-85	55-85	40-65	30-55	15-25	2-7
	17-30	Very channery loam	GC-GM, GM, SM, SC-SM, ML	A-2, A-4	0-20	10-30	65-85	55-85	40-65	30-55	15-25	2-7
	30-80	Extremely stony clay loam, Extremely flaggy clay loam	SC, GC	A-2, A-4, A-6	0-20	30-55	55-75	45-65	35-60	25-50	25-39	8-16
Petros----------	0-2	Channery silt loam	CL, CL-ML, GM, ML	A-4	0	0-15	60-80	55-75	50-70	40-60	15-30	NP-8
	2-8	Very channery silt loam	GC, GC-GM, GM, GP-GM	A-1, A-2, A-4, A-6	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	8-16	Extremely channery silt loam	GM, GC, GC-GM, GP-GM	A-4	0	0	25-49	20-45	15-40	10-36	20-39	3-17
	16-26	Weathered bedrock			---	---	---	---	---	---	---	---
LbB:												
Lily------------	0-3	Loam	ML, CL, CL-ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, SC, CL, ML	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
LbC:												
Lily	0-3	Loam	ML, CL-ML, CL	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	ML, CL, SC, SM	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---
LbD:												
Lily	0-3	Loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, SC, ML, CL	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---
LgC:												
Lily	0-3	Loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, CL, SC, ML	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---
Gilpin	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	CL, SC, CL-ML, GC	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
LgD:												
Lily	0-3	Loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, SC, ML, CL	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
LgD:												
Gilpin----------	0-6	Silt loam	CL-ML, CL	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	SC, GC, CL-ML, CL	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
LgE:												
Lily------------	0-3	Loam	ML, CL-ML, CL	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, SC, CL, ML	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---
Gilpin----------	0-6	Silt loam	CL-ML, CL	A-4, A-6	0	0	80-95	75-90	70-85	65-80	20-40	4-15
	6-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-25	Silt loam, channery silty clay loam, channery silt loam	CL-ML, SC, GC, CL	A-2, A-4, A-6	0	0	50-95	45-90	35-85	30-80	20-40	4-15
	25-35	Weathered bedrock			---	---	---	---	---	---	---	---
LmC:												
Lily------------	0-3	Loam	CL, ML, CL-ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, SC, ML, CL	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
LmC:												
Ramsey----------	0-4	Loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	85-100	75-95	60-75	30-70	0-25	NP-7
	4-10	Sandy loam, fine sandy loam, gravelly sandy loam	SC-SM, CL-ML, ML, SM	A-2, A-4	0	0	85-100	75-95	60-77	30-70	0-25	NP-7
	10-16	Gravelly sandy loam, sandy loam	SC-SM, SM, ML, CL-ML	A-4, A-1, A-2	0	0-10	65-95	60-90	40-75	20-60	15-30	NP-7
	16	Unweathered bedrock			---	---	---	---	---	---	---	---
LmD:												
Lily------------	0-3	Loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SM, ML, CL, SC	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---
Ramsey----------	0-4	Loam	SC-SM, SM, ML, CL-ML	A-2, A-4	0	0	85-100	75-95	60-75	30-70	0-25	NP-7
	4-10	Sandy loam, fine sandy loam, gravelly sandy loam	ML, CL-ML, SM, SC-SM	A-2, A-4	0	0	85-100	75-95	60-77	30-70	0-25	NP-7
	10-16	Gravelly sandy loam, sandy loam	ML, SM, SC-SM, CL-ML	A-4, A-1, A-2	0	0-10	65-95	60-90	40-75	20-60	15-30	NP-7
	16	Unweathered bedrock			---	---	---	---	---	---	---	---
LmE:												
Lily------------	0-3	Loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-95	55-80	0-35	NP-10
	3-30	Clay loam, loam	SC, ML, CL, SM	A-4, A-6	0	0	90-100	85-100	75-100	40-80	0-35	3-15
	30	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
LmE:												
Ramsey----------	0-4	Loam	SM, ML, CL-ML, SC-SM	A-2, A-4	0	0	85-100	75-95	60-75	30-70	0-25	NP-7
	4-10	Sandy loam, fine sandy loam, gravelly sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	85-100	75-95	60-77	30-70	0-25	NP-7
	10-16	Gravelly sandy loam, sandy loam	SM, SC-SM, CL-ML, ML	A-4, A-1, A-2	0	0-10	65-95	60-90	40-75	20-60	15-30	NP-7
	16	Unweathered bedrock			---	---	---	---	---	---	---	---
LoB:												
Lonewood--------	0-20	Silt loam	CL-ML, CL, ML	A-4	0	0	100	90-100	85-100	75-90	18-30	3-9
	20-28	Silty clay loam	CL	A-6, A-7	0	0	95-100	85-100	75-90	65-85	29-48	10-23
	28-55	Clay loam, loam	CL	A-6, A-7	0	0	95-100	85-100	75-90	65-85	29-48	10-23
	55-60	Weathered bedrock			---	---	---	---	---	---	---	---
LoC:					---	---	---	---	---	---	---	---
Lonewood--------	0-20	Silt loam	CL, ML, CL-ML	A-4	0	0	100	90-100	85-100	75-90	18-30	3-9
	20-28	Silty clay loam	CL	A-6, A-7	0	0	95-100	85-100	75-90	65-85	29-48	10-23
	28-55	Clay loam, loam	CL	A-6, A-7	0	0	95-100	85-100	75-90	65-85	29-48	10-23
	55-60	Weathered bedrock			---	---	---	---	---	---	---	---
Pp:												
Pope------------	0-8	Loam	CL, CL-ML, ML, SM	A-4	0	0	85-100	75-100	70-100	45-90	0-30	NP-10
	8-43	Fine sandy loam, sandy loam, loam	ML, CL-ML, SC-SM, SM	A-2, A-4	0	0	95-100	80-100	51-95	25-75	0-30	NP-7
	43-60	Very gravelly sandy loam	SC-SM, GM, ML, SM	A-1, A-2, A-4	0	0-20	45-100	35-100	30-95	15-70	0-30	NP-7

Table 16.—Engineering Index 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	
Pp:												
Philo-----------	0-36	Loam	SM, ML, CL-ML, CL	A-4	0	0	85-100	75-100	70-100	45-90	0-30	NP-10
	36-48	Fine sandy loam, sandy loam	ML, CL-ML, SM	A-4	0	0	95-100	75-100	70-90	45-80	20-35	1-10
	48-60	Gravelly sandy loam	ML, CL-ML, SM, GM	A-2, A-4	0	0	60-95	50-90	40-85	30-80	15-30	1-10
SeB:												
Sequoia---------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-100	80-95	23-35	5-15
	5-9	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	9-16	Silty clay, channery silty clay	CH, CL	A-7	0	0	70-100	65-100	60-100	55-95	43-74	20-40
	16-23	Channery silty clay	CL, CH	A-6, A-7	0	0-2	65-85	60-80	55-80	50-70	37-65	13-35
	23-33	Weathered bedrock			---	---	---	---	---	---	---	---
SeC:												
Sequoia---------	0-5	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	80-95	23-35	5-15
	5-9	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	9-16	Silty clay, channery silty clay	CL, CH	A-7	0	0	70-100	65-100	60-100	55-95	43-74	20-40
	16-23	Channery silty clay	CH, CL	A-6, A-7	0	0-2	65-85	60-80	55-80	50-70	37-65	13-35
	23-33	Weathered bedrock			---	---	---	---	---	---	---	---

Table 16.—Engineering Index 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	
SeD:												
Sequoia---------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-100	80-95	23-35	5-15
	5-9	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	9-16	Silty clay, channery silty clay	CL, CH	A-7	0	0	70-100	65-100	60-100	55-95	43-74	20-40
	16-23	Channery silty clay	CH, CL	A-6, A-7	0	0-2	65-85	60-80	55-80	50-70	37-65	13-35
	23-33	Weathered bedrock			---	---	---	---	---	---	---	---
ShC:												
Shelocta--------	0-10	Loam, silt loam	CL-ML, ML	A-4	0	0	80-95	75-95	60-95	55-90	0-35	NP-10
	10-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-60	Channery silt loam, channery silty clay loam	CL, ML, GM, GC	A-1-b, A-2, A-4, A-6	0	0-10	40-85	35-70	25-70	20-65	20-40	3-20
ShD:												
Shelocta--------	0-10	Loam, silt loam	CL-ML, ML	A-4	0	0	80-95	75-95	60-95	55-90	0-35	NP-10
	10-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-60	Channery silt loam, channery silty clay loam	GM, ML, GC, CL	A-1-b, A-2, A-4, A-6	0	0-10	40-85	35-70	25-70	20-65	20-40	3-20
ShE:												
Shelocta--------	0-10	Loam, silt loam	CL-ML, ML	A-4	0	0	80-95	75-95	60-95	55-90	0-35	NP-10
	10-21	Silty clay loam, clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-90	25-40	8-17
	21-60	Channery silt loam, channery silty clay loam	ML, GC, CL, GM	A-1-b, A-2, A-4, A-6	0	0-10	40-85	35-70	25-70	20-65	20-40	3-20

Table 16.—Engineering Index 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	
W. Water												
WrB:												
Wernock---------	0-12	Silt loam	CL, ML	A-4, A-6	0	0	90-100	85-100	75-95	55-90	25-35	3-11
	12-35	Silt loam, silty clay loam	CL, ML, CL-ML	A-4, A-6	0	0	90-100	85-100	75-100	55-95	25-45	3-22
	35-45	Weathered bedrock			---	---	---	---	---	---	---	---
WrC:												
Wernock---------	0-12	Silt loam	CL, ML	A-4, A-6	0	0	90-100	85-100	75-95	55-90	25-35	3-11
	12-35	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	75-100	55-95	25-45	3-22
	35-45	Weathered bedrock			---	---	---	---	---	---	---	---

Table 17.—Physical and Chemical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Effective cation-exchange capacity	Soil reaction
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
Ac:												
Allegheny-----------	0-6	7-27	1.20-1.40	0.6-2	0.12-0.22	0.0-2.9	1.0-4.0	.32	.32	4	---	3.6-5.5
	6-39	18-40	1.20-1.50	0.6-2	0.13-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	39-45	18-35	1.20-1.50	0.6-2	0.13-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	45-60	5-20	1.40-1.70	2-6	0.07-0.20	0.0-2.9	---	.20	.20		---	5.1-6.5
Cotaco--------------	0-6	7-27	1.20-1.40	0.6-2	0.12-0.20	0.0-2.9	0.5-4.0	.37	.43	3	---	3.6-5.5
	6-36	18-40	1.40-1.55	0.6-2	0.14-0.17	0.0-2.9	---	.32	.32		---	4.5-5.5
	36-45	28-40	1.20-1.50	0.6-2	0.07-0.15	0.0-2.9	---	.28	.32		---	3.6-5.5
	45-60	5-20	1.40-1.70	2-6	0.07-0.20	0.0-2.9	---	.20	.20		---	5.1-6.5
At:												
Atkins--------------	0-36	7-27	1.20-1.40	0.6-2	0.14-0.22	0.0-2.9	2.0-4.0	.32	.32	5	---	4.5-5.5
	36-46	7-40	1.20-1.50	0.06-2	0.14-0.18	0.0-2.9	---	.32	.32		---	4.5-5.5
	46-62	7-20	1.20-1.50	0.2-6	0.08-0.18	0.0-2.9	---	.28	.32		---	4.5-5.5
Bm:												
Bethesda------------	0-23	18-27	1.40-1.55	0.6-2	0.10-0.16	0.0-2.9	0.0-0.5	.28	.49	5	7.0-16	3.6-5.5
	23-45	18-35	1.60-1.90	0.2-0.6	0.04-0.10	0.0-2.9	---	.32	.64		7.0-20	3.6-5.5
	45-60	7-40	1.60-1.90	0.2-0.6	0.04-0.10	0.0-2.9	---	.32	.64		7.0-20	3.6-5.5
Mines pit.												
GnC:												
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	4.0-19	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		5.0-8.0	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		3.0-9.0	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
GnD:												
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
GpE:												
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---

Table 17.—Physical and Chemical 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	Erosion factors Kf	Erosion factors T	Effective cation-exchange capacity	Soil reaction
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
GpE:												
Petros----------------	0-2	12-27	1.30-1.50	0.6-6	0.10-0.14	0.0-2.9	0.5-2.0	.20	.28	2	---	4.5-5.5
	2-8	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	---	.15	.24		---	4.5-5.5
	8-16	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	---	.15	.24		---	4.5-5.5
	16-26	---	---	0.00-0.01	---	---	---	---	---		---	---
GpF:												
Gilpin----------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
Petros----------------	0-2	12-27	1.30-1.50	0.6-6	0.10-0.14	0.0-2.9	0.5-2.0	.20	.28	2	---	4.5-5.5
	2-8	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	0.0-0.5	.15	.24		---	4.5-5.5
	8-16	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	0.0-0.5	.15	.24		---	4.5-5.5
	16-26	---	---	0.00-0.00	---	---	---	---	---		---	---
GsF:												
Gilpin----------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
Bouldin---------------	0-17	7-27	1.35-1.50	2-6	0.06-0.10	0.0-2.9	1.0-3.0	.20	.28	5	---	4.5-5.5
	17-30	7-27	1.35-1.50	2-6	0.06-0.10	0.0-2.9	---	.20	.28		---	4.5-5.5
	30-80	7-40	1.40-1.55	2-6	0.06-0.10	0.0-2.9	---	.20	.28		---	4.5-5.5
Petros----------------	0-2	12-27	1.30-1.50	0.6-6	0.10-0.14	0.0-2.9	0.5-2.0	.20	.28	2	---	4.5-5.5
	2-8	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	---	.15	.24		---	4.5-5.5
	8-16	12-27	1.30-1.55	0.6-6	0.04-0.09	0.0-2.9	---	.15	.24		---	4.5-5.5
	16-26	---	---	0.00-0.00	---	---	---	---	---		---	---
LbB:												
Lily------------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
LbC:												
Lily------------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---

Table 17.—Physical and Chemical 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	Effective cation-exchange capacity	Soil reaction
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
LbD:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
LgC:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
LgD:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
LgE:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Gilpin--------------	0-6	12-27	1.20-1.40	0.6-2	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3	---	3.6-5.5
	6-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	21-25	18-40	1.20-1.50	0.6-2	0.12-0.16	0.0-2.9	---	.24	.49		---	3.6-5.5
	25-35	---	---	0.00-0.00	---	---	---	---	---		---	---
LmC:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Ramsey--------------	0-4	8-25	1.25-1.50	6-20	0.09-0.12	0.0-2.9	0.5-2.0	.20	.20	1	---	4.5-6.0
	4-10	8-25	1.20-1.40	6-20	0.09-0.12	0.0-2.9	---	.17	.20		---	4.5-6.0
	10-16	8-25	1.30-1.60	2-6	0.09-0.15	0.0-2.9	---	.17	.20		---	4.5-6.0
	16	---	---	0.00-0.2	---	---	---	---	---		---	---

Table 17.—Physical and Chemical 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	Effective cation-exchange capacity	Soil reaction
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
LmD:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Ramsey--------------	0-4	8-25	1.25-1.50	6-20	0.09-0.12	0.0-2.9	0.5-2.0	.20	.20	1	---	4.5-6.0
	4-10	8-25	1.20-1.40	6-20	0.09-0.12	0.0-2.9	---	.17	.20		---	4.5-6.0
	10-16	8-25	1.30-1.60	2-6	0.09-0.15	0.0-2.9	---	.17	.20		---	4.5-6.0
	16	---	---	0.00-0.00	---	---	---	---	---		---	---
LmE:												
Lily----------------	0-3	7-27	1.20-1.40	0.6-6	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2	10-45	3.6-5.5
	3-30	7-27	1.25-1.35	2-6	0.12-0.18	0.0-2.9	---	.28	.28		5.0-50	3.6-5.5
	30	---	---	0.00-0.00	---	---	---	---	---		---	---
Ramsey--------------	0-4	8-25	1.25-1.50	6-20	0.09-0.12	0.0-2.9	0.5-2.0	.20	.20	1	---	4.5-6.0
	4-10	8-25	1.20-1.40	6-20	0.09-0.12	0.0-2.9	---	.17	.20		---	4.5-6.0
	10-16	8-25	1.30-1.60	2-6	0.09-0.15	0.0-2.9	---	.17	.20		---	4.5-6.0
	16	---	---	0.00-0.00	---	---	---	---	---		---	---
LoB:												
Lonewood------------	0-20	12-27	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	1.0-3.0	.37	.37	3	---	4.5-5.5
	20-28	17-36	1.40-1.55	0.6-2	0.14-0.17	0.0-2.9	---	.32	.32		---	4.5-5.5
	28-55	18-40	1.40-1.55	0.6-2	0.14-0.17	0.0-2.9	---	.32	.32		---	4.5-5.5
	55-60	---	---	0.00-0.00	---	---	---	---	---		---	---
LoC:												
Lonewood------------	0-20	12-27	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	1.0-3.0	.37	.37	3	---	4.5-5.5
	20-28	17-36	1.40-1.55	0.6-2	0.14-0.17	0.0-2.9	---	.32	.32		---	4.5-5.5
	28-55	18-40	1.40-1.55	0.6-2	0.14-0.17	0.0-2.9	---	.32	.32		---	4.5-5.5
	55-60	---	---	0.00-0.00	---	---	---	---	---		---	---
Pp:												
Pope----------------	0-8	7-27	1.20-1.40	0.6-2	0.14-0.23	0.0-2.9	1.0-4.0	.37	.37	5	---	3.6-5.5
	8-43	5-27	1.30-1.60	0.6-6	0.10-0.18	0.0-2.9	---	.28	.28		---	3.6-5.5
	43-60	5-20	1.30-1.60	0.6-6	0.10-0.18	0.0-2.9	---	.28	.20		---	3.6-5.5
Philo---------------	0-36	7-27	1.20-1.40	0.6-2	0.14-0.23	0.0-2.9	1.0-4.0	.37	.37	5	---	4.5-6.0
	36-48	5-27	1.20-1.40	0.6-2	0.10-0.20	0.0-2.9	---	.32	.32		---	4.5-6.0
	48-60	5-18	1.20-1.40	2-6	0.06-0.10	0.0-2.9	---	.24	.28		---	4.5-6.0

Table 17.—Physical and Chemical 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	Effective cation- exchange capacity	Soil reaction
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
SeB:												
Sequoia-------------	0-5	12-27	1.30-1.50	0.6-2	0.17-0.20	0.0-2.9	0.5-2.0	.37	.37	3	---	4.5-5.5
	5-9	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	9-16	40-60	1.35-1.55	0.2-0.6	0.08-0.16	3.0-5.9	---	.24	.28		---	4.5-5.5
	16-23	37-47	1.40-1.50	0.2-0.6	0.10-0.14	3.0-5.9	---	.37	.28		---	4.5-5.5
	23-33	---	---	0.00-0.00	---	---	---	---	---		---	---
SeC:												
Sequoia-------------	0-5	12-27	1.30-1.50	0.6-2	0.17-0.20	0.0-2.9	0.5-2.0	.37	.37	3	---	4.5-5.5
	5-9	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	9-16	40-60	1.35-1.55	0.2-0.6	0.08-0.16	3.0-5.9	---	.24	.28		---	4.5-5.5
	16-23	37-47	1.40-1.50	0.2-0.6	0.10-0.14	3.0-5.9	---	.37	.28		---	4.5-5.5
	23-33	---	---	0.00-0.00	---	---	---	---	---		---	---
SeD:												
Sequoia-------------	0-5	12-27	1.30-1.50	0.6-2	0.17-0.20	0.0-2.9	0.5-2.0	.37	.37	3	---	4.5-5.5
	5-9	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	9-16	40-60	1.35-1.55	0.2-0.6	0.08-0.16	3.0-5.9	---	.24	.28		---	4.5-5.5
	16-23	37-47	1.40-1.50	0.2-0.6	0.10-0.14	3.0-5.9	---	.37	.28		---	4.5-5.5
	23-33	---	---	0.00-0.00	---	---	---	---	---		---	---
ShC:												
Shelocta------------	0-10	7-27	1.15-1.30	0.6-2	0.16-0.22	0.0-2.9	0.5-5.0	.32	.32	3	---	4.5-5.5
	10-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	21-60	18-40	1.30-1.55	0.6-6	0.08-0.16	0.0-2.9	---	.17	.28		---	4.5-5.5
ShD:												
Shelocta------------	0-10	7-27	1.15-1.30	0.6-2	0.16-0.22	0.0-2.9	0.5-5.0	.32	.32	3	---	4.5-5.5
	10-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	21-60	18-40	1.30-1.55	0.6-6	0.08-0.16	0.0-2.9	---	.17	.28		---	4.5-5.5
ShE:												
Shelocta------------	0-10	7-27	1.15-1.30	0.6-2	0.16-0.22	0.0-2.9	0.5-5.0	.32	.32	3	---	4.5-5.5
	10-21	18-35	1.40-1.60	0.6-2	0.12-0.18	0.0-2.9	---	.28	.28		---	4.5-5.5
	21-60	18-40	1.30-1.55	0.6-6	0.08-0.16	0.0-2.9	---	.17	.28		---	4.5-5.5
W.												
Water												
WrB:												
Wernock-------------	0-12	12-27	1.20-1.40	0.6-2	0.19-0.23	0.0-2.9	0.5-4.0	.37	.37	3	---	3.6-7.3
	12-35	18-40	1.30-1.50	0.6-2	0.18-0.22	0.0-2.9	---	.32	.32		---	3.6-7.3
	35-45	---	---	0.00-0.00	---	---	---	---	---		---	---

Table 17.—Physical and Chemical 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			Effective cation- exchange capacity	Soil reaction
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				meq/100 g	pH
WrC:												
Wernock-------------	0-12	12-27	1.20-1.40	0.6-2	0.19-0.23	0.0-2.9	0.5-4.0	.37	.37	3	---	3.6-7.3
	12-35	18-40	1.30-1.50	0.6-2	0.18-0.22	0.0-2.9	---	.32	.32		---	3.6-7.3
	35-45	---	---	0.00-0.00	---	---	---	---	---		---	---

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of 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	Month	Water table		Flooding	
			Upper limit	Lower limit	Duration	Frequency
			Ft	Ft		
Ac:						
Allegheny	B					
		January	5.0-6.0	>6.0	Very brief	Occasional
		February	5.0-6.0	>6.0	Very brief	Occasional
		March	5.0-6.0	>6.0	Very brief	Occasional
		April	5.0-6.0	>6.0	Very brief	Occasional
		December	5.0-6.0	>6.0	Very brief	Occasional
Cotaco	C					
		January	1.5-2.5	>6.0	Very brief	Occasional
		February	1.5-2.5	>6.0	Very brief	Occasional
		March	1.5-2.5	>6.0	Very brief	Occasional
		April	1.5-2.5	>6.0	Very brief	Occasional
		November	1.5-2.5	>6.0	---	None
		December	1.5-2.5	>6.0	Very brief	Occasional
At:						
Atkins	D					
		January	0.0-1.0	>6.0	Brief	Frequent
		February	0.0-1.0	>6.0	Brief	Frequent
		March	0.0-1.0	>6.0	Brief	Frequent
		April	0.0-1.0	>6.0	Brief	Frequent
		December	0.0-1.0	>6.0	Brief	Frequent
Bm:						
Bethesda	C					
		Jan-Dec	---	---	---	None
Mine pits.						
GnC:						
Gilpin	C					
		Jan-Dec	---	---	---	None
GnD:						
Gilpin	C					
		Jan-Dec	---	---	---	None
GpE:						
Gilpin	C					
		Jan-Dec	---	---	---	None
Petros	D					
		Jan-Dec	---	---	---	None
GpF:						
Gilpin	C					
		Jan-Dec	---	---	---	None
Petros	D					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table Upper limit	Water table Lower limit	Flooding Duration	Flooding Frequency
			Ft	Ft		
GsF:						
Gilpin	C					
		Jan-Dec	---	---	---	None
Bouldin	B					
		Jan-Dec	---	---	---	None
Petros	D					
		Jan-Dec	---	---	---	None
LbB:						
Lily	B					
		Jan-Dec	---	---	---	None
LbC:						
Lily	B					
		Jan-Dec	---	---	---	None
LbD:						
Lily	B					
		Jan-Dec	---	---	---	None
LgC:						
Lily	B					
		Jan-Dec	---	---	---	None
Gilpin	C					
		Jan-Dec	---	---	---	None
LgD:						
Lily	B					
		Jan-Dec	---	---	---	None
Gilpin	C					
		Jan-Dec	---	---	---	None
LgE:						
Lily	B					
		Jan-Dec	---	---	---	None
Gilpin	C					
		Jan-Dec	---	---	---	None
LmC:						
Lily	B					
		Jan-Dec	---	---	---	None
Ramsey	D					
		Jan-Dec	---	---	---	None
LmD:						
Lily	B					
		Jan-Dec	---	---	---	None
Ramsey	D					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
LmE:						
Lily----------------------	B					
		Jan-Dec	---	---	---	None
Ramsey--------------------	D					
		Jan-Dec	---	---	---	None
LoB:						
Lonewood------------------	B					
		Jan-Dec	---	---	---	None
LoC:						
Lonewood------------------	B					
		Jan-Dec	---	---	---	None
Pp:						
Pope----------------------	B					
		January	5.0-6.0	>6.0	Brief	Frequent
		February	5.0-6.0	>6.0	Brief	Frequent
		March	5.0-6.0	>6.0	Brief	Frequent
		April	5.0-6.0	>6.0	Brief	Frequent
		December	5.0-6.0	>6.0	Brief	Frequent
Philo---------------------	B					
		January	1.5-3.0	>6.0	Brief	Frequent
		February	1.5-3.0	>6.0	Brief	Frequent
		March	1.5-3.0	>6.0	Brief	Frequent
		April	1.5-3.0	>6.0	Brief	Frequent
		December	1.5-3.0	>6.0	Brief	Frequent
SeB:						
Sequoia-------------------	C					
		Jan-Dec	---	---	---	None
SeC:						
Sequoia-------------------	C					
		Jan-Dec	---	---	---	None
SeD:						
Sequoia-------------------	C					
		Jan-Dec	---	---	---	None
ShC:						
Shelocta------------------	B					
		Jan-Dec	---	---	---	None
ShD:						
Shelocta------------------	B					
		Jan-Dec	---	---	---	None
ShE:						
Shelocta------------------	B					
		Jan-Dec	---	---	---	None
W.						
Water						

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
WrB:						
Wernock	B					
		Jan-Dec	---	---	---	None
WrC:						
Wernock	B					
		Jan-Dec	---	---	---	None

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In			
Ac:					
Allegheny	---	---	---	Low	High
Cotaco	---	---	---	Moderate	High
At:					
Atkins	---	---	---	High	Moderate
Bm:					
Bethesda	---	---	---	Moderate	High
Mine pits.					
GnC:					
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
GnD:					
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
GpE:					
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
Petros	Bedrock (paralithic)	10-20	Strongly cemented	Low	Moderate
GpF:					
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
Petros	Bedrock (paralithic)	10-20	Strongly cemented	Low	Moderate
GsF:					
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
Bouldin	---	---	---	Low	Moderate
Petros	Bedrock (paralithic)	10-20	Strongly cemented	Low	Moderate
LbB:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
LbC:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
LbD:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
LgC:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
LgD:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
LgE:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Gilpin	Bedrock (paralithic)	20-40	Strongly cemented	Low	High
LmC:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Ramsey	Bedrock (lithic)	7-20	Indurated	Low	Moderate
LmD:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Ramsey	Bedrock (lithic)	7-20	Indurated	Low	Moderate
LmE:					
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	High
Ramsey	Bedrock (lithic)	7-20	Indurated	Low	Moderate
LoB:					
Lonewood	Bedrock (paralithic)	40-72	Strongly cemented	Low	Moderate
LoC:					
Lonewood	Bedrock (paralithic)	40-72	Strongly cemented	Low	Moderate
Pp:					
Pope	---	---	---	Low	High
Philo	---	---	---	Low	High
SeB:					
Sequoia	Bedrock (paralithic)	20-40	Strongly cemented	High	Moderate
SeC:					
Sequoia	Bedrock (paralithic)	20-40	Strongly cemented	High	Moderate
SeD:					
Sequoia	Bedrock (paralithic)	20-40	Strongly cemented	High	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In			
ShC:					
Shelocta	---	---	---	Low	High
ShD:					
Shelocta	---	---	---	Low	High
ShE:					
Shelocta	---	---	---	Low	High
W.					
Water					
WrB:					
Wernock	Bedrock (paralithic)	30-40	Strongly cemented	Moderate	High
WrC:					
Wernock	Bedrock (paralithic)	30-40	Strongly cemented	Moderate	High

Table 20.—Classification of the Soils

Soil name	Family or higher taxonomic class
Allegheny	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Atkins	Fine-loamy, mixed, active, acid, mesic Typic Fluvaquents
Bethesda	Loamy-skeletal, mixed, acid, mesic Typic Udorthents
Bouldin	Loamy-skeletal, siliceous, subactive, mesic Typic Paleudults
Cotaco	Fine-loamy, mixed, active, mesic, Aquic Hapludults
Gilpin	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Lily	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Lonewood	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Petros	Loamy-skeletal, mixed, semiactive, mesic, shallow Typic Dystrudepts
Philo	Coarse-loamy, mixed, active, mesic Typic Fluvaquentic Dystrudepts
Pope	Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts
Ramsey	Loamy, siliceous, subactive, mesic Lithic Dystrudepts
Sequoia	Fine, mixed, semiactive, mesic Typic Hapludults
Shelocta	Fine-loamy, mixed, active, mesic Typic Hapludults
Wernock	Fine-silty, mixed, semiactive, mesic Typic Hapludults

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