United States
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Conservation
Service

In cooperation with
Ohio Department of
Natural Resources,
Division of Soil and Water
Conservation; Ohio
Agricultural Research and
Development Center; Ohio
State University Extension;
and Guernsey County
Commissioners

Soil Survey of Guernsey County, Ohio

How To Use This Soil Survey

General Soil Map

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

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

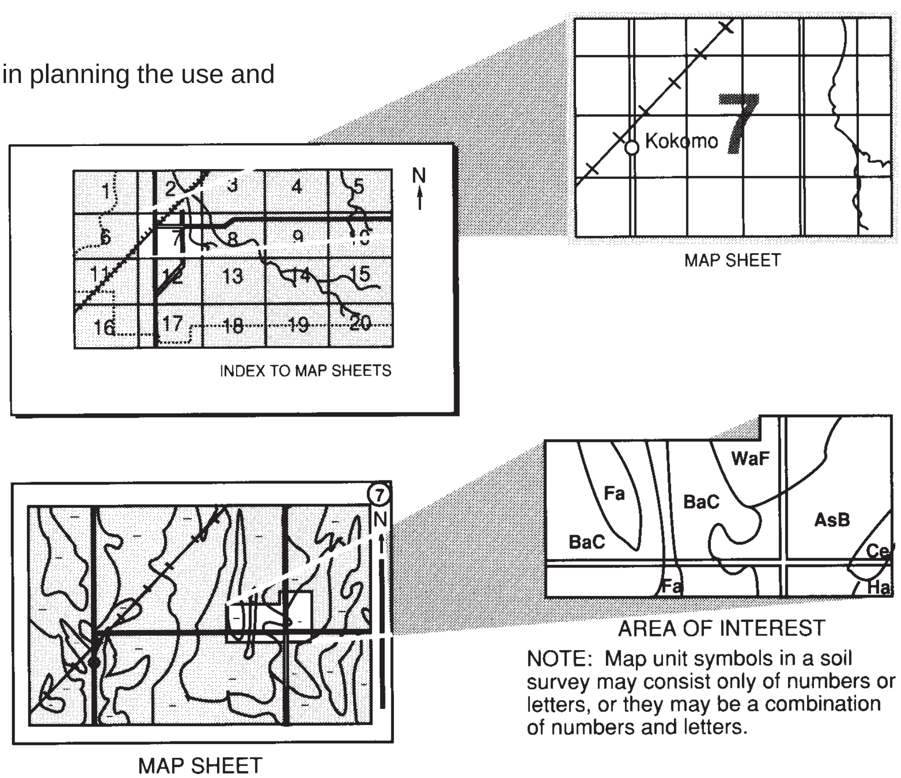
Detailed Soil Maps

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

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

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

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



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 1992. Soil names and descriptions were approved in 1998. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service; the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; the Ohio State University Extension; and the Guernsey County Commissioners. The survey is part of the technical assistance furnished to the Guernsey Soil and Water Conservation District. Financial assistance was provided by the Guernsey County Commissioners.

Cover: A farmstead in an area of the Guernsey-Westmoreland-Upshur association. These soils are commonly used as hayland and pasture in Guernsey County.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov.

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Foreword

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

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Soil Survey of
Guernsey County, Ohio

By Neil Rubel, Jeffrey Glanville, and Richard Griffin, Natural Resources Conservation Service

Fieldwork by Neil Rubel, Jeffrey Glanville, Richard Griffin, and Paul Jenny, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; the Ohio State University Extension; and the Guernsey County Commissioners

GUERNSEY COUNTY is in east-central Ohio (fig. 1). It has an area of 338,170 acres, or about 529 square miles. The population of the county was 39,024 in 1990 (U.S. Department of Commerce 1991). The population of Cambridge, which is the county seat, was 11,748, and that of Byesville was 2,415. Other towns in the county generally had populations of less than 500.

Manufacturing and farming are the major industries in the county. The major agricultural areas are on flood plains and terraces in the larger valleys and on wide, gently sloping ridgetops. Much of the rest of the land in the county is wooded.

Flooding and wetness are the major management concerns affecting farmland and development in areas on flood plains and stream terraces. Many of the soils in these areas can be drained and used for agriculture. Erosion, slope, hillside slippage, a high shrink-swell potential, a moderate depth to bedrock, and slow permeability are the major management concerns in the uplands.

This soil survey updates a report published in 1944 about the condition of the land in Guernsey and Muskingum Counties (Whiteford, Paschal, and Sease 1944). It provides additional information and has larger maps, which are on a photographic background and show the soils in greater detail.

General Nature of the County

This section provides general information about the county. It describes climate; history; physiography, relief, and drainage; geology; natural resources; farming and other land uses; and transportation facilities in the county.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Cambridge, Ohio, in the period 1951 to 1988. 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 30 degrees F and the average daily minimum temperature is 21 degrees. The lowest temperature on record, which occurred on January 21, 1984, is -20 degrees. In summer, the average temperature is 71 degrees and the average daily maximum temperature is 84 degrees. The highest recorded temperature, which occurred on July 16, 1988, is 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

Figure 1.—Location of Guernsey County in Ohio.

temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 39 inches. Of this, about 22 inches, or nearly 60 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 18 inches. The heaviest 1-day rainfall during the period of record was 5.5 inches on August 11, 1980. Thunderstorms occur on about 41 days each year, and most occur in summer.

The average seasonal snowfall is about 23 inches. The greatest snow depth at any one time during the period of record was 21 inches. On the average, 24 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in spring.

History

The first settlers in Guernsey County were probably the Mound Builders, a tribe of prehistoric Indians. It may have been quite a while after the Mound Builders left before the more recent Native Americans arrived. These Native Americans were from the Delaware, Shawnee, Mingo, and Seneca tribes (Somerset Publishers 1982).

The first settler of European descent built a cabin in the county in 1798. In that same year, the Zane Trace, which was the first road cut into the wilderness in Ohio, was being cleared. Most of the land in the county had been surveyed by 1798 (Wolfe 1943).

Cambridge was laid out in 1806, and Guernsey County was established in 1810 (Cyrus 1911). By 1826, the Zane Trace had become the National Road. The population of the county had greatly increased by that time. Cambridge eventually became a relatively large manufacturing town. Salt making was a widespread business along with agricultural and milling operations.

In the late 1800s, oil and gas were discovered in the county and coal was being mined on a large scale. The availability of these energy sources provided for the manufacture of glass, pottery, and steel (Cyrus 1911).

Today, Interstate 70 and U.S. Highway 40 closely follow the path of the National Road. Cambridge still has a few small glass factories and quite a few manufacturers of miscellaneous goods.

Physiography, Relief, and Drainage

Guernsey County lies in the Central and Western Allegheny Plateau areas (USDA 1981). It is extensively dissected by drainageways and is characterized by moderately steep to very steep hillsides and relatively narrow valleys that were produced by stream erosion. Local relief generally ranges from 300 to 400 feet. The northwestern part of the county is the most rugged. Ridgetops and valleys are narrow, and side slopes are steep and very steep.

The highest point in the county is 1,310 feet above sea level. It is north of Quaker City, in Millwood Township. The lowest point is about 770 feet above sea level. It is in the area where Wills Creek leaves the county, northwest of Birds Run.

The Illinoian and Wisconsinan glaciers advanced to within 50 miles north and west of the area that is now Guernsey County. There are no glacial outwash deposits in the county, however, because the major streams that were channels for glacial meltwater did not pass through the county. The glaciers, however, did dam streams that drained Guernsey County, forming lakes in stream valleys. Lacustrine sediments accumulated in these valleys. Soils on terraces on sides of these valleys formed in the lacustrine sediments.

Almost all of the county is within the Muskingum River watershed. Most of the creeks and rivers in the county drain into Wills Creek, a tributary of the Muskingum River. Skull Fork, in the northeast corner of the county, is a tributary of Stillwater Creek, which drains into the Muskingum River by way of the Tuscarawas River. A small area of southeastern Spencer Township drains into Duck Creek, which flows into the Ohio River.

Geology

The bedrock of Guernsey County is predominantly sedimentary rocks of the Pennsylvanian System. Rocks from the Upper Pottsville, Conemaugh, Allegheny, and Lower Monongahela Formations have been found in the county. The general dip of the strata in the county is to the southeast, at an average of 20 feet per mile. The Cambridge Arch is a prominent structure in the county. It is characterized as a broad, irregularly shaped arch with a crest varying in width from 25 to 30 miles. The axis of the arch extends roughly from Newport in Washington County to Cleveland.

The Conemaugh Formation is widely exposed throughout the county. Rocks at the surface in the east-central and south-central parts of the county are almost entirely Conemaugh in age. Typical locations of Conemaugh exposures in the county are in the Old Washington, Cambridge, and Pleasant City areas. The Conemaugh Formation consists of shales, thick layers of sandstones, thin layers of marine deposits, and deposits of Anderson coal and Pittsburgh (No. 8) coal. The thickness of the formation ranges from 314 to 527 feet, with an average thickness of 475 feet.

The Allegheny and Pottsville Formations are exposed on the lower slopes of valleys in the northwestern part of the county. These formations consist of shales, sandstones, clays, limestones, and coal. The coal units in these formations are the Upper Freeport (No. 7), Middle Kittanning (No. 6), and Lower Kittanning (No. 5). The thickness of the Allegheny Formation ranges from 188 to 290 feet, with an average thickness of 223 feet.

The lower beds of the Monongahela Formation make up less extensive areas of bedrock in the county. They are exposed in the eastern and southwestern parts of the county (Brandt and DeLong 1960; DeBrosse 1957).

Natural Resources

Every area in the county has been developed for oil and gas production. Oil and gas wells are drilled primarily in the Clinton Formation.

Coal production has decreased from what it was in the early part of the 20th century, but some surface mines still are operating. The coal units mined are the Anderson, Pittsburgh (No. 8), Upper Freeport (No. 7), Middle Kittanning (No. 6), and Lower Kittanning (No. 5).

Farming and Other Land Uses

In 1990, there were 910 farms in the county and about 42 percent of the total acreage was used as farmland (Ohio Agricultural Statistics Service 1991). In 1980, about 10 percent of the land in Guernsey County was used as cropland, 20 percent as pasture, and 50 percent as woodland (U.S. Department of Commerce 1991). The remaining 20 percent was used for other purposes, including development of the land.

The main source of farm income in the county is the sale of livestock and livestock products, mainly beef and dairy products and, to a lesser extent, sheep and hogs. The most important crops are corn, hay, and oats. There are some greenhouses and nurseries in the county, as well as a few Christmas tree farms.

Large areas of steep land are managed as woodland; for hunting or other recreational activities; or for a combination of both. About 7,000 acres in the county is unreclaimed surface mined land used for hunting by the public. Another 5,000 acres is either reclaimed surface mined land or land that is currently being surface mined. Upon completion of reclamation activities, reclaimed areas are used for hay or the acreage is idle land.

Recreational areas in the county include Salt Fork State Park, which is Ohio’s largest state park, and Senecaville Lake. Hunting, fishing, boating, swimming, camping, golfing, and horseback riding are recreational activities available at Salt Fork State Park. There are also two more golf courses in the county. Cambridge City Park offers a variety of sports and recreational activities, as well as the annual Salt Fork Arts and Crafts Festival. The Guernsey County Fair is held in Old Washington.

Transportation Facilities

Two major interstate highways have an interchange in Cambridge. I-70 goes east to Baltimore and west to Utah. I-77 goes north to Cleveland and south to Columbia, South Carolina. State highways provide easy access to most of the county.

A railroad runs east from Zanesville to Cambridge, where it splits. One line goes east to Gibson and the other south through Cumberland.

Cambridge Municipal Airport is located between Cambridge and Byesville.

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 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 is associated with a particular kind of landform or with a segment of the landform. By observing the soils 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 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.

Miscellaneous areas, such as urban land and pits, are identified by aerial photo interpretation. They are in places where the naturally occurring soils have been altered by human activities. Soil scientists make field observations to confirm photo interpretations and adjust boundary lines to show recent changes in the extent of the miscellaneous areas.

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

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

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

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

Survey Procedures

The general procedures followed in making this survey are described in the “National Soil Survey Handbook” (Soil Survey Staff 1996) of the Natural Resources Conservation Service and the “Soil Survey Manual” (Soil Survey Division Staff 1993). The soil maps made for conservation planning on individual farms prior to the start of the project soil survey also were used as references.

Before the actual fieldwork began, preliminary boundaries of slopes and landforms were plotted stereoscopically on aerial photographs that were taken in 1982 at a scale of 1:38,000 and enlarged to a scale of 1:15,840. U.S. Geological Survey topographic maps, at a scale of 1:15,840, were used to relate land and image features.

A reconnaissance was made by vehicle before the soil scientists traversed the surface on foot, examining the soils. In some areas, such as in the Mentor-Nolin-Glenford association where land use is intensive and the soil pattern is complex, traverses were as close as 100 yards. In very steep areas, such as in the Hazleton-Gilpin-Dekalb association and other areas where land use is less intensive, traverses were about an eighth of a mile apart.

As the traversed the surface, the soil scientists divided the landscape into segments based on the landform and position of the soils on the landform. For example, a hillside would be separated from a terrace or footslope, or a gently sloping ridgetop would be separated from a strongly sloping side slope. In most areas soil examinations along the traverses were made at points 50 to 100 yards apart, depending upon the landscape and soil pattern (Miller, McCormack, and Talbot 1979).

Observations of such items as landforms, blown-down trees, vegetation, roadbanks, bedrock highwalls in surface mined areas, and animal burrows were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretation. With the aid of a hand auger, soil sampling tube, or spade, the soil material was examined to a depth of about 4 feet. Deeper soils were examined to a depth of 8 feet or more with the aid of a truck-mounted, hydraulic soil coring rig. The pedons described as typical were observed and studied in pits that were dug with backhoes, shovels, spades, and spud bars.

Soil mapping was recorded on mylars of film positives of the 1982 photobase maps. Surface drainage was mapped in the field. Cultural features were recorded from observations of the maps and the landscape.

At the beginning of the survey, sample areas were selected to represent the major landscapes in the county. These areas were then mapped. Extensive notes were taken on the composition of map units in these preliminary study areas. These preliminary notes were modified as mapping progressed, and a final assessment of the composition of the individual map units was made. Transects were made to determine the composition of soil complexes.

Samples for chemical and physical analyses and for engineering properties were taken from representative sites of several of the soils in the survey area. The chemical and physical analyses were made by the Soil Characterization Laboratory, Department of Agronomy, The Ohio State University, Columbus, Ohio. The results of the analyses are stored in a computerized data file at the laboratory. The analyses for engineering properties were made by the Ohio Department of Transportation, Division of Highways, Bureau of Testing, Soils and Foundation Section, Columbus, Ohio. The laboratory procedures can be obtained by request from the respective laboratories. The results of laboratory analyses can be obtained from the Department of Natural Resources, The Ohio State University, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, State Office, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

General Soil Map Units

The general soil map in this publication shows the soil associations in this survey area. Each association has a distinctive pattern of soils, relief, and drainage. Each is a unique natural landscape. Typically, an association consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one unit can occur in another but in a different pattern.

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

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

Moderately deep to very deep, gently sloping to very steep, well drained and moderately well drained soils formed in residuum and colluvium derived from siltstone, shale, sandstone, and limestone; on uplands

1. Westmoreland-Lowell-Berks association

Sloping to very steep

Setting

Landform: Hills
Slope range: 6 to 70 percent

Composition

Percent of survey area: 35 percent
Extent of components in the association:
Westmoreland soils—35 percent
Lowell soils—20 percent
Berks soils—15 percent
Minor soils—30 percent

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 6 to 70 percent

Lowell

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Loess over colluvium and residuum derived from shale, limestone, and siltstone
Surface texture: Silt loam
Slope: 8 to 70 percent

Berks

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, shale, and sandstone
Surface texture: Channery silt loam
Slope: 8 to 70 percent

Minor Soils

- Upshur
- Bethesda
- Zanesville

Use and Management

Major uses: Pasture, cropland, woodland
Management concerns: Erosion, steep slopes; depth to bedrock in areas of the Berks soils

2. Guernsey-Westmoreland-Upshur association

Gently sloping to very steep

Setting

Landform: Hills
Slope range: 2 to 70 percent

Composition

Percent of survey area: 20 percent
Extent of components in the association:
Guernsey soils—25 percent
Westmoreland soils—25 percent
Upshur soils—20 percent
Minor soils—30 percent

Soil Properties and Qualities

Guernsey

Depth class: Deep and very deep
Drainage class: Moderately well drained
Position on the landform: Shoulders and backslopes
Parent material: Colluvium and residuum derived from siltstone, shale, limestone, and sandstone
Surface texture: Silt loam
Slope: 8 to 25 percent

Westmoreland

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 6 to 70 percent

Upshur

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from red clay shale
Surface texture: Silt loam or silty clay loam
Slope: 2 to 40 percent

Minor Soils

- Berks
- Zanesville
- Dekalb

Use and Management

Major uses: Pasture, cropland, woodland
Management concerns: Erosion, steep slopes; a hazard of slippage in areas of the Guernsey and Upshur soils

3. Hazleton-Gilpin-Dekalb association

Gently sloping to very steep

Setting

Landform: Hills
Slope range: 2 to 70 percent

Composition

Percent of survey area: 14 percent
Extent of components in the association:
Hazleton soils—25 percent
Gilpin soils—25 percent
Dekalb soils—15 percent
Minor soils—35 percent

Soil Properties and Qualities

Hazleton

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Backslopes
Parent material: Sandstone residuum
Surface texture: Channery loam
Slope: 25 to 70 percent

Gilpin

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 2 to 25 percent

Dekalb

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandstone residuum
Surface texture: Channery loam
Slope: 8 to 70 percent

Minor Soils

- Clarksburg
- Aaron
- Lowell

Use and Management

Major uses: Pasture, woodland, cropland
Management concerns: Erosion, steep slopes; depth to bedrock in areas of the Gilpin and Dekalb soils

4. Westmoreland-Guernsey-Berks association

Sloping to steep

Setting

Landform: Hills
Slope range: 8 to 70 percent

Composition

Percent of survey area: 9 percent
Extent of components in the association:
Westmoreland soils—35 percent
Guernsey soils—25 percent
Berks soils—15 percent
Minor soils—25 percent

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 8 to 70 percent

Guernsey

Depth class: Deep and very deep
Drainage class: Moderately well drained
Position on the landform: Shoulders and backslopes
Parent material: Colluvium and residuum derived from siltstone, shale, limestone, and sandstone
Surface texture: Silt loam
Slope: 8 to 25 percent

Berks

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, shale, and sandstone
Surface texture: Channery silt loam
Slope: 8 to 70 percent

Minor Soils

- Upshur
- Zanesville
- Newark

Use and Management

Major uses: Pasture, woodland, cropland
Management concerns: Erosion, steep slopes; depth to bedrock in areas of the Berks soils; a hazard of slippage in areas of the Guernsey soils

5. Dekalb-Westmoreland-Gilpin association

Gently sloping to very steep

Setting

Landform: Hills
Slope range: 2 to 70 percent

Composition

Percent of survey area: 7 percent
Extent of components in the association:
Dekalb soils—30 percent
Westmoreland soils—20 percent
Gilpin soils—15 percent
Minor soils—35 percent

Soil Properties and Qualities

Dekalb

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandstone residuum
Surface texture: Channery loam
Slope: 8 to 70 percent

Westmoreland

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 6 to 70 percent

Gilpin

Depth class: Moderately deep
Drainage class: Well drained

Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 2 to 25 percent

Minor Soils

- Clarksburg
- Hazleton
- Aaron

Use and Management

Major uses: Pasture, woodland, cropland
Management concerns: Erosion, steep slopes; depth to bedrock in areas of the Dekalb and Gilpin soils

6. Westmoreland-Guernsey-Dekalb association

Sloping to very steep

Setting

Landform: Hills
Slope range: 6 to 70 percent

Composition

Percent of survey area: 2 percent
Extent of components in the association:
Westmoreland soils—35 percent
Guernsey soils—30 percent
Dekalb soils—15 percent
Minor soils—20 percent

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Residuum derived from siltstone, sandstone, and shale
Surface texture: Silt loam
Slope: 6 to 70 percent

Guernsey

Depth class: Deep and very deep
Drainage class: Moderately well drained
Position on the landform: Backslopes
Parent material: Colluvium and residuum derived from siltstone, shale, limestone, and sandstone
Surface texture: Silt loam
Slope: 8 to 25 percent

Dekalb

Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandstone residuum
Surface texture: Channery loam
Slope: 8 to 70 percent

Minor Soils

- Upshur
- Clarksburg

Use and Management

Major uses: Pasture, cropland, woodland
Management concerns: Erosion, steep slopes; a hazard of slippage in areas of the Guernsey soils; depth to bedrock in areas of the Dekalb soils

Very deep, gently sloping to very steep, well drained soils formed in mine spoil derived mainly from shale, siltstone, limestone, and sandstone; on uplands

7. Morristown-Bethesda-Fairpoint association

Nearly level to very steep

Setting

Landform: Hills
Slope range: 0 to 70 percent

Composition

Percent of survey area: 1 percent
Extent of components in the association:
Morristown soils—40 percent
Bethesda soils—25 percent
Fairpoint soils—15 percent
Minor soils—20 percent

Soil Properties and Qualities

Morristown

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Graded and ungraded summits, shoulders, and backslopes in areas surface mined for coal
Parent material: Regolith from surface mining
Surface texture: Silty clay loam or channery clay loam

Slope: 0 to 70 percent

Bethesda

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Graded and ungraded summits, shoulders, and backslopes in areas surface mined for coal
Parent material: Regolith from surface mining
Surface texture: Clay loam or channery loam
Slope: 0 to 70 percent

Fairpoint

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Graded summits, shoulders, and backslopes in areas surface mined for coal
Parent material: Regolith from surface mining
Surface texture: Silty clay loam
Slope: 0 to 40 percent

Minor Soils

- Lowell
- Enoch

Use and Management

Major uses: Woodland, pasture, idle land
Management concerns: Erosion, droughtiness, steep slopes, a hazard of slippage; the acidity of the Bethesda soils; the alkalinity of the Morristown soils

Very deep, nearly level to moderately steep, well drained to somewhat poorly drained soils formed in recent alluvium and lacustrine sediments; on flood plains and terraces

8. Mentor-Nolin-Glenford association

Nearly level to moderately steep

Setting

Landform: Terraces and flood plains
Slope range: 0 to 25 percent

Composition

Percent of survey area: 6 percent
Extent of components in the association:
Mentor soils—25 percent
Nolin soils—20 percent
Glenford soils—15 percent
Minor soils—40 percent

Soil Properties and Qualities

Mentor

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Treads and risers
Parent material: Silty sediments
Surface texture: Silt loam
Slope: 2 to 25 percent

Nolin

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Steps of flood plains
Parent material: Recent alluvium
Surface texture: Silt loam
Slope: 0 to 3 percent

Glenford

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Treads and risers
Parent material: Silty sediments
Surface texture: Silt loam
Slope: 0 to 6 percent

Minor Components

- Newark
- Sarahsville
- Omulga
- Urban land
- Udorthents

Use and Management

Major uses: Cropland, pasture, building sites
Management concerns: Erosion in areas of the Mentor soils; flooding in areas of the Nolin soils; seasonal wetness in areas of the Glenford soils

9. Lindside-Sarahsville-Newark association

Nearly level

Setting

Landform: Flood plains
Slope range: 0 to 3 percent

Composition

Percent of survey area: 6 percent
Extent of components in the association:
Lindside soils—25 percent
Sarahsville soils—20 percent
Newark soils—15 percent
Minor soils—40 percent

Soil Properties and Qualities

Lindside

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Steps of flood plains
Parent material: Recent alluvium
Surface texture: Silt loam
Slope: 0 to 2 percent

Sarahsville

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Steps of flood plains
Parent material: Recent alluvium
Surface texture: Silty clay loam
Slope: 0 to 2 percent

Newark

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Steps of flood plains
Parent material: Recent alluvium
Surface texture: Silt loam
Slope: 0 to 2 percent

Minor Soils

- Omulga
- Zipp
- Euclid
- Melvin

Use and Management

Major uses: Cropland, pasture, woodland
Management concerns: Flooding, seasonal wetness

Detailed Soil Map Units

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

A map unit delineation on a 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 "included" areas that belong to other taxonomic classes.

Most included 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, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. 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 included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas 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 included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Gilpin silt loam, 8 to 15 percent slopes, is a phase of the Gilpin series.

Some map units are made up of two or more major soils or miscellaneous areas.

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. Guernsey-Upshur complex, 15 to 25 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urban land is an example.

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.

AaB—Aaron silt loam, 2 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 8 percent
Size of areas: 3 to 15 acres

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam
Subsoil:
9 to 14 inches—yellowish brown, friable silty clay loam
14 to 41 inches—light olive brown and grayish brown, mottled, firm clay and channery clay
Substratum:
41 to 50 inches—olive, very firm silty clay loam
Bedrock:
50 to 60 inches—olive gray, soft, calcareous shale

Soil Properties and Qualities

Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 7.7 inches

Composition

Aaron soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are better drained
- Soils that have less clay in the subsoil

Contrasting components:
- Gilpin soils on shoulders
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

AaC—Aaron silt loam, 8 to 15 percent slopes

Setting

Landform: Hills (fig. 2)
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, friable silt loam
Subsoil:
8 to 14 inches—yellowish brown, friable silty clay loam
14 to 41 inches—light olive brown and olive, mottled, firm clay and channery clay
Substratum:
41 to 48 inches—olive, very firm silty clay loam
Bedrock:
48 to 60 inches—olive gray, soft, calcareous shale

Soil Properties and Qualities

Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 7.4 inches

Figure 2.—A pastured area of Aaron silt loam, 8 to 15 percent slopes.

Composition

Aaron soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are better drained
- Soils that have less clay in the subsoil

Contrasting components:
- Gilpin soils on shoulders
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

AbB—Aaron-Upshur complex, 2 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 8 percent
Size of areas: 3 to 15 acres

Typical Profile

Aaron

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam

Subsoil:
9 to 15 inches—yellowish brown, friable silty clay loam
15 to 42 inches—light olive brown and olive, mottled, firm clay and channery clay
Substratum:
42 to 50 inches—olive, very firm silty clay loam
Bedrock:
50 to 60 inches—olive gray, soft, calcareous shale

Upshur

Surface layer:
0 to 7 inches—dark reddish brown, friable silt loam
Subsoil:
7 to 37 inches—dark red and dusky red, firm clay and silty clay
Substratum:
37 to 72 inches—dusky red, olive, and brownish yellow, firm clay and silty clay loam
Bedrock:
72 to 80 inches—light olive brown, soft siltstone

Soil Properties and Qualities

Aaron

Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 7.9 inches

Upshur

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.9 inches

Composition

Aaron soil and similar components: 50 percent
Upshur soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Soils that have more silt in the subsoil than the Aaron and Upshur soils
Contrasting components:
• Gilpin soils on shoulders
• Berks soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

AbC2—Aaron-Upshur complex, 8 to 15 percent slopes, eroded

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 5 to 40 acres
Note: Partial loss of surface layer

Typical Profile

Aaron

Surface layer:
0 to 7 inches—dark grayish brown, friable silt loam
Subsoil:
7 to 14 inches—yellowish brown, friable silty clay loam
14 to 41 inches—light olive brown and olive, mottled, firm clay and channery clay
Substratum:
41 to 48 inches—olive, very firm silty clay loam
Bedrock:
48 to 60 inches—olive gray, soft, calcareous shale

Upshur

Surface layer:
0 to 6 inches—dark reddish brown, friable silt loam
Subsoil:
6 to 35 inches—dark red and dusky red, firm clay and silty clay

Substratum:
35 to 70 inches—dusky red, olive, and brownish yellow, firm clay and silty clay loam
Bedrock:
70 to 80 inches—light olive brown, soft siltstone

Soil Properties and Qualities

Aaron

Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 7.2 inches

Upshur

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.8 inches

Composition

Aaron soil and similar components: 50 percent
Upshur soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have more silt in the subsoil than the Aaron and Upshur soils

Contrasting components:
- Gilpin soils on shoulders
- Berks soils on shoulders
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

AgC—Allegheny loam, 8 to 15 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads, risers
Slope range: 8 to 15 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable loam
Subsoil:
8 to 21 inches—brown and yellowish brown, friable loam
21 to 60 inches—yellowish brown, friable clay loam and fine sandy loam
Substratum:
60 to 70 inches—dark yellowish brown, friable sandy loam
70 to 80 inches—reddish brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Outwash
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 8.6 inches

Composition

Allegheny soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that have a reddish brown subsoil

Contrasting components:
- Omulga soils in the flatter areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

BaD—Barkcamp loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes, shoulders
Slope range: 8 to 25 percent
Size of areas: 5 to 15 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 11 inches—mixed brown, dark yellowish brown, light olive brown, and yellowish brown, friable to very firm loam
Substratum:
11 to 80 inches—dark grayish brown, firm extremely flaggy sandy loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Flooding: None
Permeability: Moderately rapid or rapid
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 5.4 inches
Cation-exchange capacity: 6 to 20 centimoles per kilogram

Composition

Barkcamp soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are less sloping
- Soils that have a thinner surface layer

Contrasting components:
- Bethesda soils in landscape positions similar to those of the Barkcamp soil
- Soils that are bare of vegetation

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BcB—Barkcamp very flaggy sandy loam, 0 to 8 percent slopes, very stony

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 0 to 8 percent
Size of areas: 5 to 15 acres
Note: Spoil from strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 1 inch—brown, very friable very flaggy sandy loam
Substratum:
1 to 8 inches—yellowish brown, friable very flaggy sandy loam
8 to 80 inches—yellowish brown, friable extremely flaggy loamy sand and extremely flaggy sandy loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Noncalcareous regolith from surface mining
Flooding: None
Permeability: Moderately rapid or rapid
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.2 inches

Cation-exchange capacity: 4 to 12 centimoles per kilogram

Composition

Barkcamp soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have boulders on the surface

Contrasting components:
- Bethesda soils
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BcD—Barkcamp very flaggy sandy loam, 8 to 40 percent slopes, very stony

Setting

Landform: Hills
Position on the landform: Summits, backslopes, shoulders
Slope range: 8 to 40 percent
Size of areas: 5 to 15 acres
Note: Spoil from strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 1 inch—brown, very friable very flaggy sandy loam
Substratum:
1 to 8 inches—yellowish brown, friable very flaggy sandy loam
8 to 80 inches—yellowish brown, friable very flaggy loamy sand and extremely flaggy sandy loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Noncalcareous regolith from surface mining
Flooding: None
Permeability: Moderately rapid or rapid
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.2 inches
Cation-exchange capacity: 4 to 12 centimoles per kilogram

Composition

Barkcamp soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have boulders on the surface

Contrasting components:
- Bethesda soils
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BeC—Berks channery silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 3 to 10 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 7 inches—brown, friable channery silt loam
Subsoil:
7 to 24 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
24 to 28 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
28 to 33 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained

Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 2.2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Berks soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have a surface layer of silt loam

Contrasting components:
- Soils that are shallow to bedrock and along the perimeter of some areas
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

BeD—Berks channery silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 10 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 6 inches—brown, friable channery silt loam
Subsoil:
6 to 24 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
24 to 27 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
27 to 32 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 2.1 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Berks soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Soils that are shallow to bedrock and in the more sloping areas
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

BeE—Berks channery silt loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 50 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown, very friable channery silt loam
Subsurface layer:
3 to 6 inches—mixed yellowish brown and brown, friable channery silt loam
Subsoil:
6 to 23 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
23 to 27 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
27 to 32 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 2.1 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Berks soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Soils that are shallow to bedrock and in the more sloping areas
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

BeF—Berks channery silt loam, 40 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 40 to 70 percent
Size of areas: 10 to 100 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown, very friable channery silt loam
Subsurface layer:
2 to 5 inches—mixed yellowish brown and brown, friable channery silt loam
Subsoil:
5 to 23 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
23 to 27 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
27 to 31 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Berks soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Soils that are shallow to bedrock and in the more sloping areas
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

BgB—Bethesda clay loam, 0 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits, backslopes
Slope range: 0 to 8 percent
Size of areas: 5 to 40 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 7 inches—mixed brown and yellowish brown, friable clay loam
Substratum:
7 to 11 inches—mixed dark grayish brown and olive brown, firm very channery clay loam
11 to 80 inches—mixed dark grayish brown, olive brown, and light olive brown, very firm extremely channery clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.9 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have a thicker surface layer

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BgD—Bethesda clay loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 25 percent
Size of areas: 5 to 40 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 7 inches—mixed brown and yellowish brown, friable clay loam
Substratum:
7 to 11 inches—mixed dark grayish brown and olive brown, firm very channery clay loam
11 to 80 inches—mixed dark grayish brown, olive brown, and light olive brown, very firm extremely channery clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent

Potential for frost action: Moderate
Available water capacity: Generally 4.8 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have a thicker surface layer

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surface Mined for Coal” section

BgE—Bethesda clay loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 60 acres
Note: Reclaimed strip mine; graded surface

Typical Profile

Surface layer:
0 to 7 inches—mixed dark grayish brown, dark yellowish brown, and yellowish brown, friable and firm clay loam
Substratum:
7 to 80 inches—mixed light olive brown, yellowish brown, and grayish brown, firm very channery clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.8 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that are less acid

Contrasting components:
- Unreclaimed areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surface Mined for Coal” section

BhB—Bethesda channery loam, 0 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 0 to 8 percent
Size of areas: 5 to 15 acres
Note: Strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown, friable channery loam
Substratum:
4 to 80 inches—mixed light olive brown, dark grayish brown, and brown, friable very channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained

Dominant parent material: Noncalcareous regolith from surface mining
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.4 inches
Cation-exchange capacity: 7 to 16 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that are less acid
Contrasting components:
• Barkcamp soils in landscape positions similar to those of the Bethesda soil
• Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BhD—Bethesda channery loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 25 percent
Size of areas: 5 to 40 acres
Note: Strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown, friable channery loam

Substratum:
3 to 80 inches—mixed light olive brown and dark grayish brown, friable very channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Noncalcareous regolith from surface mining
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.4 inches
Cation-exchange capacity: 7 to 16 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that are less acid
Contrasting components:
• Barkcamp soils in landscape positions similar to those of the Bethesda soil
• Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surface Mined for Coal" section

BhF—Bethesda channery loam, 25 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 70 percent
Size of areas: 10 to 500 acres
Note: Strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown, friable channery loam
Substratum:
3 to 80 inches—mixed light olive brown, brown, and dark grayish brown, friable very channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Noncalcareous regolith from surface mining
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.4 inches
Cation-exchange capacity: 7 to 16 centimoles per kilogram

Composition

Bethesda soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that are less acid

Contrasting components:
- Barkcamp soils in landscape positions similar to those of the Bethesda soil
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surface Mined for Coal” section

BsD—Brookside silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 50 acres
Note: Uneven slopes; occasional seepy spots

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 23 inches—dark yellowish brown and yellowish brown, friable silt loam and silty clay loam
23 to 58 inches—yellowish brown and brown, mottled, firm silty clay and channery silty clay loam
Substratum:
58 to 80 inches—dark yellowish brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 4.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 7.3 inches
Cation-exchange capacity: 10 to 22 centimoles per kilogram

Composition

Brookside soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that have a redder subsoil than that of the Brookside soil

Contrasting components:
- Claysville soils in depressions and drainageways
- Richland soils on slope breaks to the uplands
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section

- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

BtC—Brookside-Vandalia complex, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 8 to 15 percent
Size of areas: 5 to 50 acres
Note: Uneven slopes; occasional seepy spots

Typical Profile

Brookside

Surface layer:
0 to 10 inches—dark grayish brown, friable silt loam
Subsoil:
10 to 24 inches—dark yellowish brown and yellowish brown, friable silt loam and silty clay loam
24 to 60 inches—yellowish brown and brown, mottled, firm silty clay and channery silty clay loam
Substratum:
60 to 80 inches—dark yellowish brown, mottled, firm silty clay loam

Vandalia

Surface layer:
0 to 8 inches—brown, friable silty clay loam
Subsoil:
8 to 21 inches—brown and reddish brown, firm silty clay loam
21 to 60 inches—reddish brown and dark reddish brown, firm clay
Substratum:
60 to 80 inches—dark reddish brown and reddish brown, firm clay

Soil Properties and Qualities

Brookside

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 4.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 7.4 inches
Cation-exchange capacity: 10 to 22 centimoles per kilogram

Vandalia

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 8.2 inches

Composition

Brookside soil and similar components: 45 percent
Vandalia soil and similar components: 35 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Claysville soils in depressions and drainageways
- Richland soils on slope breaks to the uplands
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

BtD—Brookside-Vandalia complex, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 10 to 100 acres
Note: Uneven slopes; occasional seepy spots

Typical Profile

Brookside

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam
Subsoil:
9 to 27 inches—brown and yellowish brown, friable silty clay loam and channery silty clay loam
27 to 56 inches—yellowish brown, mottled, firm clay
Substratum:
56 to 80 inches—light olive brown, mottled, firm channery clay

Vandalia

Surface layer:
0 to 7 inches—brown, friable silty clay loam
Subsoil:
7 to 13 inches—brown, friable silty clay loam
13 to 60 inches—reddish brown and dark reddish brown, firm clay and channery clay loam
Substratum:
60 to 80 inches—dark reddish brown and brown, firm channery clay loam and silty clay loam

Soil Properties and Qualities

Brookside

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 4.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 7.2 inches
Cation-exchange capacity: 10 to 22 centimoles per kilogram

Vandalia

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 8.2 inches

Composition

Brookside soil and similar components: 50 percent
Vandalia soil and similar components: 30 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Claysville soils in depressions and drainageways
- Richland soils on slope breaks to the uplands
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

BtE—Brookside-Vandalia complex, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 40 acres
Note: Uneven slopes; occasional seepy spots

Typical Profile

Brookside

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 20 inches—yellowish brown, friable silty clay loam
20 to 52 inches—yellowish brown, mottled, firm clay
Substratum:
52 to 80 inches—yellowish brown and olive brown, mottled, firm channery clay

Vandalia

Surface layer:
0 to 6 inches—dark brown, friable silty clay loam

Subsoil:
6 to 17 inches—reddish brown, friable silty clay loam
17 to 48 inches—dark reddish brown, firm clay and channery clay
Substratum:
48 to 80 inches—reddish brown, firm clay

Soil Properties and Qualities

Brookside

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 4.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.9 inches
Cation-exchange capacity: 10 to 22 centimoles per kilogram

Vandalia

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 7.8 inches

Composition

Brookside soil and similar components: 50 percent
Vandalia soil and similar components: 30 percent
Inclusions: 20 percent

Inclusions

Similar components:
• Soils that are deep or moderately deep to bedrock
Contrasting components:
• Claysville soils in depressions and drainageways
• Richland soils on slope breaks to the uplands
• Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Ca—Chagrin loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 3 percent
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable loam
Subsoil:
9 to 34 inches—brown and dark yellowish brown, friable loam and silt loam
Substratum:
34 to 80 inches—dark yellowish brown and brown, friable fine sandy loam, loam, and sandy loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Kind of water table: Apparent
Depth to the water table: 4 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 9.9 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Chagrin soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Moderately well drained soils

Contrasting components:
- Poorly drained soils in the more depressional, enclosed areas
- Orrville soils in the more depressional, enclosed areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

ChD—Clarksburg channery silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 10 to 100 acres
Note: Uneven slopes; occasional seepy spots; fragipan

Typical Profile

Surface layer:
0 to 7 inches—very dark grayish brown and brown, friable channery silt loam
Subsoil:
7 to 32 inches—dark yellowish brown and yellowish brown, friable and firm channery loam and channery clay loam; mottled below a depth of 22 inches
32 to 43 inches—a fragipan of dark yellowish brown, mottled, very firm, brittle channery clay loam
43 to 60 inches—dark yellowish brown, mottled, very firm channery clay loam
Substratum:
60 to 80 inches—dark yellowish brown, mottled, firm channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderate above the fragipan; moderately slow or slow in the fragipan
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.7 inches
Cation-exchange capacity: 12 to 20 centimoles per kilogram

Composition

Clarksburg soil: 80 percent
Inclusions: 20 percent

Inclusions

Contrasting components:
- Kanawha soils near the base of slopes (fig. 3)
- Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

CkC—Claysville-Guernsey complex, 8 to 15 percent slopes

Setting

Landform: Hills (fig. 4)
Position on the landform: Concave benches, footslopes
Slope range: 8 to 15 percent
Size of areas: 5 to 30 acres
Note: Uneven slopes; occasional seepy spots

Typical Profile

Claysville

Surface layer:
0 to 10 inches—very dark grayish brown, friable silty clay loam
Subsurface layer:
10 to 14 inches—very dark grayish brown, mottled, friable silty clay loam
Subsoil:
14 to 46 inches—brown and light olive brown, mottled, firm silty clay and clay
Substratum:
46 to 80 inches—dark yellowish brown, mottled, firm silty clay loam

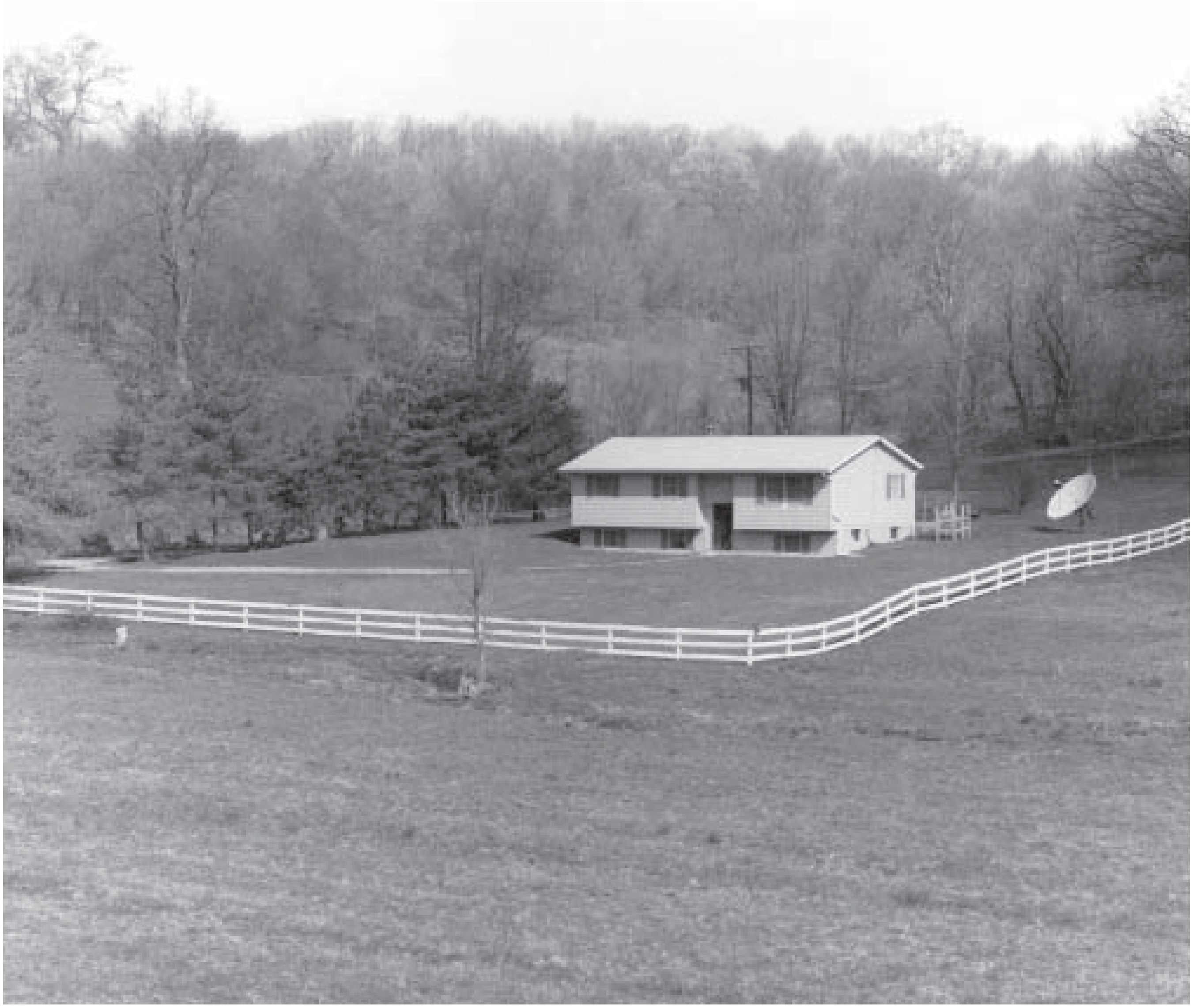

Figure 3.—An area of Clarksburg channery silt loam, 15 to 25 percent slopes. The house is in an area of the included Kanawha soils, which are well suited to building site development.

Guernsey

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 19 inches—dark yellowish brown and brown, friable silty clay loam
19 to 52 inches—brown and dark yellowish brown, mottled, firm clay and channery clay
Substratum:
52 to 80 inches—mixed yellowish brown and olive brown, mottled, firm clay

Soil Properties and Qualities

Claysville

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1 to 2 feet
Permeability: Moderately slow or slow

Content of organic matter in the surface layer: 3 to 7 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 9.1 inches
Cation-exchange capacity: 25 to 35 centimoles per kilogram

Guernsey

Depth class: Deep and very deep (more than 50 inches)
Drainage class: Moderately well drained
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.5 inches
Cation-exchange capacity: 12 to 25 centimoles per kilogram

Composition

Claysville soil and similar components: 55 percent
Guernsey soil and similar components: 30 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Soils that have a redder subsoil and substratum than those of the Claysville soil
Contrasting components:
• Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

CoD—Coshocton loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 10 to 50 acres
Note: Occasional seepy spots

Figure 4.—A pastured area of Claysville-Guernsey complex, 8 to 15 percent slopes, in the foreground, and a wooded area of Elba-Berks complex, 40 to 70 percent slopes, on the steeper slopes in the background.

Typical Profile

Surface layer:
0 to 9 inches—brown, friable loam
Subsoil:
9 to 17 inches—yellowish brown, friable channery loam
17 to 41 inches—yellowish brown, mottled, firm channery clay loam and silty clay loam
41 to 56 inches—dark gray, mottled, firm silty clay and silty clay loam
Substratum:
56 to 63 inches—pale brown, mottled, firm silty clay loam
Bedrock:
63 to 65 inches—olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 8.9 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Coshocton soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
• Well drained soils
Contrasting components:
• Clarksburg soils in landscape positions similar to those of the Coshocton soil
• Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

CsC2—Coshocton silt loam, 8 to 15 percent slopes, eroded

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 5 to 15 acres
Note: Occasional seepy spots

Typical Profile

Surface layer:
0 to 10 inches—brown, friable silt loam
Subsoil:
10 to 20 inches—yellowish brown and brown, friable channery silty clay loam and clay loam
20 to 43 inches—brown, mottled, firm silty clay loam and loam
Substratum:
43 to 54 inches—dark grayish brown, mottled, firm loam and olive brown, mottled, firm silty clay loam
Bedrock:
54 to 60 inches—olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Moderately well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 8 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Coshocton soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Well drained soils

Contrasting components:
• Guernsey soils in landscape positions similar to those of the Coshocton soil
• Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

DkC—Dekalb channery loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 15 percent
Size of areas: 2 to 20 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 7 inches—brown, friable channery loam
Subsoil:
7 to 26 inches—yellowish brown, friable channery loam and very channery sandy loam
Substratum:
26 to 34 inches—yellowish brown, friable extremely channery sandy loam
Bedrock:
34 to 36 inches—fractured, hard sandstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Sandstone residuum
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 3 inches

Composition

Dekalb soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Soils that are shallow to bedrock
Contrasting components:
• Gilpin soils in saddles
• Westmoreland soils in the flatter areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

DkD—Dekalb channery loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 500 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 7 inches—brown, friable channery loam
Subsoil:
7 to 28 inches—yellowish brown, friable channery loam and very channery sandy loam
Substratum:
28 to 35 inches—yellowish brown, friable extremely channery sandy loam
Bedrock:
35 to 37 inches—fractured, hard sandstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Sandstone residuum
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 3.1 inches

Composition

Dekalb soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Soils that are shallow to bedrock and on shoulders
- Areas of sandstone rock outcrop in the more sloping landscape positions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

DkE—Dekalb channery loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 5 to 100 acres
Note: High content of rock fragments

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown, very friable channery loam
Subsurface layer:
3 to 5 inches—brown, friable channery loam
Subsoil:
5 to 28 inches—yellowish brown, friable channery loam, very channery loam, and extremely flaggy sandy loam
Substratum:
28 to 33 inches—yellowish brown, friable extremely flaggy sandy loam
Bedrock:
33 to 35 inches—fractured, hard sandstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 3.1 inches

Composition

Dekalb soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Soils that are shallow to bedrock and on shoulders
- Areas of sandstone rock outcrop in the more sloping landscape positions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

DmF—Dekalb channery loam, 25 to 70 percent slopes, very stony

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 70 percent
Size of areas: 10 to 500 acres
Note: Large stones and boulders on the surface; high content of rock fragments

Typical Profile

Forest litter:
1.5 inches to 0.5 inch—leaf litter from deciduous trees
0.5 inch to 0—partially decomposed leaf litter
Surface layer:
0 to 3 inches—very dark brown, very friable channery loam
Subsoil:
3 to 16 inches—dark yellowish brown and yellowish brown, friable channery loam
16 to 29 inches—yellowish brown, friable very flaggy sandy loam

Substratum:
29 to 37 inches—yellowish brown, friable extremely flaggy sandy loam
Bedrock:
37 to 40 inches—fractured, hard sandstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Sandstone residuum
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 5 percent
Available water capacity: Generally 3.2 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Dekalb soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are shallow to bedrock
- Soils that are deep to bedrock

Contrasting components:
- Bedrock escarpments in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Dp—Dumps

Setting

Slope range: 0 to 8 percent
Size of areas: 2 to 20 acres
Note: Areas commonly graded and covered with soil material

Soil Properties and Qualities

Onsite investigation is needed to determine the limitations affecting any proposed use.

Composition

Dumps: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Undisturbed areas

Ds—Dumps, mine

Setting

Slope range: 0 to 60 percent
Size of areas: 5 to 40 acres
Note: Steep and very steep ridges or cone-shaped piles of mine waste; some areas graded and covered with soil material; graded tops nearly level to sloping in a few areas

Soil Properties and Qualities

Onsite investigation is needed to determine the limitations affecting any proposed use.

Composition

Dumps: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Areas that are bare of vegetation
- Reclaimed areas

EbC—Elba silty clay loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 3 to 15 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silty clay loam
Subsoil:
8 to 41 inches—dark yellowish brown and light olive brown, firm clay and friable silty clay loam
Substratum:
41 to 46 inches—variegated yellowish brown and light olive brown, firm clay
Bedrock:
46 to 60 inches—very dark gray, soft, calcareous shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from limestone and shale
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 5.9 inches
Cation-exchange capacity: 15 to 26 centimoles per kilogram

Composition

Elba soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are more acid in the subsoil
- Moderately well drained soils

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

EbD—Elba silty clay loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 30 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silty clay loam
Subsoil:
8 to 44 inches—dark yellowish brown and light olive brown, firm clay and friable silty clay loam
Substratum:
44 to 48 inches—variegated yellowish brown and pale olive, firm clay
Bedrock:
48 to 66 inches—very dark gray, soft, calcareous shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from limestone and shale
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.1 inches
Cation-exchange capacity: 15 to 26 centimoles per kilogram

Composition

Elba soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are more acid in the subsoil
- Moderately well drained soils

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

EbE—Elba silty clay loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silty clay loam
Subsoil:
7 to 42 inches—dark yellowish brown and light olive brown, firm clay and friable silty clay loam
Substratum:
42 to 46 inches—variegated yellowish brown and pale olive, firm clay
Bedrock:
46 to 58 inches—very dark gray, soft, calcareous shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from limestone and shale
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 5.8 inches
Cation-exchange capacity: 15 to 26 centimoles per kilogram

Composition

Elba soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
• Soils that are more acid in the subsoil
Contrasting components:
• Guernsey soils near the base of slopes
• Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

EkF—Elba-Berks complex, 40 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 40 to 70 percent
Size of areas: 40 to 100 acres
Note: Narrow bench in mid slope position; high content of rock fragments

Typical Profile

Elba

Surface layer:
0 to 6 inches—brown, friable silty clay loam
Subsoil:
6 to 40 inches—dark yellowish brown and light olive brown, firm clay and friable silty clay loam
Substratum:
40 to 45 inches—variegated yellowish brown and pale olive, firm clay
Bedrock:
45 to 52 inches—very dark gray, soft, calcareous shale

Berks

Surface layer:
0 to 2 inches—very dark grayish brown, very friable channery silt loam
Subsurface layer:
2 to 5 inches—mixed yellowish brown and brown, friable channery silt loam
Subsoil:
5 to 23 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
23 to 27 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
27 to 31 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Elba

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent

Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 5.7 inches
Cation-exchange capacity: 15 to 26 centimoles per kilogram

Berks

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Elba soil and similar components: 45 percent
Berks soil and similar components: 35 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are more acid in the subsoil than the Elba soil

Contrasting components:
- Guernsey soils in the less sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

EnB—Enoch loam, 0 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 0 to 8 percent
Size of areas: 5 to 80 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 8 inches—mixed dark grayish brown, dark yellowish brown, light olive brown, brown, and yellowish brown, friable and firm loam
Substratum:
8 to 21 inches—mixed very dark grayish brown, dark grayish brown, and dark gray, very firm very channery clay loam (ultra acid)
21 to 80 inches—mixed very dark grayish brown, dark grayish brown, and dark gray, very firm very channery clay loam (strongly acid in the upper part, moderately acid in the lower part)

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.6 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Enoch soil and similar components: 95 percent
Inclusions: 5 percent

Inclusions

Similar components:
- Soils that have a surface layer of silt loam or clay loam

Contrasting components:
- Ultra acid soils that are bare of vegetation and in landscape positions similar to those of the Enoch soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surfaced Mined for Coal" section

EnD—Enoch loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 25 percent
Size of areas: 3 to 30 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 8 inches—mixed dark grayish brown, dark yellowish brown, yellowish brown, and brown, friable and firm loam
Substratum:
8 to 24 inches—mixed dark grayish brown, dark gray, and very dark gray, very firm very channery clay loam (ultra acid)
24 to 80 inches—mixed dark grayish brown and dark gray, very firm very channery clay loam (very strongly acid in the upper part, moderately acid in the lower part)

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.6 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Enoch soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have a surface layer of silt loam or clay loam

Contrasting components:
- Ultra acid soils that are bare of vegetation and in landscape positions similar to those of the Enoch soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

EuA—Euclid silt loam, rarely flooded

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 0 to 3 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam
Subsoil:
9 to 15 inches—grayish brown, mottled, friable silt loam
15 to 53 inches—dark yellowish brown and yellowish brown, mottled, firm silty clay loam
Substratum:
53 to 80 inches—yellowish brown, mottled, firm silty clay loam that has thin layers of silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Rare
Kind of water table: Apparent
Depth to the water table: 1.0 to 2.5 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 2 to 3 percent
Potential for frost action: High
Available water capacity: Generally 10.4 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Euclid soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Moderately well drained soils
Contrasting components:
• Soils that have a channery surface layer and are on slope breaks to the uplands
• Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

FcB—Fairpoint silty clay loam, 0 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 0 to 8 percent
Size of areas: 5 to 20 acres
Note: Reclaimed strip mine; graded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 8 inches—brown and yellowish brown, friable and very firm silty clay loam
Substratum:
8 to 80 inches—olive brown, very firm extremely flaggy clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.6 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Fairpoint soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that have a thicker surface layer
Contrasting components:
• Severely eroded soils in the more sloping areas
• Soils that have a channery surface layer and are in landscape positions similar to those of the Fairpoint soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections
- "Lands Surfaced Mined for Coal" section

FcD—Fairpoint silty clay loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 25 percent
Size of areas: 5 to 40 acres
Note: Reclaimed strip mine; graded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 8 inches—brown and yellowish brown, friable and very firm silty clay loam
Substratum:
8 to 80 inches—olive brown, very firm extremely flaggy clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow

Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.6 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Fairpoint soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that have a thicker surface layer
Contrasting components:
• Severely eroded soils in the more sloping areas
• Soils that have a channery surface layer and are in landscape positions similar to those of the Fairpoint soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

FcE—Fairpoint silty clay loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 30 acres
Note: Reclaimed strip mine; graded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 6 inches—mixed dark grayish brown, brown, and yellowish brown, friable and firm silty clay loam

Substratum:
6 to 80 inches—mixed olive gray and olive brown, firm very channery clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.4 inches
Cation-exchange capacity: 10 to 24 centimoles per kilogram

Composition

Fairpoint soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that are calcareous
Contrasting components:
• Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

FtA—Fitchville silt loam, 0 to 3 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 0 to 3 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam
Subsurface layer:
9 to 12 inches—grayish brown, mottled, friable silt loam
Subsoil:
12 to 46 inches—yellowish brown, mottled, friable and firm silt loam and silty clay loam
Substratum:
46 to 80 inches—yellowish brown, mottled, friable stratified silt loam and silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Glaciolacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.0 to 2.5 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 2 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 10.3 inches
Cation-exchange capacity: 14 to 22 centimoles per kilogram

Composition

Fitchville soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GdB—Gilpin silt loam, 2 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 8 percent
Size of areas: 3 to 30 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 26 inches—dark yellowish brown and yellowish brown, friable silty clay loam and channery silty clay loam
Substratum:
26 to 33 inches—yellowish brown, friable very channery and extremely channery loam
Bedrock:
33 to 36 inches—olive brown, soft siltstone
36 to 41 inches—fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 0.5 to 4.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.4 inches

Composition

Gilpin soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Berks soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GdC—Gilpin silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 3 to 40 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 24 inches—brown and yellowish brown, friable silty clay loam and channery silty clay loam
Substratum:
24 to 28 inches—yellowish brown, friable very channery loam
Bedrock:
28 to 35 inches—fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 0.5 to 4.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 3.8 inches

Composition

Gilpin soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Berks soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GdD—Gilpin silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 6 inches—brown, friable silt loam
Subsoil:
6 to 26 inches—dark yellowish brown and yellowish brown, friable silty clay loam and channery silty clay loam
Substratum:
26 to 30 inches—yellowish brown, friable very channery loam
Bedrock:
30 to 35 inches—fractured siltstone

Soil Properties and Qualities

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 0.5 to 4.0 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.1 inches

Composition

Gilpin soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to bedrock

Contrasting components:
- Berks soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

GnA—Glenford silt loam, 0 to 2 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 0 to 2 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown, friable silt loam
Subsoil:
10 to 57 inches—yellowish brown, friable and firm silty clay loam; mottled below a depth of 15 inches
Substratum:
57 to 80 inches—yellowish brown, mottled, firm stratified silty clay loam and silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.0 to 3.5 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Shrink-swell potential: Moderate
Available water capacity: Generally 9.6 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Glenford soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Fitchville soils in the more depressional, enclosed areas
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

GnB—Glenford silt loam, 2 to 6 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 2 to 6 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 10 inches—brown, friable silt loam
Subsoil:
10 to 37 inches—yellowish brown, firm silt loam and silty clay loam; mottled below a depth of 13 inches
Substratum:
37 to 80 inches—yellowish brown, mottled, friable stratified silty clay loam and silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.0 to 3.5 feet
Permeability: Moderately slow

Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 9.5 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Glenford soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Fitchville soils in the more depressional, enclosed areas
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GpA—Glenford-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 0 to 2 percent
Size of areas: 50 to 500 acres

Typical Profile

Glenford

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 49 inches—yellowish brown, firm silt loam and silty clay loam; mottled below a depth of 13 inches
Substratum:
49 to 80 inches—yellowish brown, mottled, friable stratified silty clay loam and silt loam

Soil Properties and Qualities

Glenford

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.0 to 3.5 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 9.6 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Urban land

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure or alter the soils that identification is not feasible.

Composition

Glenford soil and similar components: 45 percent
Urban land and similar components: 35 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Fitchville soils in the more depressional, enclosed areas
- Euclid soils in the lower landscape positions
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GrC—Guernsey silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 8 to 15 percent

Size of areas: 3 to 30 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsurface layer:
8 to 11 inches—dark yellowish brown and brown, friable silt loam
Subsoil:
11 to 54 inches—brown and yellowish brown, firm silty clay loam and clay; mottled below a depth of 17 inches
Substratum:
54 to 80 inches—mixed yellowish brown and grayish brown, mottled, firm channery clay

Soil Properties and Qualities

Depth class: Deep and very deep (more than 50 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.4 inches
Cation-exchange capacity: 12 to 25 centimoles per kilogram

Composition

Guernsey soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Westmoreland soils on the steeper part of slopes
- Claysville soils in concave areas on slopes and near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GrD2—Guernsey silt loam, 15 to 25 percent slopes, eroded

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 20 acres
Note: Partial loss of surface layer

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsurface layer:
9 to 12 inches—dark yellowish brown and brown, friable silty clay loam
Subsoil:
12 to 19 inches—brown, friable silty clay loam
19 to 52 inches—brown and yellowish brown, mottled, firm clay and channery clay
Substratum:
52 to 80 inches—mixed yellowish brown and olive brown, mottled, firm clay

Soil Properties and Qualities

Depth class: Deep and very deep (more than 50 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.5 inches
Cation-exchange capacity: 12 to 25 centimoles per kilogram

Composition

Guernsey soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that have a surface layer of silty clay loam
- Well drained soils

Contrasting components:
• Westmoreland soils on the steeper part of slopes
• Claysville soils in concave areas on slopes and near the base of slopes
• Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GuC—Guernsey-Upshur complex, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, backslopes
Slope range: 8 to 15 percent
Size of areas: 5 to 50 acres

Typical Profile

Guernsey

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsurface layer:
9 to 13 inches—dark yellowish brown, friable silt loam
Subsoil:
13 to 18 inches—brown, friable silty clay loam
18 to 50 inches—yellowish brown, mottled, firm clay
Substratum:
50 to 80 inches—mixed yellowish brown, brown, and olive brown, firm clay

Upshur

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 12 inches—reddish brown, firm silty clay
12 to 38 inches—dark reddish brown and dusky red, firm clay
Substratum:
38 to 66 inches—dark reddish brown, firm clay and weak red, firm silty clay loam
Bedrock:
66 to 80 inches—reddish brown, soft shale

Soil Properties and Qualities

Guernsey

Depth class: Deep and very deep (more than 50 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.4 inches
Cation-exchange capacity: 12 to 25 centimoles per kilogram

Upshur

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.9 inches

Composition

Guernsey soil and similar components: 50 percent
Upshur soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Soils that have more silt in the upper part of the subsoil than the Guernsey and Upshur soils
Contrasting components:
• Westmoreland soils on the steeper part of slopes
• Gilpin soils in concave areas on slopes and near the base of slopes
• Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

GuD—Guernsey-Upshur complex, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 80 acres

Typical Profile

Guernsey

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 16 inches—brown, friable silty clay loam
16 to 48 inches—brown and yellowish brown, mottled, firm silty clay and clay
Substratum:
48 to 80 inches—yellowish brown and light olive brown, mottled, firm channery clay

Upshur

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 34 inches—reddish brown, dark reddish brown, and dusky red, firm silty clay and clay
Substratum:
34 to 46 inches—dusky red, firm clay
46 to 68 inches—variegated olive and dark reddish brown, firm silty clay loam
Bedrock:
68 to 80 inches—olive brown, soft, calcareous shale

Soil Properties and Qualities

Guernsey

Depth class: Deep and very deep (more than 50 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.1 inches
Cation-exchange capacity: 12 to 25 centimoles per kilogram

Upshur

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.8 inches

Composition

Guernsey soil and similar components: 50 percent
Upshur soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are loamy in the surface layer and in the upper part of the subsoil

Contrasting components:
- Westmoreland soils on the steeper part of slopes
- Claysville soils in concave areas on slopes and near the base of slopes
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

HaF—Hazleton channery loam, 25 to 70 percent slopes, stony

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 70 percent

Size of areas: 10 to 500 acres
Note: Large stones and boulders on the surface; high content of rock fragments

Typical Profile

Forest litter:
2 inches to 1 inch—leaf litter from deciduous trees
1 inch to 0—partially decomposed leaf litter
Surface layer:
0 to 3 inches—dark brown, very friable channery loam
Subsurface layer:
3 to 8 inches—yellowish brown, friable channery loam
Subsoil:
8 to 25 inches—light yellowish brown, friable channery loam
Substratum:
25 to 42 inches—light yellowish brown, friable extremely flaggy loam
Bedrock:
42 to 44 inches—hard sandstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Sandstone residuum
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 4.3 inches
Cation-exchange capacity: 15 to 30 centimoles per kilogram

Composition

Hazleton soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are moderately deep to bedrock

Contrasting components:
- Sandstone escarpments in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

HbE—Hazleton channery loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 5 or more acres
Note: High content of rock fragments

Typical Profile

Forest litter:
2 inches to 1 inch—leaf litter from deciduous trees
1 inch to 0—partially decomposed leaf litter
Surface layer:
0 to 2 inches—very dark grayish brown, very friable channery loam
Subsurface layer:
2 to 8 inches—yellowish brown, very friable channery loam
Subsoil:
8 to 40 inches—yellowish brown and strong brown, very friable channery loam, very channery loam, and very channery sandy loam
Substratum:
40 to 54 inches—yellowish brown and strong brown, firm very channery loam
Bedrock:
54 to 56 inches—fractured, hard sandstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Sandstone residuum
Native plant cover: Woodland
Flooding: None
Permeability: Rapid
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 5.4 inches
Cation-exchange capacity: 15 to 30 centimoles per kilogram

Composition

Hazleton soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have large stones on the surface

Contrasting components:
- Sandstone escarpments in the more sloping areas
- Dekalb soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

He—Hartshorn silt loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 10 to 100 acres
Note: Many areas cut by stream meanders

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown, friable silt loam
Subsoil:
8 to 14 inches—brown, friable loam
14 to 33 inches—brown and dark yellowish brown, friable gravelly and very gravelly loam; mottled below a depth of 28 inches
Substratum:
33 to 74 inches—dark grayish brown, mottled, friable extremely gravelly and very gravelly loam
74 to 80 inches—dark brown, soft mudstone

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Permeability: Moderately rapid or rapid
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.8 inches
Cation-exchange capacity: 9 to 22 centimoles per kilogram

Composition

Hartshorn soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Kanawha soils in the higher landscape positions
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Ho—Holton silt loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam; mottled in the lower part
Subsoil:
9 to 14 inches—brown, mottled, friable silt loam
14 to 30 inches—grayish brown, mottled, friable silt loam and loam
30 to 36 inches—dark gray, mottled, friable sandy loam
Substratum:
36 to 80 inches—dark gray, loose loamy sand and gravelly loamy sand

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Kind of water table: Apparent
Depth to the water table: 0.5 foot to 1.5 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 2 percent
Potential for frost action: High

Available water capacity: Generally 10.6 inches
Cation-exchange capacity: 5 to 12 centimoles per kilogram

Composition

Holton soil: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Kanawha soils in the higher landscape positions
- Poorly drained soils in closed depressions of old channels
- Chagrin soils in narrow areas adjacent to stream channels

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

KaB—Kanawha loam, 2 to 6 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 2 to 6 percent
Size of areas: 3 to 10 acres

Typical Profile

Surface layer:
0 to 10 inches—brown, very friable loam
Subsoil:
10 to 32 inches—dark yellowish brown, friable loam and clay loam
32 to 40 inches—brown, friable gravelly loam
Substratum:
40 to 80 inches—brown, friable gravelly loam and very gravelly loam

Soil Properties and Qualities

Depth class: Very deep (more than 72 inches)
Drainage class: Well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: Moderate
Available water capacity: Generally 8.0 inches

Composition

Kanawha soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are channery clay loam

Contrasting components:
- Somewhat poorly drained soils near the base of slopes
- Soils that are in drainageways and subject to flooding

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

KeB—Keene silt loam, 1 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 1 to 8 percent
Size of areas: 5 to 15 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 21 inches—yellowish brown, friable silt loam
21 to 53 inches—strong brown and yellowish brown, mottled, firm silty clay loam and silty clay
Substratum:
53 to 70 inches—olive brown and dark yellowish brown, mottled, firm silty clay loam and silty clay
Bedrock:
70 to 80 inches—black, soft coal blossom grading to dark yellowish brown, soft shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Moderately well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 9 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Keene soil: 85 percent
Inclusions: 15 percent

Inclusions

Contrasting components:
- Aaron soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

KeC—Keene silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Landscape position: Summits, shoulders
Slope range: 8 to 15 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 18 inches—dark yellowish brown and yellowish brown, friable silt loam
18 to 46 inches—yellowish brown and strong brown, mottled, firm silty clay loam and silty clay
Substratum:
46 to 57 inches—dark yellowish brown, mottled, firm channery silty clay loam
Bedrock:
57 to 65 inches—olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Moderately well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 8.4 inches
Cation-exchange capacity: 10 to 18 centimoles per kilogram

Composition

Keene soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Gilpin soils on shoulders
- Somewhat poorly drained soils in the less sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

Lc—Lindside silt loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent

Size of areas: 10 to 50 acres

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, very friable silt loam
Subsoil:
8 to 15 inches—brown, friable silt loam
15 to 43 inches—brown and dark yellowish brown, mottled, friable silt loam
Substratum:
43 to 58 inches—brown, mottled, friable silt loam
58 to 80 inches—dark yellowish brown, mottled, friable gravelly loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Kind of water table: Apparent
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderate
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: High
Available water capacity: Generally 11.1 inches
Cation-exchange capacity: 15 to 30 centimoles per kilogram

Composition

Lindside soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Newark soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Ld—Lindside silt loam, frequently flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 10 to 200 acres

Typical Profile

Surface layer:
0 to 10 inches—brown, friable silt loam
Subsoil:
10 to 38 inches—dark yellowish brown, friable silt loam; mottled below a depth of 18 inches
Substratum:
38 to 80 inches—dark yellowish brown, mottled, friable silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 1.5 to 3.0 feet
Permeability: Moderate
Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: High
Available water capacity: Generally 11.1 inches
Cation-exchange capacity: 15 to 30 centimoles per kilogram

Composition

Lindside soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Well drained soils

Contrasting components:
- Newark soils in depressions and drainageways
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section

- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

LoC—Lowell silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Landscape position: Summits
Slope range: 8 to 15 percent
Size of areas: 3 to 40 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 16 inches—brown, firm silty clay loam
16 to 30 inches—yellowish brown, firm silty clay; mottled in the lower part
30 to 58 inches—dark yellowish brown, mottled, firm silty clay and clay
Substratum:
58 to 70 inches—dark yellowish brown, mottled, firm silty clay loam
Bedrock:
70 to 75 inches—dark yellowish brown, soft shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 5.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.9 inches

Composition

Lowell soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have more silt in the upper part of the subsoil

Contrasting components:
- Westmoreland soils in landscape positions similar to those of the Lowell soil
- Somewhat poorly drained soils in concave areas on slopes and near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

LoD—Lowell silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 15 to 20 percent
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 14 inches—brown, firm silty clay loam
14 to 56 inches—yellowish brown and dark yellowish brown, firm silty clay and clay; mottled in the lower part
Substratum:
56 to 70 inches—dark yellowish brown, mottled, firm silty clay loam
Bedrock:
70 to 80 inches—dark yellowish brown, soft shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 5.0 feet
Permeability: Moderately slow

Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.3 inches

Composition

Lowell soil: 85 percent
Inclusions: 15 percent

Inclusions

Contrasting components:
- Westmoreland soils on the steeper part of slopes
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

LuE—Lowell-Upshur complex, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 5 to 100 acres
Note: Uneven slopes; a few landslides

Typical Profile

Lowell

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 12 inches—dark yellowish brown, friable silty clay loam
12 to 40 inches—yellowish brown, firm silty clay and clay
Substratum:
40 to 62 inches—dark yellowish brown and brown, firm silty clay and channery silty clay loam
Bedrock:
62 to 70 inches—olive gray, soft shale

Upshur

Surface layer:
0 to 6 inches—brown, friable silt loam
Subsoil:
6 to 33 inches—dark reddish brown and dusky red, firm silty clay and clay
Substratum:
33 to 68 inches—dark red, firm silty clay loam
Bedrock:
68 to 72 inches—dark red, soft shale

Soil Properties and Qualities

Lowell

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 9.2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Upshur

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.8 inches

Composition

Lowell soil and similar components: 50 percent
Upshur soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Very deep soils

Contrasting components:
- Westmoreland soils on the steeper part of slopes
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

LwC—Lowell-Westmoreland complex, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Summits, shoulders
Slope range: 8 to 15 percent
Size of areas: 3 to 20 acres

Typical Profile

Lowell

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 16 inches—dark yellowish brown, friable silty clay loam
16 to 48 inches—yellowish brown and dark yellowish brown, firm silty clay and clay; mottled below a depth of 40 inches
Substratum:
48 to 66 inches—brown and dark yellowish brown, mottled, firm silty clay and silty clay loam
Bedrock:
66 to 68 inches—light olive brown shale

Westmoreland

Surface layer:
0 to 9 inches—brown, very friable silt loam
Subsoil:
9 to 20 inches—yellowish brown, friable silt loam and silty clay loam
20 to 38 inches—yellowish brown and dark yellowish brown, friable silty clay loam and channery silty clay loam
Substratum:
38 to 45 inches—brown, friable extremely channery loam
Bedrock:
45 to 47 inches—hard siltstone

Soil Properties and Qualities

Lowell

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 5.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.9 inches

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.5 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Lowell soil and similar components: 50 percent
Westmoreland soil and similar components: 35 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils
- Soils that have more silt in the upper part of the subsoil than the Westmoreland soil

Contrasting components:
- Gilpin soils on shoulders
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

LwD—Lowell-Westmoreland complex, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 50 acres

Typical Profile

Lowell

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 14 inches—brown, firm silty clay loam
14 to 43 inches—yellowish brown, brown, and dark yellowish brown, firm silty clay, clay, and silty clay loam; mottled in the lower part
Substratum:
43 to 66 inches—brown and dark yellowish brown, mottled, firm silty clay loam and channery silty clay loam
Bedrock:
66 to 68 inches—olive brown shale

Westmoreland

Surface layer:
0 to 8 inches—brown, very friable silt loam
Subsoil:
8 to 38 inches—dark yellowish brown and yellowish brown, friable silt loam, silty clay loam, and channery clay loam
Substratum:
38 to 48 inches—dark yellowish brown, firm, very channery and extremely channery loam
Bedrock:
48 to 50 inches—siltstone

Soil Properties and Qualities

Lowell

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.5 to 5.0 feet
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.8 inches

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.7 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Lowell soil and similar components: 55 percent
Westmoreland soil and similar components: 30 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Gilpin and Berks soils on shoulders
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section

- “Engineering” and “Soil Properties” sections

LwE—Lowell-Westmoreland complex, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 100 acres

Typical Profile

Lowell

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 12 inches—brown, friable silty clay loam
12 to 42 inches—yellowish brown and dark yellowish brown, firm silty clay and clay
Substratum:
42 to 60 inches—dark yellowish brown, firm silty clay and channery silty clay loam
Bedrock:
60 to 64 inches—olive gray shale

Westmoreland

Surface layer:
0 to 7 inches—brown, very friable silt loam
Subsurface layer:
7 to 12 inches—dark yellowish brown, friable silt loam
Subsoil:
12 to 38 inches—yellowish brown, friable silt loam, channery silty clay loam, and channery clay loam
Substratum:
38 to 54 inches—dark yellowish brown, friable very channery loam
Bedrock:
54 to 56 inches—hard siltstone

Soil Properties and Qualities

Lowell

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 9.2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 7.2 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Lowell soil and similar components: 50 percent
Westmoreland soil and similar components: 30 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Berks and Gilpin soils on shoulders
- Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

LwF—Lowell-Westmoreland complex, 40 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: Lowell—40 to 65 percent; Westmoreland—40 to 70 percent
Size of areas: 20 to 400 acres
Note: Narrow benches that are not so steep

Typical Profile

Lowell

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 16 inches—brown, firm silty clay loam
16 to 46 inches—yellowish brown and dark yellowish brown, firm silty clay and clay
Substratum:
46 to 67 inches—dark yellowish brown, firm silty clay, silty clay loam, and very channery silty clay loam
Bedrock:
67 to 70 inches—dark yellowish brown, soft shale

Westmoreland

Surface layer:
0 to 3 inches—dark brown, very friable silt loam
Subsurface layer:
3 to 6 inches—dark yellowish brown, friable silt loam
Subsoil:
6 to 33 inches—yellowish brown and dark yellowish brown, friable silt loam and channery silt loam
Substratum:
33 to 41 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
41 to 45 inches—hard siltstone

Soil Properties and Qualities

Lowell

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Colluvium and residuum derived from siltstone, shale, and limestone
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Available water capacity: Generally 9.3 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 5.8 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Lowell soil and similar components: 50 percent
Westmoreland soil and similar components: 30 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Berks soils on shoulders
- Somewhat poorly drained soils in concave areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

McA—McGary silt loam, 0 to 3 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 0 to 3 percent
Size of areas: 10 to 100 acres

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam
Subsoil:
9 to 36 inches—yellowish brown and brown, mottled, friable silty clay loam and firm silty clay
Substratum:
36 to 62 inches—brown, mottled, firm silty clay loam
62 to 80 inches—strong brown, mottled, friable stratified silt loam, loam, fine sandy loam, and loamy fine sand

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Lacustrine deposits

Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 0.5 foot to 1.5 feet
Permeability: Slow or very slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 9.3 inches
Cation-exchange capacity: 5 to 14 centimoles per kilogram

Composition

McGary soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Md—Melvin silt loam, ponded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 50 acres
Note: Cattails, reeds, and other hydrophytic vegetation

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, mottled, friable silt loam
Subsoil:
9 to 22 inches—dark grayish brown, mottled, friable silt loam
Substratum:
22 to 38 inches—grayish brown, mottled, friable silt loam
38 to 80 inches—gray, mottled, firm silty clay loam and silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 2 feet above the surface to 0.5 foot below the surface
Permeability: Moderate
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Potential for frost action: High
Available water capacity: Generally 11.9 inches
Cation-exchange capacity: 5 to 10 centimoles per kilogram

Composition

Melvin soil: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Newark soils in narrow areas adjacent to stream channels

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

MeB—Mentor silt loam, 2 to 8 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 2 to 8 percent
Size of areas: 10 to 50 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 42 inches—strong brown, friable silt loam; faintly mottled below a depth of 30 inches
42 to 52 inches—brown, mottled, friable silt loam
Substratum:
52 to 80 inches—dark yellowish brown, mottled, friable silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Glaciolacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Apparent
Depth to the water table: 4 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 11.3 inches
Cation-exchange capacity: 8 to 20 centimoles per kilogram

Composition

Mentor soil and similar components: 95 percent
Inclusions: 5 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Fitchville soils in the more depressional, enclosed areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

MeC—Mentor silt loam, 8 to 15 percent slopes

Setting

Landform: Terraces
Position on the landform: Risers
Slope range: 8 to 15 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 48 inches—brown and yellowish brown, friable silt loam; faintly mottled in the lower part
Substratum:
48 to 80 inches—dark yellowish brown, mottled, friable silt loam with thin lenses of loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Glaciolacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Apparent
Depth to the water table: 4 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 11.1 inches
Cation-exchange capacity: 8 to 20 centimoles per kilogram

Composition

Mentor soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

MeD—Mentor silt loam, 15 to 25 percent slopes

Setting

Landform: Terraces
Position on the landform: Risers
Slope range: 15 to 25 percent
Size of areas: 5 to 15 acres

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 48 inches—dark yellowish brown and brown, friable silt loam
Substratum:
48 to 80 inches—dark yellowish brown, mottled, friable silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Glaciolacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Apparent
Depth to the water table: 4 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 11.1 inches
Cation-exchange capacity: 8 to 20 centimoles per kilogram

Composition

Mentor soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have more sand in the subsoil

Contrasting components:
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

MfB—Mentor-Urban land complex, 2 to 8 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 2 to 8 percent
Size of areas: 50 to 500 acres

Typical Profile

Mentor

Surface layer:
0 to 7 inches—brown, friable silt loam
Subsoil:
7 to 45 inches—brown and yellowish brown, friable silt loam
Substratum:
45 to 80 inches—dark yellowish brown, mottled, friable silt loam

Soil Properties and Qualities

Mentor

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Glaciolacustrine deposits
Flooding: None
Kind of water table: Apparent
Depth to the water table: 4 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 11 inches
Cation-exchange capacity: 8 to 20 centimoles per kilogram

Urban land

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure or alter the soils that identification is not feasible.

Composition

Mentor soil and similar components: 50 percent
Urban land: 40 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Moderately well drained soils
Contrasting components:
• Fitchville soils in the depressional, enclosed areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

MnB—Morristown silty clay loam, 0 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 0 to 8 percent
Size of areas: 10 to 20 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 8 inches—mixed brown, dark brown, and yellowish brown, friable silty clay loam
Substratum:
8 to 80 inches—olive gray and dark gray, very firm very channery silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.9 inches
Cation-exchange capacity: 10 to 25 centimoles per kilogram

Composition

Morristown soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
• Soils that have a surface layer of channery silty clay loam
Contrasting components:
• Soils that have a channery surface layer and are in landscape positions similar to those of the Morristown soil
• Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

MnD—Morristown silty clay loam, 8 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 8 to 25 percent
Size of areas: 10 to 40 acres
Note: Reclaimed strip mine; graded surface; resoiled surface layer

Typical Profile

Surface layer:
0 to 8 inches—mixed brown and yellowish brown, friable silty clay loam
Substratum:
8 to 80 inches—olive gray and dark gray, very firm very channery silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Thin layer of soil material over mine spoil (reclaimed areas)

Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.9 inches
Cation-exchange capacity: 10 to 25 centimoles per kilogram

Composition

Morristown soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have a thicker surface layer

Contrasting components:
- Soils that have a channery surface layer and are in landscape positions similar to those of the Morristown soil
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

MoF—Morristown channery clay loam, 40 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 40 to 70 percent
Size of areas: 20 to 200 acres
Note: Strip mine; ungraded surface; high content of rock fragments

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown, friable channery clay loam
Substratum:
3 to 8 inches—mixed grayish brown and olive, friable very channery clay loam
8 to 80 inches—mixed grayish brown and olive, firm very channery clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Calcareous regolith from surface mining
Native plant cover: Woodland
Flooding: None
Permeability: Moderately slow
Content of organic matter in the surface layer: 0.0 to 0.5 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 4.3 inches
Cation-exchange capacity: 10 to 25 centimoles per kilogram

Composition

Morristown soil: 85 percent
Inclusions: 15 percent

Inclusions

Contrasting components:
- Bethesda soils in landscape positions similar to those of the Morristown soil
- Soils that have a bouldery or stony surface layer and are at the base of slopes
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections
- “Lands Surfaced Mined for Coal” section

Nd—Newark silt loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 40 acres
Note: Abandoned stream channels; shallow drainage ditches in some areas

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown, very friable silt loam
Subsoil:
7 to 38 inches—brown and dark grayish brown, mottled, friable silt loam
Substratum:
38 to 80 inches—dark grayish brown and brown, mottled, friable loam and very friable gravelly loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Kind of water table: Apparent
Depth to the water table: 0.5 foot to 1.5 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: High
Available water capacity: Generally 11.8 inches

Composition

Newark soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Poorly drained soils

Contrasting components:
- Lindside soils in narrow areas adjacent to stream channels

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Ne—Newark silt loam, frequently flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 100 acres
Note: Abandoned stream channels; shallow drainage ditches in some areas

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, friable silt loam
Subsoil:
8 to 35 inches—dark grayish brown and brown, mottled, friable silt loam and silty clay loam
Substratum:
35 to 80 inches—brown, mottled, friable silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 0.5 foot to 1.5 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: High
Available water capacity: Generally 11.7 inches

Composition

Newark soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Poorly drained soils

Contrasting components:
- Nolin soils in narrow areas adjacent to stream channels
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

No—Nolin silt loam, frequently flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains

Slope range: 0 to 3 percent
Size of areas: 10 to 200 acres

Typical Profile

Surface layer:
0 to 11 inches—brown, friable silt loam
Subsoil:
11 to 41 inches—dark yellowish brown, friable silt loam
Substratum:
41 to 80 inches—dark yellowish brown, very friable silt loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 3 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 11.5 inches
Cation-exchange capacity: 6 to 20 centimoles per kilogram

Composition

Nolin soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Newark soils in more depressional, enclosed areas
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

OmB—Omulga silt loam, 1 to 6 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 1 to 6 percent
Size of areas: 5 to 40 acres
Note: Fragipan

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 27 inches—yellowish brown, friable and firm silt loam; mottled below a depth of 23 inches
27 to 60 inches—a fragipan of yellowish brown, mottled, very firm, brittle silt loam
60 to 72 inches—light yellowish brown, mottled, firm silt loam
Substratum:
72 to 80 inches—yellowish brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Loess over silty colluvium or alluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.0 to 3.5 feet
Permeability: Moderate above the fragipan; slow in the fragipan
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 8 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Omulga soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to a fragipan

Contrasting components:
- Mentor soils on slope breaks to the uplands
- Poorly drained soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

OmC—Omulga silt loam, 6 to 15 percent slopes

Setting

Landform: Terraces
Position on the landform: Risers
Slope range: 6 to 15 percent
Size of areas: 5 to 15 acres
Note: Fragipan

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 28 inches—yellowish brown and strong brown, friable and firm silt loam
28 to 46 inches—a fragipan of strong brown, mottled, very firm, brittle silt loam
Substratum:
46 to 80 inches—brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Loess over silty colluvium or alluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2.0 to 3.5 feet
Permeability: Moderate above the fragipan; slow in the fragipan
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Available water capacity: Generally 9.8 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Omulga soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have a stratified loamy to clayey substratum

Contrasting components:
- Mentor soils on slope breaks to the uplands
- Poorly drained soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Or—Orrville silt loam, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, friable silt loam
Subsoil:
8 to 13 inches— brown, mottled, friable silt loam
13 to 36 inches—grayish brown and dark grayish brown, mottled, friable silt loam
Substratum:
36 to 80 inches—dark grayish brown and gray, mottled, very friable silt loam and sandy loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Occasional
Kind of water table: Apparent
Depth to the water table: 1.0 to 2.5 feet
Permeability: Moderate in the solum; moderate or moderately rapid in the underlying material

Content of organic matter in the surface layer: 2 to 4 percent
Potential for frost action: High
Available water capacity: Generally 9.2 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Orrville soil: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Chagrin soils in narrow areas adjacent to stream channels
- Kanawha soils in the higher landscape positions
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

RcC—Richland channery loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 8 to 15 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 4 inches—dark brown, very friable channery loam
Subsurface layer:
4 to 8 inches—brown, friable channery loam
Subsoil:
8 to 38 inches—yellowish brown, friable clay loam and firm channery clay loam
38 to 55 inches—dark yellowish brown, mottled, firm channery clay loam
Substratum:
55 to 80 inches—dark yellowish brown, mottled, firm channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Apparent
Depth to the water table: 3 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.7 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Richland soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Somewhat poorly drained soils in slight depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

RcD—Richland channery loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 10 to 40 acres

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown, friable channery loam

Subsurface layer:
5 to 10 inches—dark yellowish brown, friable channery loam
Subsoil:
10 to 58 inches—yellowish brown and dark yellowish brown, friable channery loam and firm clay loam
Substratum:
58 to 80 inches—dark yellowish brown, mottled, friable channery loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Apparent
Depth to the water table: 3 to 6 feet
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 7.9 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Richland soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Somewhat poorly drained soils in slight depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Sa—Sarahsville silty clay loam, frequently flooded

Setting

Landform: Flood plains (fig. 5)
Position on the landform: Steps of flood plains
Slope range: 0 to 3 percent
Size of areas: 10 to 200 acres
Note: Abandoned stream channels; shallow ditches in some areas

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silty clay loam
Subsoil:
9 to 18 inches—brown, mottled, friable and firm silty clay loam
18 to 42 inches—brown and strong brown, mottled, firm silty clay
Substratum:
42 to 80 inches—reddish brown, mottled, firm silty clay

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Dominant parent material: Alluvium
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 1.0 to 2.5 feet
Permeability: Very slow
Content of organic matter in the surface layer: 2 to 4 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 8.5 inches
Cation-exchange capacity: 17 to 28 centimoles per kilogram

Composition

Sarahsville soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that are not subject to ponding

Contrasting components:
- Nolin soils in narrow areas adjacent to stream channels
- Poorly drained soils in closed depressions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Figure 5.—An area of Sarahsville silty clay loam, frequently flooded, used as hayland. The barn and the higher part of the field in the background are in an area of Allegheny soils.

SeB—Sees silty clay loam, 2 to 6 percent slopes

Setting

Landform: Alluvial fans
Position on the landform: Footslopes
Slope range: 2 to 6 percent
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown, friable silty clay loam
Subsoil:
9 to 15 inches—dark brown, firm silty clay
15 to 60 inches—brown, dark brown, and dark yellowish brown, mottled, firm silty clay
Substratum:
60 to 80 inches—yellowish brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 1.5 to 2.0 feet
Permeability: Slow
Content of organic matter in the surface layer: 2 to 5 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Available water capacity: Generally 9.7 inches

Composition

Sees soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have a thick surface layer

Contrasting components:
- Soils that have slopes of more than 6 percent
- Poorly drained soils in closed depressions and seepy areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Ub—Udorthents, loamy-Rock outcrop complex

Setting

Slope: 2 to 15 percent
Size of areas: 50 to 200 acres

Soil Properties and Qualities

Udorthents

These soils are in areas that have been cut and filled. They have been leveled and are used for crop production. Onsite investigation is needed to determine the limitations affecting any proposed use.

Rock outcrop

The Rock outcrop occurs as areas of exposed bedrock. The bedrock was exposed when all of the overlying soil material was removed.

Composition

Udorthents: 70 percent
Rock outcrop: 20 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Undisturbed soils along the edge of some areas of this map unit

Uc—Udorthents-Pits complex

Setting

Size of areas: 50 to 200 acres

Soil Properties and Qualities

Udorthents

These soils occur in gently sloping to very steep, graded areas or as piles of soil material or broken bedrock from mining operations. They are adjacent to the Pits. Onsite investigation is needed to determine the limitations affecting any proposed use.

Composition

Udorthents: 70 percent
Pits: 20 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Undisturbed soils along the edge of areas of this map unit or in mined areas

Ud—Udorthents-Urban land complex

Setting

Size of areas: 20 to 100 acres

Soil Properties and Qualities

Udorthents

These soils are in cut and fill areas adjacent to highways. Onsite investigation is needed to determine the limitations affecting any proposed use.

Urban land

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure or alter the soils that identification is not feasible.

Composition

Udorthents: 60 percent
Urban land: 35 percent
Inclusions: 5 percent

Inclusions

Similar components:
- Areas of excess fill

Contrasting components:
- Escarpments near the margins of this map unit
- Borrow pits

UpB—Upshur silt loam, 2 to 6 percent slopes

Setting

Landform: Hills (fig. 6)
Position on the landform: Summits
Slope range: 2 to 6 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—dark brown, friable silt loam
Subsoil:
8 to 39 inches—dark red and dusky red, firm silty clay
39 to 45 inches—variegated dusky red and light olive brown, firm silty clay loam
Substratum:
45 to 72 inches—variegated light olive brown, olive, reddish brown, and brownish yellow, firm silty clay loam
Bedrock:
72 to 77 inches—light olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: High

Figure 6.—A hayfield in an area of Upshur silt loam, 2 to 6 percent slopes. This soil is in pasture and suitability group F-5 because it has a high content of clay in the subsoil.

Potential for frost action: Moderate
Available water capacity: Generally 6.9 inches

Composition

Upshur soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils
- Soils that have a yellowish brown subsoil

Contrasting components:
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

UrC—Upshur silty clay loam, 6 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 6 to 15 percent
Size of areas: 3 to 20 acres

Typical Profile

Surface layer:
0 to 7 inches—dark brown, friable silty clay loam
Subsoil:
7 to 34 inches—reddish brown and dusky red, firm silty clay and clay
Substratum:
34 to 66 inches—dark red, weak red, and olive, firm clay and silty clay loam
Bedrock:
66 to 72 inches—light olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.8 inches

Composition

Upshur soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have a brown surface layer
- Soils that have more silt and less clay in the upper part of the subsoil

Contrasting components:
- Gilpin soils along the edge of some areas of this map unit
- Severely eroded soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

UrD—Upshur silty clay loam, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits, backslopes
Slope range: 15 to 25 percent
Size of areas: 5 to 60 acres

Typical Profile

Surface layer:
0 to 7 inches—dark brown, friable silty clay loam
Subsoil:
7 to 12 inches—dark reddish brown and dusky red, firm silty clay
12 to 32 inches—dusky red, firm clay
Substratum:
32 to 56 inches—dark reddish brown and dark red, firm silty clay loam
Bedrock:
56 to 60 inches—olive, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 6.4 inches

Composition

Upshur soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have more silt in the surface layer and upper part of the subsoil

Contrasting components:
- Gilpin soils along the edge of some areas of this map unit
- Severely eroded soils in the more sloping areas
- Somewhat poorly drained soils in concave areas on slopes and near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

UrD3—Upshur silty clay loam, 15 to 25 percent slopes, severely eroded

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 15 to 25 percent
Size of areas: 2 to 10 acres
Note: Original surface layer removed by erosion

Typical Profile

Surface layer:
0 to 5 inches—reddish brown, firm silty clay loam
Subsoil:
5 to 28 inches—reddish brown, firm clay
Substratum:
28 to 46 inches—dark red, firm silty clay loam
Bedrock:
46 to 50 inches—dusky red, soft shale

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Shale residuum
Native plant cover: Woodland
Flooding: None
Permeability: Slow
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 5.3 inches

Composition

Upshur soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are only slightly eroded

Contrasting components:
- Gilpin soils on shoulders
- Somewhat poorly drained soils in concave areas on slopes and near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

VaD2—Vandalia silty clay loam, 15 to 25 percent slopes, eroded

Setting

Landform: Hills
Position on the landform: Footslopes
Slope range: 15 to 25 percent
Size of areas: 10 to 50 acres
Note: Landslides; uneven slopes

Typical Profile

Surface layer:
0 to 7 inches—dark brown, friable silty clay loam
Subsoil:
7 to 31 inches—reddish brown and dark reddish brown, firm silty clay loam and silty clay
31 to 64 inches—reddish brown and dark reddish brown, firm clay
Substratum:
64 to 80 inches—dark reddish brown and reddish brown, firm clay

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Colluvium
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Moderately slow or slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 8.2 inches

Composition

Vandalia soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that have a stony surface layer

Contrasting components:
- Claysville soils in concave areas on slopes and near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

VtC—Vincent silt loam, 6 to 15 percent slopes

Setting

Landform: Terraces
Position on the landform: Risers
Slope range: 6 to 15 percent
Size of areas: 3 to 15 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 22 inches—reddish brown, friable silty clay loam
22 to 62 inches—reddish brown, firm silty clay; mottled in the lower part
Substratum:
62 to 80 inches—brown and reddish brown, mottled, firm silty clay loam

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 9.2 inches
Cation-exchange capacity: 12 to 20 centimoles per kilogram

Composition

Vincent soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that have more silt in the upper part of the subsoil
- Moderately well drained soils

Contrasting components:
- Soils that have a sandy subsoil and are in landscape positions similar to those of the Vincent soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

VwB—Vincent silty clay loam, 2 to 6 percent slopes

Setting

Landform: Terraces
Position on the landform: Treads
Slope range: 2 to 6 percent
Size of areas: 2 to 30 acres

Typical Profile

Surface layer:
0 to 10 inches—brown, friable silty clay loam
Subsoil:
10 to 25 inches—reddish brown, firm silty clay loam and dark reddish brown, firm silty clay
25 to 53 inches—dark reddish brown and yellowish red, mottled, firm silty clay
Substratum:
53 to 80 inches—reddish brown, mottled, firm silty clay

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Well drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 4 to 6 feet
Permeability: Slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 9.1 inches
Cation-exchange capacity: 13 to 30 centimoles per kilogram

Composition

Vincent soil: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Soils that are subject to flooding and in the lower landscape positions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

W—Water

This map unit consists of areas inundated with water for most of the year. It generally includes rivers, lakes, and ponds. Individual areas of this map unit range from 4 to 20 acres in size.

No interpretations are given for this map unit.

WhB—Wellston silt loam, 2 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 8 percent
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 9 inches—brown and dark brown, very friable silt loam
Subsoil:
9 to 37 inches—dark yellowish brown, friable silt loam
37 to 43 inches—yellowish brown, firm clay loam
Substratum:
43 to 47 inches—yellowish brown, friable loam
Bedrock:
47 to 72 inches—light olive brown, soft sandstone
72 to 74 inches—hard sandstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from sandstone, siltstone, and shale

Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 8.6 inches
Cation-exchange capacity: 8 to 16 centimoles per kilogram

Composition

Wellston soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Dekalb soils on shoulders
- Zanesville soils in the flatter areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WhC—Wellston silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 4 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, very friable silt loam
Subsoil:
8 to 36 inches—dark yellowish brown and yellowish brown, friable silt loam
36 to 42 inches—yellowish brown, friable channery loam
Substratum:
42 to 52 inches—yellowish brown, friable very channery loam
Bedrock:
52 to 57 inches—light olive brown, soft siltstone
57 to 58 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from sandstone, siltstone, and shale
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 3 percent
Potential for frost action: High
Available water capacity: Generally 9.2 inches
Cation-exchange capacity: 8 to 16 centimoles per kilogram

Composition

Wellston soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WkB—Westmore silt loam, 2 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 8 percent
Size of areas: 2 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam

Subsoil:
8 to 26 inches—brown and yellowish brown, friable silt loam and firm silty clay loam
26 to 54 inches—brown and dark yellowish brown, firm silty clay loam and clay
Substratum:
54 to 64 inches—variegated strong brown and light olive brown, firm silty clay loam
Bedrock:
64 to 72 inches—olive, soft limestone

Soil Properties and Qualities

Depth class: Deep and very deep (48 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate in the silty material; moderately slow or slow in the underlying material
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 9.3 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Westmore soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils
- Soils that have more clay in the subsoil

Contrasting components:
- Lowell soils in landscape positions similar to those of the Westmore soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WkC2—Westmore silt loam, 8 to 15 percent slopes, eroded

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 5 to 30 acres
Note: Partial loss of surface layer

Typical Profile

Surface layer:
0 to 8 inches—brown, very friable silt loam
Subsoil:
8 to 26 inches—brown and yellowish brown, friable silt loam and firm silty clay loam
26 to 54 inches—brown and dark yellowish brown, firm silty clay loam and clay
Substratum:
54 to 64 inches—variegated strong brown and light olive brown, firm silty clay loam
Bedrock:
64 to 72 inches—olive, soft limestone
72 to 74 inches—hard limestone

Soil Properties and Qualities

Depth class: Deep and very deep (48 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate in the silty material; moderately slow or slow in the underlying material
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: High
Available water capacity: Generally 9.3 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Westmore soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that have a redder subsoil

Contrasting components:
- Lowell soils in landscape positions similar to those of the Westmore soil

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WmC—Westmoreland silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 3 to 20 acres
Note: Smooth slopes

Typical Profile

Surface layer:
0 to 8 inches—brown, very friable silt loam
Subsoil:
8 to 20 inches—dark yellowish brown, friable silt loam
20 to 39 inches—yellowish brown, friable channery and very channery clay loam
Substratum:
39 to 44 inches—light olive brown, firm extremely channery clay loam
Bedrock:
44 to 50 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.5 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Westmoreland soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are moderately deep to bedrock

Contrasting components:
- Berks soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WmD—Westmoreland silt loam, 15 to 25 percent slopes

Setting

Landform: Hills
Slope range: 15 to 25 percent
Size of areas: 10 to 40 acres
Note: Smooth slopes

Typical Profile

Surface layer:
0 to 7 inches—brown, very friable silt loam
Subsoil:
7 to 18 inches—yellowish brown, friable silt loam
18 to 35 inches—yellowish brown, friable channery and very channery clay loam
Substratum:
35 to 40 inches—dark yellowish brown, firm extremely channery clay loam
Bedrock:
40 to 45 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None

Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 5.9 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Westmoreland soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are very deep to bedrock

Contrasting components:
- Berks soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

WmE—Westmoreland silt loam, 25 to 40 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 25 to 40 percent
Size of areas: 10 to 200 acres

Typical Profile

Forest litter:
0.5 inch to 0—decomposed leaf litter from deciduous trees
Surface layer:
0 to 6 inches—brown, very friable silt loam
Subsoil:
6 to 34 inches—yellowish brown, friable silt loam and channery silt loam
Substratum:
34 to 42 inches—yellowish brown, friable extremely channery loam
Bedrock:
42 to 47 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale, siltstone, and sandstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 5.9 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Composition

Westmoreland soil and similar components: 80 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are very deep to bedrock

Contrasting components:
- Berks soils on the steeper part of slopes
- Soils that have boulders on the surface and are near the base of slopes

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

WnF—Westmoreland-Berks complex, 40 to 70 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 40 to 70 percent
Size of areas: 20 to 500 acres
Note: High content of rock fragments

Typical Profile

Westmoreland

Forest litter:
0.5 inch to 0—decomposed leaf litter from deciduous trees
Surface layer:
0 to 2 inches—dark brown, very friable silt loam
Subsurface layer:
2 to 6 inches—dark yellowish brown, friable silt loam
Subsoil:
6 to 37 inches—yellowish brown and dark yellowish brown, friable silt loam and channery silt loam
Substratum:
37 to 46 inches—dark yellowish brown, friable extremely channery silt loam
Bedrock:
46 to 48 inches—hard siltstone

Berks

Surface layer:
0 to 2 inches—very dark grayish brown, very friable channery silt loam
Subsurface layer:
2 to 5 inches—mixed yellowish brown and brown, friable channery silt loam
Subsoil:
5 to 23 inches—yellowish brown, friable very channery and extremely channery silt loam
Substratum:
23 to 27 inches—yellowish brown, friable extremely channery silt loam
Bedrock:
27 to 31 inches—olive brown, fractured siltstone

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Native plant cover: Woodland
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.5 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Berks

Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Dominant parent material: Residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate or moderately rapid
Content of organic matter in the surface layer: 2 to 4 percent
Available water capacity: Generally 2 inches
Cation-exchange capacity: 5 to 15 centimoles per kilogram

Composition

Westmoreland soil and similar components: 55 percent
Berks soil and similar components: 30 percent
Inclusions: 15 percent

Inclusions

Similar components:
• Soils that are very deep to bedrock
Contrasting components:
• Guernsey soils in the less sloping areas
• Areas of rock outcrop in the more sloping landscape positions

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WrC—Westmoreland-Urban land complex, 6 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 6 to 15 percent
Size of areas: 50 to 300 acres

Typical Profile

Westmoreland

Surface layer:
0 to 9 inches—brown, very friable silt loam
Subsoil:
9 to 20 inches—dark yellowish brown, friable silt loam

20 to 40 inches—yellowish brown, friable channery and very channery clay loam
Substratum:
40 to 45 inches—light olive brown, firm extremely channery clay loam
Bedrock:
45 to 50 inches—hard siltstone

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.7 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Urban land

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure or alter the soils that identification is not feasible.

Composition

Westmoreland soil and similar components: 45 percent
Urban land: 35 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that have more silt in the subsoil than the Westmoreland soil
- Soils that have fewer rock fragments in the subsoil than the Westmoreland soil

Contrasting components:
- Gilpin soils on shoulders
- Zanesville soils in the flatter areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

WrD—Westmoreland-Urban land complex, 15 to 25 percent slopes

Setting

Landform: Hills
Position on the landform: Backslopes
Slope range: 15 to 25 percent
Size of areas: 50 to 300 acres

Typical Profile

Westmoreland

Surface layer:
0 to 8 inches—brown, very friable silt loam
Subsoil:
8 to 18 inches—yellowish brown, friable silt loam
18 to 36 inches—yellowish brown, friable channery and very channery clay loam
Substratum:
36 to 42 inches—dark yellowish brown, firm extremely channery silty clay loam
Bedrock:
42 to 47 inches—hard siltstone

Soil Properties and Qualities

Westmoreland

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Flooding: None
Permeability: Moderate
Content of organic matter in the surface layer: 1 to 4 percent
Potential for frost action: Moderate
Available water capacity: Generally 6.1 inches
Cation-exchange capacity: 15 to 25 centimoles per kilogram

Urban land

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure or alter the soils that identification is not feasible.

Composition

Westmoreland soil and similar components: 45 percent
Urban land: 35 percent
Inclusions: 20 percent

Inclusions

Similar components:
- Soils that are moderately deep to bedrock

Contrasting components:
- Berks soils on shoulders
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

WtB—Woodsfield silt loam, 1 to 8 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 1 to 8 percent
Size of areas: 2 to 20 acres

Typical Profile

Surface layer:
0 to 9 inches—brown, friable silt loam
Subsoil:
9 to 20 inches—yellowish brown and strong brown, friable silt loam
20 to 43 inches—dark reddish brown, firm clay
Substratum:
43 to 61 inches—dark reddish brown, firm silty clay loam
Bedrock:
61 to 65 inches—olive, soft mudstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate in the upper part of the solum; slow in the lower part
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 8.6 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Woodsfield soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Upshur soils in the more sloping areas

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- "Woodland" section
- "Crops and Pasture" section
- "Recreation" section
- "Wildlife Habitat" section
- "Engineering" and "Soil Properties" sections

WtC—Woodsfield silt loam, 8 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 8 to 15 percent
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam
Subsoil:
8 to 18 inches—yellowish brown and strong brown, friable silt loam
18 to 44 inches—reddish brown, firm silty clay and clay
Substratum:
44 to 56 inches—olive, firm silty clay loam
Bedrock:
56 to 62 inches—olive brown, soft siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 72 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from shale and siltstone
Native plant cover: Woodland
Flooding: None
Permeability: Moderate in the upper part of the solum; slow in the lower part

Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 8.1 inches
Cation-exchange capacity: 10 to 20 centimoles per kilogram

Composition

Woodsfield soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Moderately well drained soils

Contrasting components:
- Upshur soils in the more sloping areas
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

ZnB—Zanesville silt loam, 2 to 6 percent slopes

Setting

Landform: Hills
Position on the landform: Summits
Slope range: 2 to 6 percent
Size of areas: 5 to 40 acres
Note: Fragipan

Typical Profile

Surface layer:
0 to 11 inches—brown, friable silt loam
Subsoil:
11 to 32 inches—yellowish brown, friable silt loam and firm silty clay loam; mottled below a depth of 24 inches
32 to 58 inches—a fragipan of yellowish brown, very firm, brittle silty clay loam
Bedrock:
58 to 67 inches—light olive brown, soft siltstone
67 to 68 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from sandstone, siltstone, and shale
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2 to 3 feet
Permeability: Moderate above the fragipan; slow in the fragipan
Content of organic matter in the surface layer: 1 to 2 percent
Potential for frost action: High
Available water capacity: Generally 9 inches

Composition

Zanesville soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to a fragipan

Contrasting components:
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

ZnC—Zanesville silt loam, 6 to 15 percent slopes

Setting

Landform: Hills
Position on the landform: Shoulders, summits
Slope range: 6 to 15 percent
Size of areas: 5 to 20 acres
Note: Fragipan

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam

Subsoil:
8 to 25 inches—yellowish brown, friable silt loam
25 to 43 inches—a fragipan of strong brown, very firm, brittle silty clay loam
43 to 50 inches—yellowish brown, firm silty clay loam
Substratum:
50 to 55 inches—yellowish brown, firm channery silty clay loam
Bedrock:
55 to 58 inches—olive gray, soft siltstone
58 to 60 inches—hard siltstone

Soil Properties and Qualities

Depth class: Deep and very deep (40 to 80 inches)
Drainage class: Well drained
Dominant parent material: Loess and residuum derived from sandstone, siltstone, and shale
Native plant cover: Woodland
Flooding: None
Kind of water table: Perched
Depth to the water table: 2 to 3 feet
Permeability: Moderate above the fragipan; slow in fragipan
Content of organic matter in the surface layer: 1 to 2 percent
Potential for frost action: High
Available water capacity: Generally 8 inches

Composition

Zanesville soil and similar components: 85 percent
Inclusions: 15 percent

Inclusions

Similar components:
- Soils that are deep to a fragipan

Contrasting components:
- Gilpin soils on shoulders

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Zp—Zipp silty clay loam, frequently flooded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, mottled, friable silty clay loam
Subsoil:
8 to 46 inches—gray and dark gray, mottled, firm silty clay
Substratum:
46 to 80 inches—gray, mottled, firm silty clay

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Very poorly drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 0.5 to 1.0 foot
Permeability: Slow or very slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate
Available water capacity: Generally 7.5 inches
Cation-exchange capacity: 12 to 30 centimoles per kilogram

Composition

Zipp soil and similar components: 90 percent
Inclusions: 10 percent

Inclusions

Similar components:
- Soils that are ponded year round

Contrasting components:
- Sarahsville soils on slight rises

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Zs—Zipp silty clay loam, ponded

Setting

Landform: Flood plains
Position on the landform: Steps of flood plains
Slope range: 0 to 2 percent
Size of areas: 5 to 75 acres
Note: Soil ponded for most of the year

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown, mottled, friable silty clay loam
Subsoil:
8 to 48 inches—gray, mottled, firm silty clay
Substratum:
48 to 80 inches—gray, mottled, firm silty clay

Soil Properties and Qualities

Depth class: Very deep (more than 60 inches)
Drainage class: Very poorly drained
Dominant parent material: Lacustrine deposits
Native plant cover: Woodland
Flooding: Frequent
Kind of water table: Apparent
Depth to the water table: 2.0 feet above the surface to 0.5 foot below the surface (fig. 7)
Permeability: Slow or very slow
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Potential for frost action: Moderate

Figure 7.—A typical area of Zipp silty clay loam, ponded.

Available water capacity: Generally 7.6 inches
Cation-exchange capacity: 12 to 30 centimoles per kilogram

Composition

Zipp soil: 90 percent
Inclusions: 10 percent

Inclusions

Contrasting components:
- Sarahsville soils on slight rises

Management

For general and detailed information about managing this map unit, see the following sections in this publication:

- “Woodland” section
- “Crops and Pasture” section
- “Recreation” section
- “Wildlife Habitat” section
- “Engineering” and “Soil Properties” sections

Use and Management of the Soils

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

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The soils in the survey area are assigned to various interpretive groups in some of the tables. The groups for each map unit also are shown under the heading "Interpretive Groups," which follows the tables at the back of this survey.

Crops and Pasture

Steve Hibinger, district conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

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

In 1990, about 143,000 acres, or 42 percent of the total acreage in Guernsey County, was used as farmland. This acreage included about 40,300 acres of cropland, of which 5,500 acres was used for corn, 33,700 acres for hay, and 1,100 acres for oats (Ohio Agricultural Statistics Service 1991).

The paragraphs that follow describe the main concerns in managing the cropland and pasture in the county. These concerns are water erosion, soil drainage, droughtiness, soil fertility, and tilth.

Water erosion is the major management concern on most of the cropland and some of the pasture in Guernsey County because it can result in the removal of the surface layer of soils. The surface layer has received most of the residue from the native and cultivated plants that have grown on the soil in the past. As a result of the addition of this residue, the surface layer is darker and has a higher organic matter content than the rest of the soil. Because of its higher organic matter content, the surface layer is capable of storing and releasing more available water and plant nutrients than other layers of the soil; therefore, loss of the surface layer considerably reduces the nutrient-supplying capacity of the soil.

The subsoil of the Aaron, Elba, and Guernsey soils and of many other soils in the county has a higher clay content than the surface layer. If the surface layer is eroded, the plow layer contains a considerable amount of the more clayey subsoil material. As a result, tillage is difficult, tilth is poor, and a seedbed cannot be easily prepared.

Erosion also reduces the depth to root-restricting layers, thus reducing the volume of soil available for root development. The growth of roots is restricted by a fragipan in the Clarksburg, Omulga, and Zanesville soils and by the bedrock underlying the moderately deep Berks, Gilpin, and Dekalb soils.

Measures that help to control erosion also help to maintain the productive capacity of the soil. These measures include conservation tillage systems, contour farming, contour stripcropping, a cropping sequence that includes forage crops, crop residue management, and grassed waterways.

No-till farming or another system of conservation tillage that leaves crop residue on the surface is effective in controlling erosion on most of the soils in the county. These systems help to control erosion by reducing the amount of soil exposed to the impact of raindrops and the flow of runoff. They are suitable on both smooth and irregular slopes. In areas of some of the wetter soils, such as those in the Fitchville series, a good drainage system is needed if conservation tillage is to be effective. Contour farming, contour stripcropping, and grassed waterways can be used in conjunction with a conservation tillage system to further reduce the susceptibility of the soils to erosion.

Contour farming, or tilling across the slope, generally is quite effective in reducing the hazard of erosion in gently sloping areas where slope ranges from 2 to 8 percent. The gently sloping Wellston and Zanesville soils, which commonly have uniform slopes, generally can be easily tilled across the slope; however, the gently sloping Claysville soils generally cannot be uniformly tilled across the slope because they are on short, irregular slopes that are not conducive to contour farming.

Contour stripcropping has been used extensively in the county for many years, mainly on soils that have rather uniform slopes ranging from 2 to 25 percent. It is used in many areas of the gently sloping to moderately steep Gilpin, Lowell, and Westmoreland soils, which commonly are on smooth, uniform slopes. It is not practical in areas where slopes are short and irregular, such as in many areas of the sloping and moderately steep Brookside and Vandalia soils.

Management of crop residue and a crop rotation that includes forage crops are equally applicable to smooth, irregular slopes. Returning crop residue to the soil helps to control erosion by reducing the impact of raindrops on the surface. Close-growing forage crops help to control erosion by reducing the runoff rate. The applicability of forage as an erosion-control measure depends to a large extent on the type of farming enterprise that is involved.

Grassed waterways can be established in low areas where runoff tends to collect and flow, especially if the areas are elongated. Gullies can form in these areas if water flows rapidly across a bare surface. Establishing grassed waterways in these gullies helps to control erosion. A subsurface drainage system can carry off the normal flow of runoff in these areas, and grassed waterways help to collect and remove any excess surface water. In addition to preventing the formation of gullies, the grassed waterways help to prevent flooding and overwashing of crops.

Erosion is also a hazard in pastured areas of the county. Many permanent pastures are in moderately steep or steep areas where runoff is very rapid. The key to erosion control in pastured areas is maintaining a thick cover of sod. Overgrazing damages this cover and thus increases soil loss. Applying fertilizer and lime and mowing to control weeds tend to increase the density of the stand and thus help to control erosion. Many of the pastures in Guernsey County are on slopes that can be used occasionally for cultivated crops. Special care is needed to prevent excessive erosion when these slopes are cultivated. No-till methods of pasture seeding permit resodding with a minimum of soil loss.

Soil drainage is a significant management problem on some soils in Guernsey County. Most plant roots do not grow well without oxygen. Very little oxygen is available in soils that are saturated with water. Wet soils remain cold in spring. They warm up earlier if excess water is removed. Wetness also limits the use of farm machinery. Livestock compact wet, soft soils, damaging pasture plants.

Areas used for alfalfa or for small grain crops in winter require a better surface and subsurface drainage system than is needed in areas used for corn or soybeans. Very few soybeans are grown in the county. Late-planted soybeans are grown in some areas that are not drained adequately for most other crops. Most of the soils on terraces and flood plains are suited to soybeans.

Many of the naturally wet soils are highly productive when adequately drained. Their natural wetness has reduced or prevented the oxidation of organic matter and the leaching of carbonates. As a result, these soils are higher in natural fertility than the better drained soils nearby.

Each soil series in the county is assigned to a drainage class; for example, Wellston soils are well drained, Fitchville soils are somewhat poorly drained, and Zipp soils are very poorly drained. The drainage classes are based on the depth to and duration of the seasonal high water table during the wettest part of the year, generally late winter or early spring. The classes are determined by the depth to the water table under natural conditions and do not relate to the adequacy of a drainage system.

Many of the soils in Guernsey County are permeable enough to be adequately drained by properly designed and installed subsurface drainage systems if good outlets are available. In some areas, however, suitable outlets are not available. In these areas open ditches are generally constructed to provide outlets. Measures that maintain the ditches are needed. Management of drainage systems may require special permits and extra planning to ensure compliance with regulations involving wetlands.

Droughtiness is not a major management concern in areas used as cropland in the county. The more droughty soils are those in the Berks, Dekalb, Barkcamp, Bethesda, Fairpoint, Morristown, and Enoch series. Except for the Berks and Dekalb soils, these droughty soils generally are not used as cropland. Occasional shortages of available moisture occur in many soils. The shortages are most common in soils that have a limited depth to bedrock, such as the Dekalb and Gilpin soils, or in soils that have a fragipan, such as the Clarksburg, Omulga, and Zanesville soils. Many of the more droughty soils are well suited to no-till or other systems of conservation tillage that leave crop residue on the surface. The crop residue conserves moisture for crop use. Some soils can be productive if they are irrigated.

The effects of drought are more evident in pastures than in cultivated fields. In most of the pastured areas, grasses on moderately steep or steep, south-facing slopes grow very slowly during the dry part of the summer. Their growth rates can be increased in areas of these soils by renovating the pasture and planting drought-tolerant species, such as alfalfa and orchardgrass.

Soil fertility is affected by the content of plant nutrients, lime, and organic matter in the soil. Measures that maintain fertility are needed on all of the soils in the county, regardless of other problems. The productivity of a soil depends on the soil’s natural fertility, past use and management, and long-term fertility history. These factors differ widely from farm to farm, even on the same soil. A regular program of soil testing is needed to determine the amount and kind of fertilizer to be applied.

The amount and kind of fertilizer to be applied can differ widely among soil types. Soils that have a high content of clay and of organic matter, such as the Claysville soils, have a high capacity to store and release plant nutrients, whereas soils that have a low content of clay and a moderately low content of organic matter, such as the Dekalb and Berks soils, have a low capacity. If the soils are very acid, much of the phosphate fertilizer applied combines with iron and aluminum and is not available to plants. Earthworms, which incorporate plant residue into soils, are more active if soil reaction is nearly neutral. Their activity results in better soil structure and a higher content of organic matter.

Additions of organic material are very beneficial on most of the soils in the county. Organic matter, which is a very good source of nitrogen, improves soil structure and tilth. It also has the capacity to store and release plant nutrients. As a result, additions of organic matter improve the ability of the soils to provide nutrients to crops. These additions are especially effective in restoring the productivity of soils in severely eroded spots.

Tilth is an important factor affecting the germination of seeds and the infiltration of water into soil. Soils that have good tilth are granular and porous.

Most of the soils used as cropland in Guernsey County have a surface layer of silt loam that has a moderate or moderately low content of organic matter. The content of clay in this layer is about 20 to 25 percent and that of sand is about 15 to 25 percent. The clay does not cause excessive stickiness, but because of the high content of silt and relatively weak structure, a crust forms on the surface after periods of heavy rainfall. This crust, which is hard when dry, reduces the rate of water infiltration, increases the runoff rate, and hinders the emergence of seedlings.

The soils in the county are not suited to plowing in the fall because of the increased susceptibility to crusting and erosion. Leaving crop residue on the surface helps to prevent excessive crusting. Regular additions of crop residue, manure, and other organic material also reduce the susceptibility of the soils to crusting and improve soil structure.

Soils that have a high content of clay in the surface layer, such as Elba and Upshur silty clay loams, are sticky when wet. If these soils are worked when they are too wet, soil particles stick together and form into clods. The surface layer of eroded soils is more susceptible to clodding than that of uneroded soils because it has a slightly higher content of clay. Additions of organic material help to maintain or improve tilth.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 5. The main concerns affecting the management of cropland are controlling erosion, removing excess water, minimizing surface crusting and compaction, conserving moisture, and maintaining soil tilth, organic matter content, and fertility.

Generally, a combination of several practices is needed to control erosion. Conservation tillage, stripcropping, field windbreaks, tall grass barriers, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Surface or subsurface drainage systems, or both, are used to remove excess water, lower the seasonal high water table, and minimize ponding.

A surface crust forms in tilled areas after hard rains and may inhibit seedling emergence. Regular additions of crop residue, manure, or other organic materials improve soil structure and minimize crusting.

Tilling within the proper range in moisture content minimizes surface compaction.

Conserving moisture consists primarily of reducing the evaporation and runoff rates and increasing the rate of water infiltration. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Measures that are effective in maintaining soil tilth, organic matter content, and fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *flooding, depth to rock, limited rooting depth, slope,* and *limited organic matter content*.

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers crop residue and leaves a rough or ridged surface helps to prevent removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Depth to rock.—Rooting depth and available moisture may be limited by rock within a depth of 40 inches.

Limited rooting depth.—Reclaimed soils in strip-mined areas have dense layers in the subsoil that restrict root penetration. The soils are best suited to shallow-rooted crops.

Slope.—Unless conservation farming practices are applied, water erosion may be accelerated in areas where the slope is more than 15 percent. The selection of crops and the use of equipment are limited. Cultivation may be restricted.

Limited organic matter content.—Many soils that have a light colored surface layer have a low or moderately low organic matter content and weak or moderate structure. Regularly adding crop residue, manure, and other organic material to the soil helps to maintain or improve the content of organic matter and soil structure.

Additional limitations and hazards are as follows:

Excessive permeability.—This limitation causes deep leaching of nutrients and pesticides. The capacity of the soil to retain moisture for plant use is poor. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Potential for ground-water pollution.—The pollution of ground water is a hazard in areas of soils that are excessively permeable or have hard bedrock, a fragipan, or a water table within the profile.

Limited available water capacity, poor or fair tilth, restricted permeability, and surface crusting.—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Part of original surface layer removed by erosion.—More than 25 percent of the original surface layer has been removed by erosion. In cultivated areas the existing surface layer consists of a mixture of the original surface layer and part of the subsurface layer or subsoil.

Wind erosion.—Sandy windblown material from the soil surface can damage young plants.

Frost heave.—Frost heaving can damage deep-rooted legumes and some small grain crops.

Easily eroded.—Some soils are more susceptible to erosion, as shown by their high K value. When these soils are used for crop production, they can be quickly degraded through loss of topsoil.

Seasonal high water table.—The choice of crops may be limited and the stand and vigor of crop species may be reduced by the seasonal high water table, especially if it is at a depth of less than 40 inches. The seasonal high water table can also have an adverse effect on pesticide and herbicide movement in the soil, leading to possible ground-water contamination.

Surface compaction.—If the surface of the soil is compacted, pore space is decreased, which reduces the infiltration rate, permeability, and the extent of the soil surface area available for cation exchange. As a result, seed germination and seedling vigor may be reduced.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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

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

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals 1 through 8. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

Class 7 soils have very severe limitations that make them unsuitable for cultivation.

Class 8 soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a letter, *E, W, S,* or *C,* to the class numeral, for example, 2E. The letter *E* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *W* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *S* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *C,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *W, S,* or *C* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of map units in this survey area is given in table 6.

Pasture and Hayland Suitability and Production

Information in table 6 and in the "Interpretive Groups" section can be used by farmers, farm managers, conservationists, and extension agents in planning the use of soil for pasture and hay crops. The estimated yields for four common hay and pasture crops are given in table 6, and the pasture and hayland suitability groups assigned to the soils are listed in the "Interpretive Groups" section. The suitability groups are based on soil characteristics and limitations. Soils assigned the same suitability group symbol require the same general management and have about the same potential productivity. Soils on slopes of more than 25 percent generally are unsuited to hay and those on slopes of more than 40 percent generally are unsuited to pasture and hay. A brief discussion of the groups follows:

Group A consists of soils that have few limitations affecting the management and growth of climatically adapted plants. *Group A-1* consists of deep and very deep, well drained and moderately well drained soils. These soils have a surface layer of silt loam, silty clay loam, loam, or channery loam. The available water capacity is moderate or high. Plants on these soils respond favorably to additions of lime. Frequent applications of lime may be needed to help maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes. Slope ranges from 1 to 15 percent.

Group A-2 consists of deep and very deep, well drained and moderately well drained soils. These soils have a surface layer of silt loam, silty clay loam, loam, or channery loam. The available water capacity is moderate or high. Plants on these soils respond favorably to additions of lime. Frequent applications of lime may be needed to help maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes. Slope ranges from 15 to 25 percent. It limits mechanically applying lime and fertilizer and clipping, mowing, and spraying for weed control. Erosion is a hazard if pastures are overgrazed or cultivated for reseeding. These soils are unsuited to no-till seeding.

Group A-3 consists of deep and very deep, well drained and moderately well drained soils. These soils have a surface layer of silt loam or silty clay loam. The available water capacity is moderate. Slope ranges from 25 to 40 percent. These soils are generally unsuited to hay and are poorly suited to pasture.

Group A-4 consists of moderately deep, well drained, droughty soils that have stones on the surface. The stones are extensive enough to preclude the use of hay making equipment. These soils have a surface layer of channery loam. The available water capacity is very low. Slope ranges from 25 to 70 percent.

Group A-5 consists of very deep, well drained and moderately well drained soils on flood plains and low stream terraces. These soils are subject to flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and the deposition of sediment by floodwater lowers the quality of the forage. The surface layer is loam or silt loam. The available water capacity is moderate or high. Slope ranges from 0 to 6 percent.

Group A-6 consists of deep and very deep, well drained and moderately well drained soils. They are subject to frost action, which can damage legumes. Including grasses in seeding mixtures with legumes minimizes the damage caused by frost heaving. These soils have a surface layer of silt loam or silty clay loam. The available water capacity is moderate or high. Slope ranges from 0 to 15 percent.

Group B consists of soils that are droughty. The droughtiness limits the growth and production of hay and pasture.

Group B-2 consists of deep and very deep, well drained, droughty soils. These soils have a surface layer of channery loam. The available water capacity is very low. Slope ranges from 25 to 40 percent. These soils have a high content of rock fragments in the subsoil. They are generally unsuited to hay and are poorly suited to pasture.

Group B-3 consists of very deep, moderately well drained soils on flood plains. These soils are subject to flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and the deposition of sediment by floodwater lowers the quality of the forage. These soils have a surface layer of silt loam. The available water capacity is moderate. Slope ranges from 0 to 3 percent.

Group B-4 consists of soils in areas that been reclaimed following surface mining operations. These soils are very deep, well drained, and droughty. They have a surface layer of silty clay loam or clay loam. The available water capacity is low or very low. Most plants on these soils respond favorably to additions of lime. Frequent applications of lime may be needed to help maintain an adequate pH level. These soils have a high content of rock fragments in the substratum. The root zone generally is 20 to 30 inches deep. Slope ranges from 0 to 25 percent.

Group C consists of soils that generally are wet because they have a seasonal high water table. Some of these soils are saturated during the growing season.

Group C-1 consists of very deep, somewhat poorly drained soils. These soils are subject to frost action, which can damage legumes. Including grasses in seeding mixtures with legumes minimizes the damage caused by frost heaving. These soils have a surface layer of silt loam. The available water capacity is high. The seasonal high water table limits the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. Plants on these soils respond favorably to additions of lime. Frequent applications may be needed to help maintain an adequate pH level. The low pH level in the subsoil shortens the life of some deep-rooted legumes. Slope ranges from 0 to 3 percent.

Group C-2 consists of deep and very deep, somewhat poorly drained soils. Some of these soils are subject to flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and the deposition of sediment by floodwater lowers the quality of the forage. These soils have a surface layer of silt loam or silty clay loam. The available water capacity is moderate or high. The seasonal high water table limits the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best on these soils. Because of the moderately deep root zone, these soils are best suited to forage plants that do not have a taproot. Subsurface drains are used to lower the seasonal high water table. The effectiveness of the drains generally is limited by the restricted permeability in the subsoil or the landscape position of the soils. Slope ranges from 0 to 15 percent.

Group C-3 consists of very deep, somewhat poorly drained to very poorly drained soils on flood plains. These soils are subject to frequent, occasional, and rare periods of flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and the deposition of sediment by floodwater lowers the quality of the forage. The available water capacity is moderate or high. These soils have a surface layer of silt loam or silty clay loam. They are subject to frost action, which can damage legumes. Including grasses in seeding mixtures with legumes minimizes the damage caused by frost heaving. The seasonal high water table limits the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of the drains is limited by the landscape position of the soil. Slope ranges from 0 to 3 percent.

Group E consists of very deep soils that have an effective rooting depth of less than 20 inches. These soils formed in mine spoil. They have a shallow surface layer and a toxic, acid subsoil. Because of the shallow root zone, these soils are better suited to forage plants that have a fibrous root system than to plants that have deep roots.

Group E-2 consists of very deep, well drained, droughty soils. These soils have a surface layer of silty clay loam or clay loam. The available water capacity is low or very low. Slope ranges from 25 to 40 percent. These soils are generally unsuited to hay and are poorly suited to pasture.

Group E-3 consists of very deep, well drained, droughty soils. These soils have a surface layer of channery loam. The available water capacity is low. Slope ranges from 0 to 25 percent.

Group F consists of soils that have a restricted root zone. The root growth of climatically adapted plants is limited to a depth of 20 to 40 inches. Forage plants that do not have a taproot should be selected for planting in areas of these soils.

Group F-1 consists of moderately deep, well drained soils. Some of these soils are droughty. All of the soils in group F-1 have a surface layer of silt loam or channery silt loam. The available water capacity is low or very low. Plants on these soils respond favorably to additions of lime. Frequent applications may be needed to help maintain an adequate pH level. The low ph level in the subsoil shortens the life of some deep-rooted legumes. Slope ranges from 2 to 25 percent.

Group F-2 consists of moderately deep, well drained, droughty soils. These soils have a surface layer of channery silt loam or channery loam. The available water capacity is very low. These soils have a high content of rock fragments in the subsoil. Slope ranges from 25 to 40 percent. These soils are generally unsuited to hay and are poorly suited to pasture.

Group F-3 consists of deep and very deep, moderately well drained, droughty soils. These soils are moderately deep to a fragipan. They have a surface layer of silt loam or channery silt loam. The available water capacity is low in the root zone. Plants on these soils respond favorably to additions of lime. Frequent applications of lime may be needed to help maintain an adequate pH level. The low ph level in the subsoil shortens the life of some deep-rooted legumes. Slope ranges from 1 to 25 percent.

Group F-5 consists of deep and very deep, well drained soils. Rooting depth is restricted because of the high content of clay in the subsoil. These soils have a surface layer of silty clay loam or silt loam. The available water capacity is moderate in the root zone. Slope ranges from 2 to 25 percent.

Group F-6 consists of deep and very deep, well drained soils. Rooting depth is restricted because of the high content of clay in the subsoil. These soils have a surface layer of silty clay loam. The available water capacity is moderate in the root zone. Slope ranges from 25 to 40 percent.

Group G consists of soils that have a very restricted root zone. These soils formed in mine spoil. They have a shallow surface layer and a toxic, extremely acid subsoil. Because of the shallow root zone, these soils are better suited to forage plants that have a fibrous root system than to those that have deep roots.

Group G-1 consists of very deep, well drained, droughty soils. These soils have a surface layer of loam. The available water capacity is low. Slope ranges from 0 to 25 percent. These soils are poorly suited to hay. They are generally unsuited to pasture because of a severe hazard of erosion.

Group H consists of soils that are not suited to forage crops. *Group H-1* consists of soils that have slopes of more than 40 percent and soils in surface-mined areas. The soils in the mined areas have characteristics that prohibit their use as pasture. The soils in this group generally are unsuited to pasture and hay.

Miscellaneous land types are not assigned a rating. Soils that are ponded also are not assigned a rating. They generally are not used for forage production.

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, pastureland, forest land, or other 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 when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 60,000 acres in the survey area, or nearly 20 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county, but the highest concentrations are in the Mentor-Nolin-Glenford and Lindside-Sarahsville-Newark associations, which are described under the heading "General Soil Map Units." Most of this prime farmland is used for crops, mainly corn and hay.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses or to surface mining. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 8. 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 is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Lands Surface Mined for Coal

By 1991, about 12,000 acres of land in Guernsey County had been affected by surface mining. About 60 percent of this land was mined prior to the 1972 Ohio Reclamation law. It generally consists of graded and ungraded ridges and spoil piles and bedrock highwalls in areas where no soil material has been replaced. The soils in these areas are mapped as Bethesda, Morristown, and Barkcamp soils.

The legislation enacted by Ohio in 1972 required the restoration of all mined land after 1972. The land must be restored to the approximate original contour and blanketed with topsoil and subsoil from natural soils. Areas mapped as Bethesda clay loam, 0 to 8 percent slopes, and Morristown silty clay loam, 8 to 25 percent slopes, were reclaimed by this technique. Reclaimed soils make up about 5,000 acres in the county. They are better suited to agricultural production than soils that have not been reclaimed after mining operations, but they still have limitations that are difficult to overcome.

The Surface Mining Control and Reclamation Act of 1977 requires that soils identified as prime farmland be replaced in natural sequence to a depth of as much as 48 inches following mining. Most soils in surface-mined areas do not meet the requirements for prime farmland. As a result, most of the mined land is being reclaimed with a minimum of 6 inches of soil material overlying the spoil.

Soil properties should be considered in managing these soils. The organic matter content is considerably lower in previously mined soils than in natural soils. A high bulk density is common in both the replaced soil material and the underlying graded spoil. The compaction is a result of the use of heavy machinery, especially wheeled reclamation equipment; excessive handling of topsoil material when it is stockpiled and spread; mining and reclamation activities performed under unfavorable moisture conditions; and insufficient time for soil-forming processes to decrease the bulk density. The high bulk density reduces the available water capacity and retards plant growth. As a result, crop yields are reduced.

Typically, the content of rock fragments in mine spoil ranges from 35 to 60 percent, compared to 0 to 15 percent in the surface layer of most soils in the county. The rock fragments reduce the effective root zone and the available water capacity in mined soils. Roots tend to concentrate in the part of the profile where the soil material and rock fragments adjoin. Few roots penetrate the compact, massive spoil material.

Planting suitable forage species increases the organic matter content, improves soil structure, reduces bulk density, and increases the water infiltration rate, pore space, and root growth in mine spoil soils. Forage species are better soil-building crops than row crops. They also help to control runoff and erosion more effectively. Thin stands should be reseeded. Conservation tillage methods of seedbed preparation that keep plant residue on the surface, including no-till planting, and companion crops also help to control erosion.

Mine spoil soils are generally unsuited to grazing in winter when they are wet. Winter grazing can result in compaction and damage to the plants and can increase the hazard of erosion. These soils are better suited to frequent, light applications of fertilizer than to larger applications because of the loss of plant nutrients through runoff and the concentration of roots in the upper few inches of the soils.

Woodland

Woodland is an important land use in Guernsey County. In 1980, about 165,000 acres, or nearly 50 percent of the county, was wooded. The wooded acreage mainly occurs as privately owned stands of timber and farm woodlots. About 20,000 acres of woodland in the north-central part of the county is owned by the State of Ohio. This acreage is part of Salt Fork State Park. The most extensive wooded areas are in the Hazleton-Gilpin-Dekalb association in the northern part of the county.

The woodland is mainly mixed hardwoods. The dominant woodland species are oak, yellow-poplar, black cherry, red maple, sugar maple, ash, and beech. Most of the wooded acreage is on steep and very steep soils formed in residuum and colluvium derived from sandstone, siltstone, limestone, and shale. The dominant soils are those in the Guernsey, Westmoreland, Dekalb, Berks, Hazleton, and Clarksburg series. Many of the narrow ridgetops and flood plains also are wooded; however, woodland is not the dominant land use on the wider ridgetops and flood plains where the soils are better suited to farming. The wooded acreage in the county has increased in recent years, particularly in the steeper areas. Many abandoned areas have been planted to trees, mainly eastern white pine.

In places the woodland shows the results of poor management, abuse, and neglect. Heavy cutting without planning for future timber production has resulted in understocked stands of trees near maturity. The practice of high grading has continually removed the best trees and left diseased or damaged trees, which take up valuable growing space on soils that are excellent woodland sites. Low-value white elm and hollow beech and poorly formed black cherry and red maple now cover thousands of acres where yellow-poplar, oak, black walnut, and sugar maple were once prevalent. Grazing has damaged or destroyed the leaf litter and desirable seedlings, has damaged roots, and has resulted in compaction. In most wooded areas, wild grapevines have not been controlled. Good management can, in time, restore this woodland to a higher level of production. Additional information on woodland management can be obtained from the local offices of the Natural Resources Conservation Service and the Ohio Department of Natural Resources, Division of Forestry.

Soils differ greatly in productivity for woodland. The factors that influence the growth of trees are almost the same as those that influence the production of annual crops and forage. The major difference is that tree roots extend deeper, around rock fragments in the lower part of the soil profile. The direction of exposure, or aspect, and the position of the soil on the landscape are important in evaluating a soil for woodland. Other important properties are the percent of slope, the degree of past erosion, and the levels of acidity and fertility.

Aspect is the direction in which a slope faces. Trees grow better on north and east aspects because they are less exposed to the sun and prevailing winds and because soil moisture is more abundant. South and west aspects are less suited to woodland because of higher soil temperatures resulting from more direct sunlight, high evaporation by the prevailing wind, earlier snowmelt, and a greater degree of freezing and thawing.

The position of the soil on the landscape is important in determining the amount of moisture available for tree growth. The supply of soil moisture increases as elevation decreases, partly because of downslope seepage. Also, the soils on the lower part of slopes are generally deeper, lose less moisture through evaporation, and have a somewhat lower soil temperature than those on the upper part.

Slope is an important factor in woodland management. Steep and very steep slopes seriously limit the use of equipment, and as the percent of slope increases, the rate of water infiltration decreases and the rate of runoff and the hazard of erosion increase.

Erosion reduces the volume of soil available for water storage. Severe erosion removes the original surface layer and exposes the subsoil. Because the subsoil is commonly less porous, the runoff rate increases and the rate of water intake decreases. Both tree growth and natural reseeding are adversely affected.

Soil reaction and fertility influence the growth of trees. For example, black walnut grows better on well drained soils, such as Chagrin, Mentor, Nolin, Richland, and Westmore soils. The natural content of lime in the subsoil of these soils favors the growth of this species. The growth rate is slower on soils that are low in fertility.

Christmas trees have been grown in a few areas of the county. They can grow well on many of the soils but are adversely affected by various soil properties. Drainage and soil texture affect the species that can be successfully grown. For example, blue spruce and Fraser fir do not grow well on poorly drained and somewhat poorly drained soils, such as Claysville, Fitchville, and Newark soils. Fraser fir also does not grow well on Aaron, Elba, Guernsey, and Upshur soils because the soils have a fine textured subsoil. Other limiting factors are fertility, the available water capacity, the potential for frost action, and the depth to bedrock. Wellston and Westmoreland soils are better suited to spruce and fir than Berks and Dekalb soils because they have a higher available water capacity, are deeper to bedrock, and are more fertile.

Woodland Management and Productivity

Table 9 can help woodland owners or forest managers plan the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, and N.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed also are subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class*. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Woodland Harvesting and Regeneration Activities

Table 10 gives the degree and kinds of limitations that affect the operation of equipment used in tree harvesting and in the regeneration of woodland. Ratings are given for haul roads, log landings, skid trails and logging areas, and site preparation and planting. The limitations are considered *slight* if the physical site characteristics impose little or no limitations on the kind of equipment or time of operation; *moderate* if the site characteristics impose some limitations on the kind of equipment or the time of operation, or both; and *severe* if the site characteristics are such that special equipment or techniques are needed or the time of efficient operation is very limited, or both.

Haul roads are access roads leading from log landings to primary or surfaced roads. Generally, these are unpaved roads that have not been graveled. The ratings are based on soil properties, site features, and observed performance of the soils. Wetness, rockiness, depth to hard bedrock, stoniness, soil strength, slope, soil texture, and flooding should be considered when selecting routes for haul roads. Wetness and flooding affect the duration of use. Stones and boulders, which are difficult to move, hinder the construction when cutting and filling are needed. Soil strength, as inferred from the AASHTO group index and AASHTO group, is a measure of the traffic-supporting capacity of the soil. Slope affects the use of equipment and the cutting and filling requirements of the site.

Log landings are areas where logs are assembled for transportation. The best sites for landings require little or no surface preparation, which consists of cutting or filling. Considerable soil compaction can be expected in these areas. The ratings are based on the soil properties, site features, and observed performance of soils. Wetness, flooding, rockiness, stoniness, slope, depth to hard bedrock, soil strength, soil texture, and rock fragments should be considered when selecting sites for log landings. Wetness and flooding affect the duration of use. Stones and boulders, which are difficult to move, limit the use of equipment and affect the configuration and location of landings. Depth to hard bedrock is a problem where cutting and filling are required. Slope affects the use of equipment and the cutting and filling requirements of the site. Soil texture affects trafficability. Soil strength, as inferred from the AASHTO group index and AASHTO group, is a measure of the traffic-supporting capacity of the soil.

Skid trails and logging areas refer to the areas that are being partially or completely logged. In these areas logs are moved from the stump to the log landing with rubber-tired equipment. Using other types of log-moving equipment can sometimes minimize or help to overcome limitations. The ratings are based on soil properties, site features, and the observed performance of the soils. Wetness, flooding, rockiness, stoniness, texture, and slope affect the use of logging equipment. Deferring logging activities during periods when the soil is saturated at or near the surface minimizes environmental damage. In addition, special logging equipment is generally required during these periods. Equipment should not be used on soils that are subject to long periods of flooding. Operating equipment on these soils can result in equipment damage or environmental damage, or both. Stones and boulders limit the safe and efficient use of equipment. Traction becomes worse as slope gradients increase. It also is a problem on clayey soils during wet periods.

Site preparation and planting are mechanized operations for site preparation, planting, row seeding, or a combination of these. The ratings are based on the limitations affecting the efficient use of equipment and on the damage that can result on the site when equipment is used. It is assumed that the operating techniques used do not displace or remove topsoil from the site or create channels in which storm runoff can concentrate. Wetness, flooding, rockiness, stoniness, rock fragments, depth to hard bedrock, texture, and slope affect equipment use during site preparation and planting. Deferring logging activities during periods when the soil is saturated at or near the surface minimizes environmental damage. In addition, special logging equipment is generally required during these periods. Equipment should not be used on soils that are subject to long periods of flooding. Operating equipment on these soils can result in equipment damage or environmental damage, or both. Stones and boulders limit the safe and efficient use of equipment. The rock fragments and the very shallow depth to hard bedrock are limitations affecting site preparation and planting. Traction becomes worse as slope gradients increase. It also is a problem on clayey soils during wet periods.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 11 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

There are a number of outdoor recreational areas in scenic Guernsey County. Some of these areas are privately owned or owned by service organizations, churches, or sportsmen’s clubs. Other areas are owned by governmental agencies.

The State of Ohio owns about 20,000 acres of land in Salt Fork State Park adjacent to Salt Fork Lake and a smaller acreage of land around the Senecaville Dam and Reservoir (fig. 8). These recreational areas are used for boating, hunting, fishing, camping, picnicking, hiking, and other activities. A large wildlife preserve is being developed in Muskingum County, Ohio, on land that has been affected by surface mining. The area of development joins Guernsey County near Spencer Township.

Many people who reside outside of the county have constructed summer residences in Guernsey County. There are several golf courses in areas throughout the county.

The soils in the county vary greatly. Many soils are moderately well suited to recreational uses. Most of the soils on flood plains are subject to frequent flooding, and some of these areas tend to be excessively wet. There are about 3,000 acres of hydric soils and constructed wetlands in the county. Soils on gently sloping uplands and nearly level and gently sloping terraces are best suited to recreational activities. Measures that help to control erosion and reduce wetness are needed both in intensive recreational areas, such as playgrounds and developed campsites, and in extensive recreational areas, such as trails and primitive campsites. Access roads, critical area plantings, diversions, waterways, subsurface drains, and protection of heavily used areas are needed. More information about these conservation measures can be obtained from the local office of the Natural Resources Conservation Service.

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of

Figure 8.—Salt Fork Lake and Salt Fork State Park provide numerous recreational opportunities in Guernsey County.

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.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 12 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 15 and interpretations for dwellings without basements and for local roads and streets in table 14.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Guernsey County has a wide variety of wildlife. Some birds inhabiting the county are turkey, mourning dove, ruffed grouse, quail, pheasant, hawks, crows, and various songbirds. Some of the common mammals are rabbits, squirrels, beaver, opossum, muskrat, woodchuck, raccoon, skunk, fox, coyote, and white-tailed deer. This wide variety of wildlife is supported by diverse habitats, including cropland, openland, woodland, wetland, and areas of open water.

Areas of wetland are scattered throughout the county. The largest areas are along Skull Fork, Salt Fork, Buffalo Creek, and Leatherwood Creek. Melvin and Zipp soils commonly are in these areas.

About 7,000 acres of unreclaimed strip-mined land, consisting mainly of Bethesda and Morristown soils, is used primarily for wildlife habitat. The main management concern in areas of these soils is habitat improvement. These soils have a restricted rooting depth, are droughty and extremely acid, and contain many rock fragments. Wildlife habitat can be improved by establishing a wider variety of plants.

With proper treatment most of the soils in Guernsey County are well suited to plants used as food and cover by wildlife. Planting grasses helps to create nesting areas, and planting shrubs in hedgerows and fence rows helps to provide food and cover. Planting nut-producing trees and leaving hollow den trees improve habitat for woodland wildlife. Cropland is an invaluable source of food for wildlife if it is managed properly. Ponds can be constructed in some areas. Landscaping the area around a newly constructed pond helps to provide habitat for wildlife. Additional information about improving wildlife habitat can be obtained from the Ohio State University Extension; the Ohio Department of Natural Resources, Division of Wildlife; and the local office of the Natural Resources Conservation Service.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 13, 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 fescue, timothy, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are foxtail, goldenrod, smartweed, ragweed, and fall panicum.

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, beech, cherry, sweetgum, maple, hawthorn, dogwood, hickory, blackberry, and black walnut. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are honeysuckle, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, 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, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

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

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation 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.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 14 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the presence of toxic substances affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 15 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered. The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 16 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 17 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 *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

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

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment.

Generally, deeper onsite investigation is needed to determine these properties.

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. The availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

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 shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

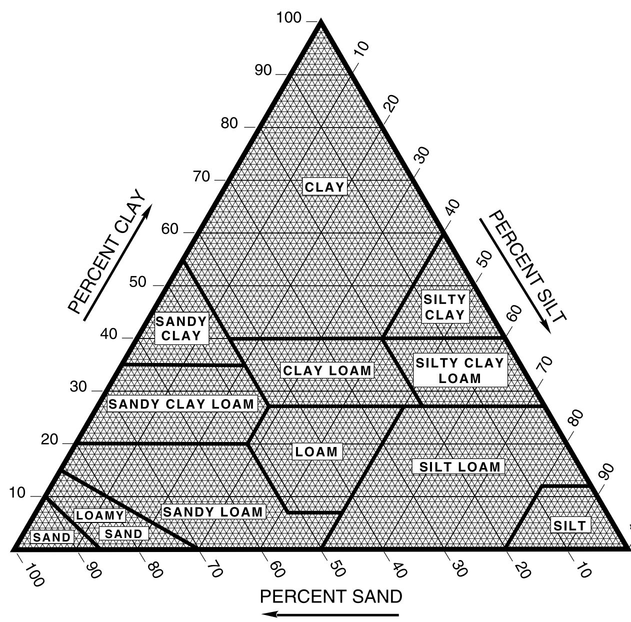

Figure 9.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

Engineering Index Properties

Table 18 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 9). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, 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 grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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

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.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Tables 19 and 20 show estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the tables, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In table 19, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems 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 major soil layer. The capacity varies, depending on soil properties that affect retention of water and depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, 6 to 9 percent; and *very high*, more than 9 percent.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

In table 20, *cation-exchange capacity* is 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Soil and Water Features

Tables 21 and 22 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

In table 21, *hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. *Ponding duration* classes are the same as those for flooding. *Maximum ponding depth* refers to the depth of the water above the surface of the soil.

In table 22, *depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others 1979; National Research Council 1995; Tiner 1985; U.S. Army Corps of Engineers 1987). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff 1975) and “Keys to Soil Taxonomy” (Soil Survey Staff 1990) and in the “Soil Survey Manual” (Soil Survey Division Staff 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt, Whited, and Pringle 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (Hurt, Whited, and Pringle 1996; National Research Council 1995).

Md	Melvin silt loam, ponded
Ne	Newark silt loam, frequently flooded
Zp	Zipp silty clay loam, frequently flooded
Zs	Zipp silty clay loam, ponded

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

BcB	Barkcamp very flaggy sandy loam, 0 to 8 percent slopes, very stony
BcD	Barkcamp very flaggy sandy loam, 8 to 40 percent slopes, very stony
BhB	Bethesda channery loam, 0 to 8 percent slopes
BhD	Bethesda channery loam, 8 to 25 percent slopes
BhF	Bethesda channery loam, 25 to 70 percent slopes
BsD	Brookside silt loam, 15 to 25 percent slopes
BtC	Brookside-Vandalia complex, 8 to 15 percent slopes
BtD	Brookside-Vandalia complex, 15 to 25 percent slopes
Ca	Chagrin loam, occasionally flooded
CkC	Claysville-Guernsey complex, 8 to 15 percent slopes
EuA	Euclid silt loam, rarely flooded
FtA	Fitchville silt loam, 0 to 3 percent slopes
GnA	Glenford silt loam, 0 to 2 percent slopes
GnB	Glenford silt loam, 2 to 6 percent slopes
GpA	Glenford-Urban land complex, 0 to 2 percent slopes
He	Hartshorn silt loam, occasionally flooded
Ld	Lindside silt loam, frequently flooded
McA	McGary silt loam, 0 to 3 percent slopes
MoF	Morristown channery clay loam, 40 to 70 percent slopes
No	Nolin silt loam, frequently flooded
OmB	Omulga silt loam, 1 to 6 percent slopes
OmC	Omulga silt loam, 6 to 15 percent slopes
Or	Orrville silt loam, occasionally flooded
Sa	Sarahsville silty clay loam, frequently flooded
SeB	Sees silty clay loam, 2 to 6 percent slopes

Physical and Chemical Analyses of Selected Soils

Samples of some of the soils in Guernsey County were analyzed by the Soil Characterization Laboratory, School of Natural Resources, The Ohio State University, Columbus, Ohio. The physical and chemical data obtained from the samples include those on particle-size distribution, reaction, organic matter content, calcium carbonate equivalent, and extractable cations.

These data were used in the classification and correlation of the soils and in the evaluation of their behavior under various land uses. Three pedons were selected as representative of their respective series and are described in the section “Soil Series and Their Morphology.” These series and their laboratory identification numbers are Upshur (GR-1), Sarahsville (GR-2), and Glenford (GR-3).

In addition to the data from Guernsey County, laboratory data are also available for nearby counties that have many of the same soils. All of these data are on file at the Department of Agronomy, The Ohio State University, Columbus, Ohio; The Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff 1975, 1990). 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 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; 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 Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

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, 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, mesic Typic Hapludalfs.

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” (Soil Survey Division Staff 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (Soil Survey Staff 1975) and in “Keys to Soil Taxonomy” (Soil Survey Staff 1990). 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.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Aaron Series

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Slow
Parent material: A thin layer of loess over residuum derived from siltstone and shale interbedded with thin layers of limestone and sandstone
Landform: Hills

Position on the landform: Summits, shoulders
Slope: 2 to 15 percent
Commonly adjacent soils: Upshur, Westmoreland

Taxonomic class: Fine, mixed, mesic Aquic Hapludalfs

Typical Pedon

Aaron silt loam, 2 to 8 percent slopes, in Center Township; 1,080 feet south and 1,240 feet west of the northeast corner of sec. 19, T. 2 N., R. 2 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; many roots; moderately acid; abrupt irregular boundary.
Bt1—9 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate fine angular blocky structure; friable; common roots; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; common distinct organic coatings in vertical streaks; strongly acid; clear smooth boundary.
Bt2—14 to 22 inches; light olive brown (2.5Y 5/4) clay; common fine distinct gray (10YR 5/1) mottles; moderate medium subangular blocky structure; firm; few roots; many distinct brown (10YR 5/3) and few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; strongly acid; gradual smooth boundary.
Bt3—22 to 30 inches; light olive brown (2.5Y 5/4) clay; common fine distinct gray (10YR 5/1) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; common slickensides at about 45 degree angle; firm; few roots; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; many distinct olive (5Y 5/3) clay films on faces of slickensides; many dark concretions of iron and manganese oxide; moderately acid; abrupt wavy boundary.
BC—30 to 41 inches; grayish brown (2.5Y 5/2) channery clay; common medium distinct light olive brown (2.5Y 5/4) and gray (5Y 6/1) mottles; weak coarse subangular blocky structure; firm; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; few dark concretions of iron and manganese oxide; 20 percent rock fragments, which are mostly limestone; strong effervescence; moderately alkaline; gradual smooth boundary.
C—41 to 50 inches; olive (5Y 4/3) silty clay loam; massive; very firm; common soft shale fragments; 5 percent limestone fragments; strong effervescence; moderately alkaline; gradual smooth boundary.
Cr—50 to 60 inches; olive gray (5Y 4/2), weathered shale; few olive (5Y 5/4) and dark reddish gray (10R 3/1) lithochromic mottles; strong effervescence; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 50 inches
Depth to bedrock: 40 to 60 inches
Content of rock fragments: Ap and Bt horizons—0 to 14 percent; BC and C horizons—5 to 35 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 or 3
Texture—silt loam
A horizon (if it occurs):
Color—hue of 10YR, value and chroma of 2 or 3
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 4 to 8
Texture—silty clay loam, silty clay, clay
C horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, chroma of 2 to 6
Texture—silty clay loam, silty clay, clay, or the channery or gravelly analogs of those textures

Allegheny Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Old alluvium
Landform: Terraces
Position on the landform: Dissected treads, risers
Slope: 8 to 15 percent
Commonly adjacent soils: Omulga, Newark, Sarahsville

Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludults

Typical Pedon

Allegheny loam, 8 to 15 percent slopes, in Millwood Township; 2,280 feet south and 1,320 feet west of the northeast corner of sec. 9, T. 1 N., R. 1 W.

Ap—0 to 8 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common roots; neutral; abrupt smooth boundary.
BE—8 to 10 inches; yellowish brown (10YR 5/4) loam; 15 percent mixed areas of dark yellowish brown

(10YR 4/4) material; weak fine and medium subangular blocky structure; friable; common roots; very strongly acid; abrupt irregular boundary.

Bt1—10 to 21 inches; brown (7.5YR 5/4) loam; moderate medium subangular blocky structure; friable; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—21 to 33 inches; yellowish brown (10YR 5/4) clay loam; few small pockets of pale brown (10YR 6/3) fine sandy loam in the lower 3 inches; common coarse faint strong brown (7.5YR 5/8) mottles in the lower part; weak medium and coarse subangular blocky structure; friable; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—33 to 60 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) and common coarse distinct light yellowish brown (2.5Y 6/3) mottles; massive; friable; very strongly acid; gradual smooth boundary.

C1—60 to 70 inches; dark yellowish brown (10YR 4/4) sandy loam; common fine faint brown (10YR 5/3) mottles; massive; friable; very strongly acid; abrupt smooth boundary.

2C2—70 to 80 inches; reddish brown (5YR 4/3) silty clay loam; many medium prominent light olive gray (5Y 6/2) mottles; massive; firm; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap and Bt horizons—0 to 10 percent; C horizon—0 to 15 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 to 4
Texture—loam
Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 8
Texture—loam, silt loam, sandy clay loam, clay loam
C and 2C horizons:
Color—hue of 5YR to 2.5Y, value of 4 or 5, chroma of 3 to 8
Texture—sandy loam, loam, fine sandy loam, clay loam, silty clay loam

Barkcamp Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid
Parent material: Ultra acid, partially weathered fine-earth material and fragments of medium and coarse grained sandstone, shale, siltstone, and coal from surface mining operations
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 40 percent
Commonly adjacent soils: Bethesda

Taxonomic class: Loamy-skeletal, siliceous, acid, mesic Typic Udorthents

Typical Pedon

Barkcamp loam, 8 to 25 percent slopes, in Oxford Township; 440 feet north and 960 feet west of the southeast corner of sec. 2, T. 10 N., R. 7 W.

Ap1—0 to 2 inches; mixed brown (10YR 4/3) (80 percent) and dark yellowish brown (10YR 4/4) (20 percent) loam; moderate very fine granular structure; friable; many roots; 10 percent sandstone and siltstone fragments; very strongly acid; clear smooth boundary.

Ap2—2 to 11 inches; mixed dark yellowish brown (10YR 4/4) (60 percent), light olive brown (2.5Y 5/4) (20 percent), and yellowish brown (10YR 5/6) (20 percent) loam; weak medium and coarse subangular blocky structure; very firm; few roots to a depth of 8 inches; 10 percent sandstone or siltstone fragments; extremely acid in the upper part grading to ultra acid in the lower part; abrupt smooth boundary.

2C—11 to 80 inches; dark grayish brown (2.5Y 4/2) extremely flaggy sandy loam; massive; firm; about 45 percent fragments of gray (10YR 6/1) sandstone, 15 percent fragments of brownish yellow (10YR 6/8) sandstone, and 5 percent fragments of very dark gray (10YR 3/1) carbonaceous shale and coal; ultra acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: A or Ap horizon—10 to 50 percent; 2C horizon—35 to 80 percent
Ap or A horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 to 8

Texture—loam, very flaggy sandy loam

2C horizon:

Color—hue of 7.5YR to 2.5Y or is neutral, value of 4 to 6, chroma of 0 to 8

Texture—very gravelly, extremely gravelly, very flaggy, extremely flaggy, very channery, or extremely channery analogs of loam, sandy loam, or loamy sand; clay content ranges from 6 to 18 percent

Berks Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Parent material: Residuum derived from siltstone and shale interbedded with thin layers of fine grained sandstone
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 8 to 70 percent
Commonly adjacent soils: Dekalb, Guernsey, Westmoreland

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Dystrochrepts

Typical Pedon

Berks channery silt loam, 40 to 70 percent slopes, in Jackson Township; 1,460 feet south and 320 feet west of the northeast corner of sec. 7, T. 1 N., R. 3 W.

Oe—0.5 inch to 0; partially decomposed leaf litter from deciduous trees.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) channery silt loam, light brownish gray (10YR 6/2) dry; moderate very fine granular structure; very friable; many roots; 10 percent siltstone fragments; very strongly acid; abrupt wavy boundary.

BA—2 to 5 inches; mixed yellowish brown (10YR 5/4) (65 percent) and brown (10YR 4/3) (35 percent) channery silt loam; weak fine subangular blocky structure; friable; many roots; 20 percent siltstone fragments; very strongly acid; clear wavy boundary.

Bw1—5 to 12 inches; yellowish brown (10YR 5/4) very channery silt loam; weak medium subangular blocky structure; friable; common roots; 45 percent siltstone fragments; very strongly acid; gradual smooth boundary.

Bw2—12 to 23 inches; yellowish brown (10YR 5/4) extremely channery silt loam; weak fine subangular blocky structure in the upper part of the horizon; friable; few roots; 70 percent siltstone fragments; very strongly acid; gradual smooth boundary.

C—23 to 27 inches; yellowish brown (10YR 5/4) extremely channery silt loam; massive; friable; few roots; 85 percent siltstone fragments; strongly acid; gradual smooth boundary.

Cr—27 to 31 inches; olive brown (2.5Y 4/4), fractured siltstone.

Range in Characteristics

Thickness of the solum: 18 to 37 inches
Depth to bedrock: 20 to 40 inches
Content of rock fragments: A or Ap horizon—10 to 35 percent; B horizon—15 to 75 percent; C horizon—35 to 90 percent

A horizon:

Color—hue of 10YR, value of 3 to 5, chroma of 2 to 4

Texture—channery silt loam

Bw horizon:

Color—hue of 10YR, value and chroma of 4 to 6

Texture—channery to extremely channery analogs of silt loam or loam

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 6

Texture—very channery or extremely channery analogs of silt loam or loam

Bethesda Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Partially weathered fine-earth material and fragments of sandstone, siltstone, shale, and coal from surface mining operations
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 70 percent
Commonly adjacent soils: Berks, Dekalb, Lowell, Westmoreland

Taxonomic class: Loamy-skeletal, mixed, acid, mesic Typic Udorthents

Typical Pedon

Bethesda channery loam, 25 to 70 percent slopes, in Millwood Township; 2,200 feet south and 1,520 feet west of the northeast corner of sec. 34, T. 9 N., R. 7 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) channery loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many

roots; 20 percent rock fragments; slightly acid; abrupt wavy boundary.
C1—3 to 6 inches; mixed dark grayish brown (2.5Y 4/2) (60 percent) and light olive brown (2.5Y 5/4) (40 percent) very channery loam; weak medium granular structure; friable; many roots; 40 percent rock fragments; very strongly acid; clear wavy boundary.
C2—6 to 80 inches; variegated light olive brown (2.5Y 5/4), brown (10YR 5/3), and dark grayish brown (10YR 4/2) very channery loam; massive; friable; common roots to a depth of 18 inches, few roots to a depth of 40 inches; 55 percent rock fragments consisting of 60 percent light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6) sandstone, 30 percent dark gray (N 4/) shale, and 10 percent gray (10YR 6/1) mudstone; extremely acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: A or Ap horizon—5 to 50 percent; C horizon—35 to 80 percent
A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 2 to 4
Texture—clay loam, channery loam
C horizon:
Color—hue of 7.5YR to 5Y or is neutral, value of 3 to 6, chroma of 0 to 8
Texture—very channery, extremely channery, very flaggy, or extremely flaggy analogs of loam, silt loam, silty clay loam, or clay loam

Brookside Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Colluvium derived from limestone, shale, and siltstone interbedded with thin layers of sandstone
Landform: Hills
Position on the landform: Footslopes
Slope: 8 to 40 percent
Commonly adjacent soils: Claysville, Guernsey, Lowell, Westmoreland, Vandalia

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Brookside silt loam, 15 to 25 percent slopes, in Spencer Township; 2,380 feet south and 2,020 feet east of the northwest corner of sec. 34, T. 9 N., R. 10 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; many roots; 5 percent rock fragments; moderately acid; abrupt wavy boundary.
BA—9 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine and medium subangular blocky structure; friable; common roots; 5 percent rock fragments; moderately acid; clear smooth boundary.
Bt1—11 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium angular blocky structure; friable; few roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent rock fragments; moderately acid; gradual smooth boundary.
Bt2—23 to 33 inches; yellowish brown (10YR 5/4) silty clay; common fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few black (10YR 2/1) stains and concretions of iron and manganese oxide; 10 percent rock fragments; strongly acid; clear wavy boundary.
Bt3—33 to 46 inches; brown (10YR 5/3) channery silty clay loam; many medium distinct grayish brown (2.5Y 5/2) mottles; weak medium subangular blocky structure; firm; few roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common black (10YR 2/1) stains and concretions of iron and manganese oxide; 20 percent rock fragments; slightly acid; clear wavy boundary.
BC—46 to 58 inches; brown (10YR 5/3) channery silty clay loam; many medium distinct grayish brown (2.5Y 5/2) mottles; weak coarse subangular structure; firm; few black (10YR 2/1) stains and concretions of iron and manganese oxide; 20 percent rock fragments; neutral; gradual smooth boundary.
C—58 to 80 inches; dark yellowish brown (10YR 4/4) silty clay loam; common medium distinct grayish brown (10YR 5/2) and few coarse distinct strong brown (7.5YR 5/6) mottles; massive; firm; 10 percent rock fragments; strong effervescence; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 70 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—5 to 15 percent; Bt horizon—5 to 25 percent; BC and C horizons—5 to 35 percent

Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 or 4, chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silty clay, clay, silty clay loam, or the channery analogs of those textures

C horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 2 to 6
Texture—silty clay, clay, silty clay loam, clay loam, or the channery analogs of those textures

Chagrin Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Loamy alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 3 percent
Commonly adjacent soils: Orrville

Taxonomic class: Fine-loamy, mixed, mesic Dystric Fluventic Eutrochrepts

Typical Pedon

Chagrin loam, occasionally flooded, in Millwood Township; 420 feet north and 720 feet west of the southeast corner of sec. 26, T. 9 N., R. 7 W.

Ap—0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; many roots; few small pebbles; slightly acid; abrupt smooth boundary.

Bw1—9 to 15 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; common roots; few small pebbles; slightly acid; clear smooth boundary.

Bw2—15 to 27 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; common roots; common distinct brown (10YR 4/3) organic coatings on faces of peds; few small pebbles; slightly acid; gradual smooth boundary.

Bw3—27 to 34 inches; dark yellowish brown (10YR 4/4) loam; weak coarse subangular blocky structure; friable; few roots; common faint brown (10YR 4/3) organic coatings on faces of peds; slightly acid; gradual smooth boundary.

C1—34 to 72 inches; dark yellowish brown (10YR 4/4) stratified fine sandy loam and loam; few fine distinct yellowish brown (10YR 5/6) mottles below a depth of 42 inches, common fine distinct grayish brown (10YR 5/2) mottles below a depth of 50 inches; massive; friable; moderately acid; clear smooth boundary.

C2—72 to 80 inches; brown (7.5YR 4/4) sandy loam; many medium distinct grayish brown (10YR 5/2) mottles; massive; friable; strongly acid.

Range in Characteristics

Thickness of the solum: 24 to 48 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 10 percent; Bw and C horizons—0 to 15 percent

Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 or 3
Texture—loam

Bw horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 or 4
Texture—dominantly loam and silt loam; less commonly sandy loam, fine sandy loam, or clay loam

C horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 2 to 4
Texture—loam, silt loam, fine sandy loam, sandy loam

Clarksburg Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow
Parent material: Colluvium derived from sandstone, siltstone, and shale
Landform: Hills
Position on the landform: Footslopes
Slope: 15 to 25 percent
Commonly adjacent soils: Berks, Dekalb, Hazleton, Westmoreland

Taxonomic class: Fine-loamy, mixed, mesic Typic Fragiudalfs

Typical Pedon

Clarksburg channery silt loam, 15 to 25 percent slopes, in Wheeling Township; 1,160 feet north and 1,560 feet east of the southwest corner of sec. 18, T. 4 N., R. 4 W.

Ap1—0 to 3 inches; very dark grayish brown (10YR 3/2) channery silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable;

many roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Ap2—3 to 7 inches; brown (10YR 4/3) channery silt loam; weak fine subangular blocky structure; friable; many roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

BE—7 to 11 inches; dark yellowish brown (10YR 4/4) channery loam; weak fine and medium subangular blocky structure; friable; common roots; common distinct brown (10YR 5/3) silt coatings on faces of peds; 15 percent rock fragments; strongly acid; gradual wavy boundary.

Bt1—11 to 22 inches; yellowish brown (10YR 5/4) channery clay loam; moderate medium subangular blocky structure; firm; common roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; 20 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—22 to 32 inches; dark yellowish brown (10YR 4/4) channery clay loam; many fine distinct light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; firm; few roots; common distinct clay films on faces of peds; few black (10YR 2/1) concretions and stains of iron and manganese oxide; 25 percent rock fragments; strongly acid; clear irregular boundary.

Btx—32 to 43 inches; dark yellowish brown (10YR 4/4) channery clay loam; many medium distinct grayish brown (10YR 5/2) and few fine distinct strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate very thick platy; very firm, brittle; few fine roots on faces of prisms; many distinct gray (10YR 5/1) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of prisms; 25 percent rock fragments; strongly acid; clear wavy boundary.

BC—43 to 60 inches; dark yellowish brown (10YR 4/4) channery clay loam; common medium distinct grayish brown (2.5Y 5/2) mottles; weak coarse subangular blocky structure; very firm; common distinct dark grayish brown (10YR 4/2) and dark gray (10YR 4/1) clay films on faces of peds; 15 percent rock fragments; strongly acid; clear wavy boundary.

C—60 to 80 inches; dark yellowish brown (10YR 4/4) channery loam; common fine distinct dark gray (10YR 4/1) mottles; massive; firm; 15 percent rock fragments; strongly acid.

Range in Characteristics

Thickness of the solum: 50 to 70 inches
Depth to bedrock: More than 60 inches
Depth to fragipan: 24 to 36 inches
Content of rock fragments: Ap and Bt horizons—0 to 25 percent; Btx horizon—5 to 30 percent; C horizon—5 to 50 percent

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 or 3
Texture—channery silt loam

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—loam, silt loam, silty clay loam, clay loam, or the channery analogs of those textures

Btx horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—silty clay loam, clay loam, or the channery analogs of those textures

C horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—loam, silt loam, silty clay loam, clay loam, or the channery or very channery analogs of those textures

Claysville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow or slow
Parent material: Clayey colluvium
Landform: Hills
Position on the landform: Concave benches, footslopes
Slope: 8 to 15 percent
Commonly adjacent soils: Brookside, Guernsey, Lowell, Upshur, Westmoreland

Taxonomic class: Fine, mixed, mesic Aquic Hapludolls

Typical Pedon

Claysville silty clay loam, in an area of Claysville-Guernsey complex, 8 to 15 percent slopes, in Spencer Township; 900 feet north and 2,460 feet east of the southwest corner of sec. 8, T. 9 N., R. 10 W.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many roots; 5 percent rock fragments; slightly acid; clear wavy boundary.

AB—10 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; common fine distinct light olive brown (2.5Y 5/6) mottles; moderate fine subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 5 percent rock fragments; neutral; clear wavy boundary.

Bw1—14 to 21 inches; brown (10YR 4/3) silty clay; common fine prominent olive gray (5Y 5/2) mottles; moderate medium subangular blocky structure; firm; common roots; common distinct dark grayish brown (10YR 4/2) organic coatings on faces of peds; 5 percent rock fragments; neutral; clear wavy boundary.

Bw2—21 to 30 inches; light olive brown (2.5Y 5/6) clay; common prominent gray (10YR 5/1) mottles; moderate medium and coarse subangular blocky structure; firm; few roots; common distinct olive gray (5Y 5/2) coatings on faces of peds; common fine dark concretions of iron and manganese oxide; 5 percent rock fragments; neutral; abrupt wavy boundary.

BC—30 to 46 inches; light olive brown (2.5Y 5/6) clay; common prominent gray (10YR 5/1) mottles; weak medium and coarse subangular blocky structure; firm; common distinct olive gray (5Y 5/2) and few distinct brown (7.5YR 5/2) coatings on faces of peds; common dark concretions of iron and manganese oxide; 5 percent rock fragments; weak effervescence; slightly alkaline.

2C—46 to 80 inches; dark yellowish brown (10YR 3/4) silty clay loam; common fine prominent light olive brown (2.5Y 5/4) and gray (10YR 6/1) mottles; massive; firm; many dark red (10R 3/6) soft shale fragments; 5 percent limestone fragments; strong effervescence; slightly alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches:
Thickness of the mollic epipedon: 10 to 18 inches
Depth to bedrock: More than 60 inches
Depth to carbonates: 30 to 60 inches
Content of rock fragments: A and Bw horizons—0 to 15 percent; BC and C horizons—0 to 25 percent

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture—silty clay loam

Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silty clay, clay, silty clay loam, or the channery analogs of those textures

C and 2C horizons:
Color—hue of 5Y to 10R, value of 3 to 6, chroma of 2 to 6
Texture—silty clay, clay, silty clay loam, or the channery analogs of those textures

Coshocton Series

Depth class: Deep and very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow
Parent material: Colluvium and residuum derived from siltstone, shale, and sandstone with a thin mantle of loess in some places
Landform: Hills
Position on the landform: Summits, shoulders, footslopes
Slope: 8 to 25 percent
Commonly adjacent soils: Clarksburg, Dekalb, Guernsey, Wellston, Westmoreland

Taxonomic class: Fine-loamy, mixed, mesic Aquultic Hapludalfs

Typical Pedon

Coshocton silt loam, 6 to 15 percent slopes, eroded, in White Eyes Township in Coshocton County, at the North Appalachian Experimental Watershed, Agricultural Research Service; 3,600 feet north and 400 feet west of the southeast corner of sec. 5, T. 6 N., R. 5 W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; streaks and pockets of yellowish brown (10YR 5/4) subsoil material; weak medium granular structure; friable; many fine roots; 5 percent rock fragments; moderately acid; abrupt smooth boundary.

BA—7 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; 5 percent shale fragments; strongly acid; clear smooth boundary.

Bt1—10 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine and medium subangular blocky structure; friable; common fine roots; common faint light yellowish brown (10YR 6/4) clay films on faces of peds; 10 percent rock fragments; very strongly acid; clear smooth boundary.

Bt2—14 to 17 inches; yellowish brown (10YR 5/4) channery silty clay loam; many fine distinct strong brown (7.5YR 5/6) and common fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; common faint light yellowish brown (10YR 6/4) clay films on faces of peds; few fine roots; 15 percent rock fragments; very strongly acid; clear smooth boundary.

Bt3—17 to 27 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct yellowish brown

(10YR 5/8) and few fine distinct light brownish gray (2.5Y 6/2) mottles; moderate medium and coarse prismatic structure parting to weak coarse subangular blocky; firm; many distinct light brownish gray (2.5Y 6/2) silt coatings on vertical faces of prisms; common faint light yellowish brown (10YR 6/4) and common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine roots; many dark concretions of iron and manganese oxide; 10 percent rock fragments; very strongly acid; abrupt wavy boundary.

BC—27 to 46 inches; yellowish brown (10YR 5/4) channery loam; few fine distinct light brownish gray (2.5Y 6/2) and few fine distinct yellowish brown (10YR 5/8) mottles; weak thick platy structure parting to weak fine subangular blocky; very firm; few faint light yellowish brown (10YR 6/4) clay films on vertical faces of peds; few fine roots; many dark concretions of iron and manganese oxide; 20 percent rock fragments; very strongly acid; clear smooth boundary.

C—46 to 58 inches; yellowish brown (10YR 5/4) channery silty clay loam; common medium distinct light brownish gray (2.5Y 6/2) and few fine faint yellowish brown (10YR 5/8) mottles; massive; firm; 30 percent rock fragments; very strongly acid.

R—58 to 60 inches; fractured shale that has thin beds of sandstone.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: 40 to 80 inches
Content of rock fragments: Ap horizon—2 to 20 percent; upper part of the Bt horizon—2 to 20 percent; lower part of the Bt horizon and the C horizon—2 to 35 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 to 4
Texture—loam, silt loam
Upper part of the Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—loam, silt loam, clay loam, silty clay loam, or the channery analogs of those textures
Lower part of the Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 6
Texture—silty clay, silty clay loam, clay loam, silt loam, loam, or the channery analogs of those textures
C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 6
Texture—silty clay loam, silty clay, clay loam, loam, or the channery analogs of those textures

Dekalb Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Rapid
Parent material: Residuum derived from medium and coarse grained sandstone
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 8 to 70 percent
Commonly adjacent soils: Hazleton, Lowell, Westmoreland

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Dystrochrepts

Typical Pedon

Dekalb channery loam, 25 to 70 percent slopes, very stony, in Millwood Township; 1,520 feet south and 1,060 feet west of the northeast corner of sec. 16, T. 9 N., R. 7 W.

Oi—1.5 inches to 0.5 inch; leaf litter from deciduous trees.

Oe—0.5 inch to 0; partially decomposed leaf litter.

A—0 to 3 inches; very dark brown (10YR 2/2) channery loam, dark grayish brown (10YR 4/2) dry; moderate very fine granular structure; very friable; many roots; 15 percent rock fragments; neutral; clear wavy boundary.

BA—3 to 6 inches; dark yellowish brown (10YR 4/4) channery loam; weak medium granular structure; friable; many roots; 15 percent rock fragments; very strongly acid; clear wavy boundary.

Bw1—6 to 16 inches; yellowish brown (10YR 5/4) channery loam; weak medium subangular blocky structure; friable; common roots; 25 percent rock fragments; strongly acid; gradual wavy boundary.

Bw2—16 to 29 inches; yellowish brown (10YR 5/4) very flaggy sandy loam; weak medium subangular blocky structure; friable; common roots; 55 percent rock fragments; very strongly acid; gradual wavy boundary.

C—29 to 37 inches; yellowish brown (10YR 5/4) extremely flaggy sandy loam; massive; friable; few roots; 70 percent rock fragments; very strongly acid; abrupt smooth boundary.

R—37 to 39 inches; light yellowish brown (2.5Y 6/4), hard sandstone bedrock; yellowish brown (10YR 5/4) sandy loam in cracks that are less than 1 inch wide and are more than 12 inches apart.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Content of rock fragments: A and Bw horizons—10 to 60 percent; C horizon—50 to 90 percent
A horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—channery loam
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 to 4
Texture—sandy loam, loam, or the channery or very channery analogs of those textures
Bw horizon:
Color—hue of 10YR or 7.5YR, value of 5, chroma of 4 to 6
Texture—loam, sandy loam, or the channery, very channery, flaggy, or very flaggy analogs of those textures
C horizon:
Color—hue of 10YR or 7.5YR, value of 5, chroma of 4 to 6
Texture—very channery, extremely channery, very flaggy, or extremely flaggy analogs of sandy loam or loamy sand

Elba Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum derived from limestone, calcareous shale, and siltstone
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 8 to 40 percent
Commonly adjacent soils: Brookside, Lowell, Upshur, Westmore

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Elba silty clay loam, 15 to 25 percent slopes, in Wills Township; 1,160 feet north and 820 feet east of the southwest corner of sec. 20, T. 2 N., R. 1 W.

Ap—0 to 8 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure parting to weak fine granular; friable; many roots; few rock fragments; neutral; clear smooth boundary.

Bt1—8 to 18 inches; dark yellowish brown (10YR 4/4) clay; strong fine and medium angular blocky structure; firm; common roots; many distinct clay films on faces of peds; few rock fragments; slightly acid; clear smooth boundary.

Bt2—18 to 24 inches; light olive brown (2.5Y 5/4) clay; moderate fine and medium angular blocky structure; firm; few roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent limestone fragments; strong effervescence; moderately alkaline; gradual smooth boundary.

Bt3—24 to 31 inches; light olive brown (2.5Y 5/4) clay; moderate medium subangular blocky structure; firm; few roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common soft limestone fragments; strong effervescence; moderately alkaline; gradual smooth boundary.

BC—31 to 44 inches; light olive brown (2.5Y 5/4) silty clay loam; weak coarse subangular blocky structure; friable; few distinct dark yellowish brown (10YR 4/4) clay films on vertical faces of peds and on stone fragments; many soft limestone fragments; 10 percent hard limestone fragments; strong effervescence; moderately alkaline; clear smooth boundary.

C—44 to 48 inches; variegated yellowish brown (10YR 5/6) and pale olive (5Y 6/3) clay; massive; firm; many soft limestone fragments; 10 percent hard limestone fragments; strong effervescence; moderately alkaline; clear wavy boundary.

Cr—48 to 66 inches; very dark gray (10YR 3/1), soft shale; slight effervescence; slightly alkaline.

Range in Characteristics

Thickness of the solum: 24 to 48 inches
Depth to bedrock: 40 to 72 inches
Depth to carbonates: 10 to 30 inches
Content of rock fragments: Ap horizon—0 to 15 percent; Bt horizon—0 to 35 percent; BC and C horizons—5 to 60 percent
Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4, chroma of 2 or 3
Texture—silty clay loam
Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6
Texture—silty clay, clay, silty clay loam, or the channery analogs of those textures
C horizon:
Color—hue of 7.5YR to 5Y, value of 4 to 6, chroma of 1 to 6

Texture—silty clay loam, silty clay, clay, or the channery or very channery analogs of those textures

Enoch Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: A mixture of ultra acid, partially weathered fine-earth material and carbonaceous shales, sandstone, and siltstone exposed by surface mining operations
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 0 to 25 percent
Commonly adjacent soils: Lowell, Upshur, Westmoreland

Taxonomic class: Loamy-skeletal, siliceous, acid, mesic Typic Udorthents

Typical Pedon

Enoch loam, 0 to 8 percent slopes, in Oxford Township; 800 feet south and 1,640 feet east of the northwest corner of sec. 20, T. 10 N., R. 7 W.

Ap1—0 to 4 inches; mixed dark grayish brown (10YR 4/2) (60 percent), light olive brown (2.5Y 5/4) (30 percent), and yellowish brown (10YR 5/4) (10 percent) loam that has a few pockets of silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; many roots; many distinct dark grayish brown (10YR 4/2) organic coatings on faces of peds; 10 percent rock fragments; moderately acid; clear smooth boundary.

Ap2—4 to 8 inches; mixed dark yellowish brown (10YR 4/4) (60 percent), yellowish brown (10YR 5/4) (20 percent), and brown (10YR 4/3) (20 percent) loam; weak medium subangular blocky structure; firm; common roots; 10 percent rock fragments; very strongly acid in the upper part of the horizon grading to extremely acid at a depth of 7 inches; abrupt smooth boundary.

2C1—8 to 21 inches; variegated very dark grayish brown (2.5Y 3/2) (40 percent), dark grayish brown (2.5Y 4/2) (30 percent), and dark gray (5Y 4/1) (30 percent) very channery clay loam; massive; very firm; 50 percent rock fragments consisting of 90 percent dark gray (N 4/) and very dark gray (N 4/) shale and 10 percent siltstone or coal; ultra acid; gradual smooth boundary.

2C2—21 to 45 inches; variegated very dark grayish brown (2.5Y 3/2) (40 percent), dark grayish brown (2.5Y 4/2) (30 percent), and dark gray (5Y 4/1) (30 percent) very channery clay loam; massive; very firm; 50 percent rock fragments consisting of 90 percent dark gray (N 4/) and very dark gray (N 4/) shale and 10 percent siltstone or coal; strongly acid; gradual smooth boundary.

2C3—45 to 80 inches; variegated very dark grayish brown (2.5Y 3/2) (40 percent), dark grayish brown (2.5Y 4/2) (30 percent), and dark gray (5Y 4/1) (30 percent) very channery clay loam; massive; very firm; 50 percent rock fragments consisting of 90 percent dark gray (N 4/) and very dark gray (N 4/) shale and 10 percent siltstone or coal; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 15 percent; 2C horizon—35 to 60 percent
Ap or A horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—loam
2C horizon:
Color—hue of 7.5YR to 5Y or is neutral, value of 2 to 6, chroma of 0 to 8
Texture—very channery analogs of loam, clay loam, or silty clay loam

Euclid Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Silty deposits
Landform: Stream terraces
Position on the landform: Treads
Slope: 0 to 3 percent
Commonly adjacent soils: Glenford, Mentor, Sarahsville

Taxonomic class: Fine-silty, mixed, nonacid, mesic Aeric Haplaquepts

Typical Pedon

Euclid silt loam, rarely flooded, in Richland Township; 600 feet south and 1,580 feet west of the northeast corner of sec. 8, T. 1 N., R. 2 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; common roots; slightly acid; abrupt smooth boundary.

Bg—9 to 15 inches; grayish brown (10YR 5/2) silt loam; common fine distinct dark yellowish brown

(10YR 4/6) mottles; weak medium subangular blocky structure; friable; common roots; few dark concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

Bw—15 to 48 inches; dark yellowish brown (10YR 4/4) silty clay loam; many medium distinct gray (10YR 5/1) and strong brown (7.5YR 5/6) mottles; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; few roots; many distinct dark gray (10YR 4/1) silt coatings on prisms and faces of blocky peds; common dark concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

BC—48 to 53 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct gray (10YR 5/1) and common medium faint strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; many distinct dark gray (10YR 4/1) silt coatings on faces of peds; common dark concretions of iron and manganese oxide; moderately acid; gradual smooth boundary.

C—53 to 80 inches; yellowish brown (10YR 5/4) silty clay loam that has thin strata of silt loam; common medium distinct grayish brown (10YR 5/2) and few medium faint strong brown (7.5YR 5/6) mottles; massive; firm; few dark concretions of iron and manganese oxide; moderately acid.

Range in Characteristics

Thickness of the solum: 35 to 55 inches
Depth to bedrock: More than 60 inches
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bw and Bg horizons:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 2 to 6
Texture—silt loam, silty clay loam
C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silt loam, silty clay loam, thin strata of loam and fine sandy loam in some pedons

Fairpoint Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Partially weathered fine-earth material, fragments of shale and siltstone, and smaller amounts of sandstone and limestone from surface mining operations
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 40 percent
Commonly adjacent soils: Guernsey, Lowell, Upshur, Westmoreland

Taxonomic class: Loamy-skeletal, mixed, nonacid, mesic Typic Udorthents

Typical Pedon

Fairpoint silty clay loam, 8 to 25 percent slopes, in Adams Township; 1,580 feet south and 580 feet east of the northwest corner of sec. 16, T. 2 N., R. 4 W.

Ap1—0 to 2 inches; brown (10YR 4/3) silty clay loam; moderate medium and coarse granular structure; friable; many roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Ap2—2 to 8 inches; mixed yellowish brown (10YR 5/4) and brown (10YR 5/3) silty clay loam and brown (10YR 4/3) silt loam; weak medium subangular blocky structure; very firm; common roots; 10 percent rock fragments; moderately acid; abrupt wavy boundary.

2C—8 to 80 inches; olive brown (2.5Y 4/4) extremely flaggy clay loam; massive; very firm; few roots to a depth of 18 inches; 60 percent rock fragments consisting mainly of olive gray (5Y 4/2) and dark grayish brown (2.5Y 4/2), subrounded, hard mudstone; few yellowish brown (10YR 5/8), soft mudstone fragments; slightly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 15 percent; 2C horizon—35 to 80 percent in individual subhorizons
Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, chroma of 1 to 6
Texture—silty clay loam
2C horizon:
Color—hue of 7.5YR to 5Y or is neutral, value of 3 to 6, chroma of 0 to 8
Texture—very channery, extremely channery, very flaggy, or extremely flaggy analogs of clay loam, silty clay loam, silt loam, or loam

Fitchville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Silty lacustrine deposits

Landform: Terraces
Position on the landform: Treads
Slope: 0 to 3 percent
Commonly adjacent soils: Glenford

Taxonomic class: Fine-silty, mixed, mesic Aeric Ochraqualfs

Typical Pedon

Fitchville silt loam, 0 to 3 percent slopes, in Liberty Township; 1,280 feet south and 1,900 feet east of the northwest corner of sec. 5, T. 3 N., R. 3 W.

Ap—0 to 9 inches; dark grayish brown (2.5Y 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; common fine distinct dark yellowish brown (10YR 3/4) mottles; weak fine subangular blocky structure parting to weak fine granular; friable; common roots; slightly acid; abrupt smooth boundary.

Eg—9 to 12 inches; grayish brown (10YR 5/2) silt loam; common medium prominent strong brown (7.5YR 5/6) and common medium faint gray (10YR 5/1) mottles; weak medium subangular blocky structure; friable; few roots; moderately acid; clear smooth boundary.

BE—12 to 17 inches; yellowish brown (10YR 5/4) silt loam; many medium prominent gray (10YR 6/1) and many medium distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few roots; many distinct grayish brown (10YR 5/2) clay films and common distinct pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; gradual wavy boundary.

Bt—17 to 31 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent gray (10YR 5/1) mottles; moderate medium prismatic structure parting to moderate coarse angular blocky; firm; many prominent dark gray (10YR 4/1) surfaces and few clay films on faces of peds; moderately acid; gradual wavy boundary.

BC—31 to 46 inches; yellowish brown (10YR 5/4) silty clay loam; common gray (10YR 5/1) silt coatings on vertical faces of peds; common medium distinct strong brown (7.5YR 5/6), grayish brown (10YR 5/2), and dark gray (10YR 4/1) mottles; weak coarse subangular blocky structure; friable; many fine, dark, soft accumulations of iron and manganese oxide; neutral; clear wavy boundary.

C—46 to 80 inches; yellowish brown (10YR 5/6) stratified silt loam and silty clay loam; common medium distinct brown (7.5YR 5/2), common medium prominent light yellowish brown (2.5Y 6/4), and few medium prominent gray (10YR 6/1) mottles; massive; friable; few thin strata of loam; few soft accumulations of calcium carbonate having strong effervescence; slightly alkaline.

Range in Characteristics

Thickness of the solum: 35 to 70 inches
Depth to bedrock: More than 60 inches
Ap horizon:
Color—hue of 2.5Y or 10YR, value of 4 or 5, chroma of 2
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 1 to 6
Texture—silt loam, silty clay loam
C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silt loam, silty clay loam, thin lenses of fine sandy loam and loam in some pedons

Gilpin Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum derived from siltstone, fine grained sandstone, and shale
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 2 to 25 percent
Commonly adjacent soils: Guernsey, Lowell, Wellston, Westmoreland, Zanesville

Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludults

Typical Pedon

Gilpin silt loam, 8 to 15 percent slopes, in Wills Township; 1,880 feet north and 720 feet east of the southwest corner of sec. 20, T. 2. N., R. 2. W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many roots; 5 percent rock fragments; abrupt smooth boundary.

Bt1—8 to 17 inches; brown (7.5YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; common roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent rock fragments; strongly acid; gradual smooth boundary.

Bt2—17 to 24 inches; yellowish brown (10YR 5/4) channery silty clay loam; moderate fine and medium subangular blocky structure; friable; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; many stains of iron and manganese oxide; 20 percent rock fragments; strongly acid; gradual wavy boundary.

C—24 to 28 inches; yellowish brown (10YR 5/6) very channery loam; massive; friable; few roots; few distinct brown (7.5YR 4/4) clay films on stone fragments; many stains and concretions of iron and manganese oxide; 50 percent rock fragments; strongly acid; clear smooth boundary.

Cr—28 to 35 inches; fractured siltstone.

Range in Characteristics

Thickness of the solum: 20 to 36 inches
Depth to bedrock: 20 to 40 inches
Content of rock fragments: Ap and Bt horizons—5 to 35 percent; C horizon—30 to 80 percent
Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value and chroma of 4 to 6
Texture—silt loam, loam, silty clay loam, or the channery analogs of those textures
C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6
Texture—channery to extremely channery analogs of loam, silty clay loam, or silt loam

Glenford Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Stratified, silty lacustrine sediments
Landform: Terraces
Position on the landform: Treads
Slope: 0 to 6 percent
Commonly adjacent soils: Fitchville, Mentor

Taxonomic class: Fine-silty, mixed, mesic Aquic Hapludalfs

Typical Pedon

Glenford silt loam, 0 to 2 percent slopes, in Liberty Township; 1,320 feet south and 1,420 feet east of the northwest corner of sec. 5, T. 3 N., R. 3 W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak medium granular; friable; many roots; slightly acid; abrupt smooth boundary.

Bt1—10 to 15 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; common roots; common faint yellowish brown (10YR 5/4) clay films and common faint brown (10YR 5/3) silt coatings on faces of peds; very strongly acid; clear smooth boundary.

Bt2—15 to 40 inches; yellowish brown (10YR 5/4) silty clay loam; many fine distinct strong brown (7.5YR 5/6) and gray (10YR 5/1) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few roots; common distinct grayish brown (10YR 5/2) and light olive brown (2.5Y 5/4) clay films on prisms and some faces of peds; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in voids; extremely acid; gradual wavy boundary.

BC—40 to 57 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct strong brown (7.5YR 5/8) and gray (10YR 6/1) mottles; weak coarse subangular blocky structure; firm; few roots; few distinct grayish brown (10YR 5/2) clay films on faces of peds; slightly acid; gradual smooth boundary.

C—57 to 80 inches; yellowish brown (10YR 5/6) stratified silty clay loam and silt loam; few medium distinct strong brown (7.5YR 5/8) and common fine prominent gray (10YR 5/1) and grayish brown (10YR 5/2) mottles; massive; firm; weak effervescence; few secondary nodules have strong effervescence; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: BC and C horizons—0 to 3 percent
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam, thin strata of loam and fine sandy loam in some pedons
C horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 to 6
Texture—stratified silt loam and silty clay loam; thin strata of loam, fine sandy loam, or silty clay in some pedons

Guernsey Series

Depth class: Deep and very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow
Parent material: Colluvium and residuum derived from siltstone and shale interbedded with thin layers of limestone and sandstone
Landform: Hills
Position on the landform: Shoulders, backslopes
Slope: 8 to 25 percent
Commonly adjacent soils: Brookside, Lowell, Upshur, Westmore, Westmoreland

Taxonomic class: Fine, mixed, mesic Aquic Hapludalfs

Typical Pedon

Guernsey silt loam, in an area of Claysville-Guernsey complex, 8 to 15 percent slopes, in Spencer Township; 1,080 feet north and 2,200 feet east of the southwest corner of sec. 8, T. 9 N., R. 10 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure parting to weak fine granular; friable; many roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

B/A—9 to 12 inches; mixed dark yellowish brown (10YR 4/4) (70 percent) and brown (10YR 4/3) (30 percent) silty clay loam; moderate fine angular blocky structure; friable; common roots; common distinct brown (10YR 5/3) silt coatings on faces of peds; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bt1—12 to 19 inches; brown (7.5YR 5/4) silty clay loam; moderate medium angular blocky structure; friable; common roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent rock fragments; strongly acid; clear smooth boundary.

Bt2—19 to 31 inches; brown (7.5YR 4/4) clay; few medium prominent grayish brown (2.5Y 5/2) mottles; moderate medium angular blocky structure; firm; few roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; 10 percent rock fragments; strongly acid; clear wavy boundary.

Bt3—31 to 43 inches; dark yellowish brown (10YR 4/4) channery clay; common medium distinct grayish brown (2.5Y 5/2) mottles; weak coarse subangular blocky structure; firm; few roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few reddish brown (5YR 4/3) streaks; 15 percent rock fragments; strongly acid; abrupt wavy boundary.

2BC—43 to 52 inches; brown (7.5YR 4/4) clay; common medium distinct grayish brown (2.5Y 5/2) mottles; weak coarse subangular blocky structure; firm; few roots; common distinct reddish brown (5YR 4/3) mottles; 10 percent rock fragments; moderately acid; gradual wavy boundary.

2C—52 to 80 inches; mixed yellowish brown (10YR 5/4) and olive brown (2.5Y 4/4) clay; many medium prominent dark gray (10YR 4/1) and few prominent reddish brown (5YR 4/3) mottles; massive; firm; many soft, unoriented shale fragments; 10 percent hard siltstone fragments; neutral.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Depth to bedrock: More than 50 inches
Depth to carbonates: More than 30 inches
Content of rock fragments: Ap horizon—2 to 15 percent; Bt horizon—2 to 25 percent; 2C horizon—2 to 35 percent
Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture—silt loam
Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6
Texture—silty clay loam, silty clay, clay, silt loam, or the channery analogs of those textures; thin subhorizons of silt loam in the upper part of the horizon
2C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—silty clay loam, silty clay, clay, or the channery analogs of those textures

Hartshorn Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid
Parent material: Alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Berks, Lowell, Richland, Westmoreland

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Dystric Fluventic Eutrochrepts

Typical Pedon

Hartshorn silt loam, occasionally flooded, in Oxford Township; 520 feet north and 820 feet east of the southwest corner of sec. 2, T. 10 N., R. 7 W.

Ap—0 to 8 inches; dark yellowish brown (10YR 3/4) silt loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common roots; 5 percent gravel; moderately acid; abrupt smooth boundary.

Bw1—8 to 14 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; common roots; 5 percent gravel; moderately acid; clear wavy boundary.

Bw2—14 to 28 inches; brown (10YR 4/3) gravelly loam; weak fine and medium subangular blocky structure; friable; few roots; 15 percent gravel; moderately acid; abrupt wavy boundary.

BC—28 to 33 inches; dark yellowish brown (10YR 4/4) very gravelly loam; few medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; few roots; few dark concretions of iron and manganese oxide; 40 percent gravel; slightly acid; clear smooth boundary.

2C1—33 to 46 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam; common medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; massive; friable; many faint dark grayish brown (10YR 4/2) coatings on pebbles; few dark concretions of iron and manganese oxide; 65 percent gravel; slightly acid; clear smooth boundary.

2C2—46 to 74 inches; dark yellowish brown (10YR 4/4) very gravelly loam; common medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; massive; friable; many faint dark grayish brown (10YR 4/2) coatings on pebbles; few dark concretions of iron and manganese oxide; 50 percent gravel; slightly acid; abrupt smooth boundary.

3Cr—74 to 80 inches; dark brown (7.5YR 3/2), soft mudstone; common medium prominent greenish gray (5BG 5/1) zones that are slightly harder; neutral.

Range in Characteristics

Thickness of the solum: 15 to 34 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 5 percent; Bw horizon—0 to 15 percent; 2C horizon—35 to 70 percent

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—silt loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 or 4
Texture—silt loam, loam, or the gravelly analogs of those textures

2C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 3 or 4
Texture—very gravelly or extremely gravelly analogs of loam, sandy loam, or clay loam

Hazleton Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Rapid
Parent material: Residuum derived from medium and coarse grained sandstone
Landform: Hills
Position on the landform: Backslopes
Slope: 25 to 70 percent
Commonly adjacent soils: Dekalb, Gilpin, Clarksburg, Westmoreland

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Dystrochrepts

Typical Pedon

Hazleton channery loam, 25 to 70 percent slopes, stony, in Wheeling Township; 230 feet north and 2,780 feet west of the southeast corner of sec. 19, T. 4 N., R. 3 W.

Oi—2 inches to 1 inch; leaf litter from deciduous trees.

Oe—1 inch to 0; partially decomposed leaf litter.

A—0 to 3 inches; dark brown (10YR 3/3) channery loam, brown (10YR 5/3) dry; moderate very fine granular structure; very friable; many roots; 20 percent rock fragments; strongly acid; clear irregular boundary.

E—3 to 8 inches; yellowish brown (10YR 5/4) channery loam; weak fine subangular blocky structure; friable; many roots; 20 percent rock fragments; very strongly acid; clear wavy boundary.

Bw—8 to 25 inches; light yellowish brown (10YR 6/4) channery loam; weak medium subangular blocky structure; friable; common roots; 25 percent rock fragments; very strongly acid; gradual wavy boundary.

C—25 to 42 inches; light yellowish brown (10YR 6/4) extremely flaggy loam; massive; friable; few roots; 70 percent rock fragments; very strongly acid; abrupt wavy boundary.
R—42 to 44 inches; hard sandstone.

Range in Characteristics

Thickness of the solum: 25 to 50 inches
Depth to bedrock: 40 to 72 inches
Content of rock fragments: A, E, and Bw horizons—10 to 60 percent; C horizon—35 to 80 percent
A horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—channery loam
E horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture—loam, sandy loam, fine sandy loam, or the channery or very channery analogs of those textures
Bw horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 3 to 6
Texture—loam, sandy loam, or the channery, very channery, flaggy, or very flaggy analogs of those textures
C horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, chroma of 4 to 6
Texture—very channery, extremely channery, very flaggy, or extremely flaggy analogs of loam, sandy loam, or loamy sand

Holton Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Chagrin, Clarksburg, Kanawha

Taxonomic class: Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts

Typical Pedon

Holton silt loam, occasionally flooded, in Wheeling Township; 1,080 feet south and 2,240 feet east of the northwest corner of sec. 1, T. 4 N., R. 3 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; common medium faint dark grayish brown (2.5Y 4/2) mottles in the lower part; weak medium granular structure; friable; common roots; moderately acid; abrupt smooth boundary.
Bw—9 to 14 inches; brown (10YR 4/3) silt loam; common medium distinct grayish brown (10YR 5/2) mottles with yellowish brown (10YR 5/8) rinds; weak medium subangular blocky structure; friable; common roots; moderately acid; clear smooth boundary.
Bg1—14 to 20 inches; grayish brown (10YR 5/2) silt loam; few medium distinct gray (10YR 5/1) mottles; massive; friable; few roots; common strong brown (7.5YR 5/6) concretions; moderately acid; clear smooth boundary.
Bg2—20 to 30 inches; grayish brown (2.5Y 5/2) loam; few fine prominent yellowish red (5YR 4/6) mottles; massive; friable; few roots; moderately acid; clear wavy boundary.
Bg3—30 to 36 inches; dark gray (5Y 4/1) sandy loam; common fine prominent yellowish red (5YR 4/6) and common medium prominent dark yellowish brown (10YR 4/4) mottles; massive; friable; few roots; moderately acid; gradual smooth boundary.
Cg1—36 to 56 inches; dark gray (5Y 4/1) loamy sand; single grained; loose; slightly acid; abrupt smooth boundary.
Cg2—56 to 80 inches; dark gray (5Y 4/1) gravelly loamy sand; single grained; loose; 20 percent gravel; slightly acid.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 5 percent; Bg and Bw horizons—0 to 10 percent; C horizon—0 to 25 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2
Texture—silt loam
Bg horizon and Bw horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 6
Texture—silt loam; loam; sandy loam or fine sandy loam common in the lower part of the horizons
Cg horizon:
Color—hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 6
Texture—sandy loam, loam, loamy sand, or the gravelly analogs of those textures

Kanawha Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Parent material: Local alluvium
Landform: Stream terraces
Position on the landform: Treads
Slope: 2 to 6 percent
Commonly adjacent soils: Berks, Clarksburg, Dekalb, Hazleton, Westmoreland

Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

Kanawha loam, 2 to 6 percent slopes, in Wheeling Township; 2,140 feet south and 2,600 feet east of the northwest corner of sec. 1, T. 4 N., R. 3 W.

Ap—0 to 10 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak medium granular; very friable; many roots; 5 percent sandstone fragments; strongly acid; abrupt smooth boundary.
BA—10 to 13 inches; dark yellowish brown (10YR 4/4) loam; moderate fine subangular blocky structure; friable; many distinct brown (10YR 4/3) organic coatings on faces of peds; 5 percent rock fragments; strongly acid; clear smooth boundary.
Bt—13 to 32 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; common roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; 10 percent rock fragments; strongly acid; clear wavy boundary.
BC—32 to 40 inches; brown (7.5YR 4/4) gravelly loam; weak medium subangular blocky structure; friable; few roots; 20 percent rock fragments; moderately acid; clear smooth boundary.
C1—40 to 48 inches; brown (10YR 4/3) gravelly loam; massive; friable; 30 percent rock fragments; moderately acid; gradual smooth boundary.
C2—48 to 80 inches; brown (10YR 4/3) very gravelly loam; massive; friable; 45 percent rock fragments; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 72 inches
Content of rock fragments: Ap and Bt horizons—0 to 20 percent; C horizon—5 to 50 percent
Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4, chroma of 2 to 4
Texture—loam
Bt horizon:
Color—hue of 10YR to 5YR, value of 4 or 5, chroma of 3 to 6
Texture—loam, silt loam, clay loam
C horizon:
Color—hue of 10YR to 5YR, value of 4 or 5, chroma of 3 to 6
Texture—loam, fine sandy loam, or the gravelly or very gravelly analogs of those textures

Keene Series

Depth class: Deep and very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow
Parent material: A silty mantle and the underlying residuum derived from shale and siltstone
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 1 to 15 percent
Commonly adjacent soils: Aaron, Upshur, Zanesville

Taxonomic class: Fine-silty, mixed, mesic Aquic Hapludalfs

Typical Pedon

Keene silt loam, 1 to 8 percent slopes, in Washington Township; 520 feet south and 2,260 feet east of the northwest corner of sec. 3, T. 4 N., R. 1 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure parting to weak fine granular; friable; many roots; moderately acid; abrupt smooth boundary.
BE—9 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common roots; common faint light yellowish brown (10YR 6/4) silt coatings on faces of peds; strongly acid; clear smooth boundary.
Bt1—12 to 21 inches; yellowish brown (10YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; common roots; common distinct brown (7.5YR 5/4) clay films and few faint brown (10YR 5/3) silt coatings on faces of peds; few dark concretions of iron and manganese oxide; very strongly acid; clear wavy boundary.
2Bt2—21 to 31 inches; strong brown (7.5YR 5/6) silty clay loam; many medium prominent gray (5Y 6/1) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds;

5 percent rock fragments; very strongly acid; gradual smooth boundary.

2Bt3—31 to 43 inches; yellowish brown (10YR 5/4) silty clay; common medium faint yellowish brown (10YR 5/6) and common medium prominent gray (5Y 6/1) mottles; moderate medium and coarse subangular blocky structure; firm; many distinct gray (10YR 6/1) and few distinct reddish brown (5YR 5/3) clay films on faces of peds; 5 percent rock fragments; many dark concretions and stains of iron and manganese oxide; strongly acid; abrupt smooth boundary.

2BC—43 to 53 inches; yellowish brown (10YR 5/4) silty clay loam; common fine faint yellowish brown (10YR 5/6) and many medium distinct grayish brown (10YR 5/2) mottles; weak coarse subangular blocky structure; firm; common distinct gray (5Y 6/1) clay films on vertical faces of peds; common soft shale fragments; 5 percent rock fragments; strongly acid; gradual smooth boundary.

2C1—53 to 61 inches; olive brown (2.5Y 4/4) silty clay loam; many medium distinct grayish brown (2.5Y 5/2) mottles; massive; firm; many soft mudstone fragments; 5 percent rock fragments; strongly acid; gradual smooth boundary.

2C2—61 to 70 inches; dark yellowish brown (10YR 4/4) silty clay; many coarse prominent gray (10YR 5/1) mottles; massive; firm; few dead roots; 10 percent rock fragments; strongly acid; gradual smooth boundary.

2Cr—70 to 80 inches; black (10YR 2/1), highly weathered coal blossom grading to dark yellowish brown (10YR 4/4), soft shale.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: 40 to 80 inches
Thickness of the loess mantle: 20 to 30 inches
Content of rock fragments: A and Bt horizons—0 to 5 percent; 2Bt horizon—5 to 15 percent; 2C horizon—5 to 35 percent

Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value 4 or 5, chroma of 4 to 6
Texture—silt loam, silty clay loam

2Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—silty clay, silty clay loam

2C horizon:
Color—hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 4
Texture—silty clay loam, silty clay, clay, or the channery analogs of those textures

Lindside Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Newark, Sarahsville

Taxonomic class: Fine-silty, mixed, mesic Fluvaquentic Eutrochrepts

Typical Pedon

Lindside silt loam, frequently flooded, in Westland Township; 590 feet north and 4,220 feet west of the southeast corner of sec. 2, T. 1 N., R. 4 W.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak coarse subangular blocky structure parting to moderate medium granular; friable; common roots; moderately acid; abrupt smooth boundary.

Bw1—10 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; few medium distinct yellowish brown (10YR 5/6) mottles in the lower part; weak coarse subangular blocky structure; friable; few roots; few faint brown (10YR 5/3) silt coatings on faces of peds; strongly acid; clear smooth boundary.

Bw2—18 to 38 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct grayish brown (10YR 5/2) and few medium distinct yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; few roots; few faint brown (10YR 5/3) silt coatings on faces of peds; few dark concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

C—38 to 80 inches; dark yellowish brown (10YR 4/4) silt loam; few fine distinct grayish brown (10YR 5/2) and common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few thin strata of loam and silty clay loam; common faint brown (10YR 4/3) silt coatings in pores; moderately acid.

Range in Characteristics

Thickness of the solum: 25 to 50 inches
Depth to bedrock: More than 60 inches

Content of rock fragments: Ap horizon—0 to 5 percent; Bw and C horizons—0 to 5 percent above a depth of 40 inches, 0 to 15 percent below a depth of 40 inches

Ap horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 2 or 3

Texture—silt loam

Bw horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6 above a depth of 20 inches and 1 to 4 below a depth of 20 inches

Texture—silt loam, silty clay loam

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 1 to 4

Texture—silt loam, silty clay loam, and, less commonly, loam and fine sandy loam

Lowell Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Loess and the underlying residuum and colluvium derived from shale, limestone, and siltstone
Landform: Hills
Position on the landform: Summits, backslopes
Slope: 8 to 70 percent
Commonly adjacent soils: Brookside, Gilpin, Upshur, Westmoreland

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Lowell silt loam, 8 to 15 percent slopes, in Adams Township; 1,980 feet north and 1,280 feet east of the southwest corner of sec. 16, T. 2 N., R. 4 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common roots; common faint dark brown (10YR 3/3) organic coatings; neutral; abrupt smooth boundary.

Bt1—9 to 16 inches; brown (7.5YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; common roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt2—16 to 30 inches; yellowish brown (10YR 5/4) silty clay; common fine distinct strong brown (7.5YR 5/6) mottles in the lower part; moderate medium subangular blocky structure; firm; few roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few dark concretions of iron and manganese oxide in the lower part; few soft shale fragments; moderately acid; gradual smooth boundary.

2Bt3—30 to 46 inches; dark yellowish brown (10YR 4/4) clay; many medium distinct yellowish brown (10YR 5/6) and few medium distinct light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; few roots; common distinct brown (7.5YR 4/4) clay films in pores and on faces of peds; common soft shale fragments; strongly acid; abrupt wavy boundary.

2BC—46 to 58 inches; dark yellowish brown (10YR 4/4) silty clay; common fine distinct light olive brown (2.5Y 5/4) and few medium distinct very dark brown (10YR 2/2) mottles; weak coarse subangular blocky structure; firm; few distinct clay films on faces of peds; common soft shale fragments; moderately acid; gradual smooth boundary.

2C—58 to 70 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct strong brown (7.5YR 5/6) mottles; massive; firm; common dark grayish brown (10YR 4/2) and dark gray (10YR 4/1), soft shale fragments; few rock fragments; neutral; abrupt smooth boundary.

2Cr—70 to 75 inches; dark yellowish brown (10YR 3/4), soft shale.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: 40 to 72 inches
Thickness of the loess mantle: Less than 18 inches
Content of rock fragments: A and Bt horizons—0 to 5 percent; 2Bt and 2BC horizons—0 to 15 percent; 2C horizon—1 to 50 percent

Ap horizon:

Color—hue of 10YR, value of 4, chroma of 2 to 4

Texture—silt loam

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 4 to 6

Texture—silty clay loam and silty clay with thin subhorizons of silt loam in the upper part of the horizon

2Bt horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 4 to 6

Texture—silty clay, clay

2C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 4 to 6

Texture—silty clay loam, silty clay, clay, or the channery or very channery analogs of those textures

McGary Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow or very slow
Parent material: Calcareous, clayey lacustrine deposits
Landform: Terraces
Position on the landform: Treads
Slope: 0 to 3 percent
Commonly adjacent soils: Glenford, Mentor

Taxonomic class: Fine, mixed, mesic Aeric Ochraqualfs

Typical Pedon

McGary silt loam, 0 to 3 percent slopes, in Jackson Township; 1.5 miles south of Byesville; 1,920 feet north and 3,500 feet east of the intersection of Ohio Highway 821 and Seneca Lane.

Ap—0 to 9 inches; dark grayish brown (2.5Y 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; weak fine and medium granular structure; friable; many roots; slightly acid; abrupt smooth boundary.
BE—9 to 12 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent gray (10YR 5/1) mottles; weak medium platy structure parting to weak fine and medium subangular blocky; friable; common distinct light brownish gray (2.5Y 6/2) silt coatings on faces of peds; common roots; few dark stains and concretions of iron and manganese oxide; slightly acid; clear smooth boundary.
Bt1—12 to 27 inches; yellowish brown (10YR 5/6) silty clay; many fine prominent gray (10YR 5/1) mottles; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; many distinct light brownish gray (2.5Y 6/2) clay films on faces of peds; few roots; few dark stains and concretions of iron and manganese oxide; moderately acid; gradual smooth boundary.
Bt2—27 to 36 inches; brown (7.5YR 4/4) silty clay; common fine distinct gray (10YR 5/1) mottles; moderate medium prismatic structure parting to moderate medium angular blocky; firm; many distinct light brownish gray (2.5Y 6/2) and dark gray (5YR 4/1) clay films on faces of peds; few roots; few dark stains and concretions of iron and manganese oxide; slightly acid; clear wavy boundary.
C1—36 to 62 inches; brown (7.5YR 4/4) silty clay loam; common fine distinct gray (10YR 5/1) mottles; weak coarse subangular blocky structure; firm; few distinct dark reddish gray (5YR 4/2) clay films on faces of peds; few roots; many carbonate nodules; strong effervescence; moderately alkaline; abrupt smooth boundary.
2C2—62 to 80 inches; strong brown (7.5YR 5/6) stratified silt loam, loam, fine sandy loam, and loamy fine sand; massive; friable; common strong brown (7.5YR 5/8) and light brownish gray (2.5Y 6/2) streaks; common black (10YR 2/1) stains of iron and manganese oxide in the lower part; neutral.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Depth to bedrock: More than 60 inches
Depth to carbonates: 24 to 48 inches
Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 3
Texture—silt loam
Btg (if it occurs) and Bt horizons:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—silty clay loam, silty clay
Cg (if it occurs) and C horizons:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—stratified silty clay loam, silt loam, loam, fine sandy loam, loamy fine sand, silty clay, and clay

Melvin Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Newark

Taxonomic class: Fine-silty, mixed, nonacid, mesic Typic Fluvaquents

Typical Pedon

Melvin silt loam, ponded, in Wills Township; 1,520 feet south and 640 feet west of the northeast corner of sec. 3, T. 2 N., R. 1 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; common fine distinct dark yellowish brown (10YR 4/6) mottles; weak fine subangular blocky structure; friable; many roots; few dark concretions of iron and manganese oxide; moderately acid; abrupt smooth boundary.

Bg—9 to 22 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct dark yellowish brown (10YR 4/6) mottles; weak medium and coarse subangular blocky structure; friable; common distinct grayish brown (10YR 5/2) silt coatings on faces of peds; few roots; few dark concretions of iron and manganese oxide; moderately acid; clear smooth boundary.

Cg1—22 to 38 inches; grayish brown (10YR 5/2) silt loam; common medium faint gray (10YR 5/1) and many medium distinct dark yellowish brown (10YR 4/6) mottles; massive; friable; common dark concretions of iron and manganese oxide; slightly acid; gradual smooth boundary.

Cg2—38 to 56 inches; gray (10YR 5/1) silty clay loam; common medium distinct light olive brown (2.5Y 5/4) mottles; massive; firm; common dark concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Cg3—56 to 80 inches; gray (5Y 5/1) silt loam; many medium distinct light olive brown (2.5Y 5/4) mottles; massive; firm; few dark concretions of iron and manganese oxide; neutral.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 5 percent throughout the soils
Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 or 2
Texture—silt loam
Bg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 to 2
Texture—silt loam, silty clay loam
Cg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 to 2
Texture—silt loam, silty clay loam

Mentor Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Silty deposits
Landform: Terraces
Position on the landform: Treads, risers
Slope: 2 to 25 percent
Commonly adjacent soils: Fitchville, Glenford

Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Mentor silt loam, 2 to 8 percent slopes, in Liberty Township; 1,060 feet north and 520 feet west of the southeast corner of sec. 3, T. 3 N., R. 3 W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many roots; neutral; abrupt smooth boundary.

Bt1—7 to 30 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common roots; common faint brown (7.5YR 4/4) clay films and dark yellowish brown (10YR 4/4) silt coatings on faces of peds; strongly acid; gradual smooth boundary.

Bt2—30 to 42 inches; strong brown (7.5YR 5/6) silt loam; few fine faint brown (10YR 5/3) and strong brown (7.5YR 4/6) mottles; moderate coarse subangular blocky structure; friable; few roots; common distinct brown (7.5YR 4/4) clay films and common faint dark yellowish brown (10YR 4/4) silt coatings on faces of peds; few dark concretions of iron and manganese oxide; very strongly acid; gradual smooth boundary.

BC—42 to 52 inches; brown (7.5YR 4/4) silt loam; few fine faint brown (10YR 5/3) and strong brown (7.5YR 4/6) mottles; weak medium and coarse subangular blocky structure; friable; few roots; few faint clay films on faces of peds; common dark concretions of iron and manganese oxide; few thin lenses of loam; strongly acid; gradual smooth boundary.

C—52 to 80 inches; dark yellowish brown (10YR 4/4) silt loam; common faint brown (7.5YR 4/2) and strong brown (7.5YR 4/6) mottles; massive; friable; moderately acid in the upper part of the horizon grading to neutral in the lower part.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap and Bt horizons—0 to 2 percent; C horizon—0 to 10 percent
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam
C horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam, thin strata of loam and sandy loam in some pedons

Morristown Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Calcareous, partially weathered fine-earth material that has fragments of limestone and shale and some fragments of sandstone and siltstone from surface mining operations
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 70 percent
Commonly adjacent soils: Brookside, Elba, Lowell, Westmoreland

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Typic Udorthents

Typical Pedon

Morristown channery clay loam, 40 to 70 percent slopes, in Spencer Township; 3,080 feet south and 480 feet west of the northeast corner of sec. 19, T. 9 N., R. 10 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) channery clay loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; common roots; 20 percent rock fragments; strong effervescence; slightly alkaline; abrupt smooth boundary.
C1—3 to 8 inches; mixed grayish brown (10YR 5/2) and olive (5Y 5/3) very channery clay loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; weak fine subangular blocky structure; friable; common roots; 35 percent rock fragments; strong effervescence; slightly alkaline; clear wavy boundary.
C2—8 to 80 inches; mixed grayish brown (2.5Y 5/2) and olive (5Y 5/3) very channery clay loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; massive; firm; common roots to a depth of 20 inches, few roots to a depth of 40 inches; 55 percent rock fragments consisting of dark gray (5Y 4/1) and dusky red (10R 3/3) calcareous shale, olive (5Y 5/4) siltstone, and olive gray (5Y 5/2) sandstone; strong effervescence; slightly alkaline.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: A or Ap horizon—0 to 50 percent; C horizon—35 to 70 percent
A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 6
Texture—silty clay loam, channery clay loam
C horizon:
Color—hue of 7.5YR to 5Y or is neutral, value of 3 to 6, chroma of 0 to 8
Texture—very channery or extremely channery analogs of clay loam, silty clay loam, or loam

Newark Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Lindside, Nolin

Taxonomic class: Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Newark silt loam, frequently flooded, in Millwood Township; 340 feet south and 2,000 feet west of the northeast corner of sec. 25, T. 9 N., R. 7 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; many roots; moderately acid; abrupt smooth boundary.
Bg—8 to 20 inches; dark grayish brown (10YR 4/2) silt loam; many fine distinct brown (7.5YR 4/4) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; common roots; many faint brown (7.5YR 5/2) silt coatings on all faces of peds; few black (10YR 2/1) stains and concretions of iron and manganese oxide; moderately acid; gradual smooth boundary.
Bw—20 to 35 inches; brown (7.5YR 4/4) silty clay loam; weak coarse subangular blocky structure; friable; few roots; many distinct brown (7.5YR 4/2) organic coatings on all faces of peds; many black (10YR 2/1) stains and concretions of iron and

manganese oxide; moderately acid; gradual smooth boundary.

C—35 to 80 inches; brown (7.5YR 4/4) silty clay loam; common fine distinct grayish brown (10YR 5/2) mottles; massive; friable; many black (10YR 2/1) stains and concretions of iron and manganese oxide; moderately acid in the upper part of the horizon, strongly acid in the lower part.

Range in Characteristics

Thickness of the solum: 20 to 50 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 5 percent; B and C horizons—0 to 5 percent above a depth of 30 inches, 0 to 15 percent between depths of 30 and 40 inches, and 0 to 35 percent below a depth of 40 inches
Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bg horizon:
Color—hue of 7.5YR to 2.5Y or is neutral, value of 4 to 6, chroma of 0 to 2
Texture—silt loam, silty clay loam
Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 or 4
Texture—silty clay loam, silt loam
C horizon or Cg horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam, silt loam, thin strata of loam and fine sandy loam below a depth of 40 inches in many pedons

Nolin Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 3 percent
Commonly adjacent soils: Mentor, Newark

Taxonomic class: Fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts

Typical Pedon

Nolin silt loam, frequently flooded, in Wheeling Township; 80 feet south and 620 feet east of the northwest corner of sec. 18, T. 4 N., R. 4 W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate coarse subangular blocky structure parting to weak medium granular; friable; common roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; neutral; abrupt smooth boundary.

A—6 to 11 inches; brown (10YR 4/3) silt loam; moderate medium subangular blocky structure; friable; few roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; slightly acid; clear smooth boundary.

Bw1—11 to 26 inches; dark yellowish brown (10YR 4/4) silt loam; moderate coarse subangular blocky structure; friable; few roots; common distinct brown (10YR 4/3) organic coatings on faces of peds; moderately acid; gradual smooth boundary.

Bw2—26 to 41 inches; dark yellowish brown (10YR 4/4) silt loam; weak coarse subangular blocky structure; few roots; common distinct brown (10YR 4/3) organic coatings on faces of peds; moderately acid; gradual smooth boundary.

C—41 to 80 inches; dark yellowish brown (10YR 4/4) silt loam; massive; very friable; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap, A, and Bw horizons—0 to 5 percent; C horizon—0 to 15 percent
Ap and A horizons:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 or 4
Texture—silt loam, silty clay loam
C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam, silt loam, loam, fine sandy loam

Omulga Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan; slow in the fragipan
Parent material: Old alluvium or loess and the underlying lacustrine sediments
Landform: Terraces
Position on the landform: Treads, risers

Slope: 1 to 15 percent
Commonly adjacent soils: Clarksburg, Nolin

Taxonomic class: Fine-silty, mixed, mesic Typic Fragiudalfs

Typical Pedon

Omulga silt loam, 1 to 6 percent slopes, in Madison Township; 80 feet south and 280 feet west of the center of sec. 14, T. 3 N., R. 1 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; many roots; slightly acid; abrupt smooth boundary.
BE—9 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common roots; few tongues of brown (10YR 4/3) soil material from the Ap horizon; moderately acid; clear smooth boundary.
Bt—11 to 23 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few roots; common faint pale brown (10YR 6/3) silt coatings in the lower part; very strongly acid; gradual smooth boundary.
E—23 to 27 inches; yellowish brown (10YR 5/4) silt loam; common fine distinct gray (10YR 5/1) mottles; weak fine subangular blocky structure; firm; few roots; many faint pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; clear broken boundary.
Btx—27 to 60 inches; yellowish brown (10YR 5/6) silt loam; common medium faint strong brown (7.5YR 5/6) and few fine distinct gray (10YR 5/1) mottles; weak very coarse prismatic structure parting to weak thick platy; very firm, brittle; few roots between prisms in the upper part of the horizon; many distinct grayish brown (10YR 5/2) and few distinct yellowish brown (10YR 5/4) clay films on faces of prisms; few black (10YR 2/1) stains of iron and manganese oxide; very strongly acid; gradual smooth boundary.
BC—60 to 72 inches; light yellowish brown (10YR 6/4) silt loam; common fine faint brownish yellow (10YR 6/6) and common fine distinct light brownish gray (10YR 6/2) mottles; massive; firm; moderately acid; clear smooth boundary.
2C—72 to 80 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct gray (10YR 6/1) mottles; massive; firm; few dark grayish brown (10YR 4/2) bands; common fine black (10YR 2/1) stains of iron and manganese oxide; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 80 inches
Depth to bedrock: More than 60 inches
Depth to fragipan: 24 to 36 inches
Content of rock fragments: Ap, Bt, and Btx horizons—0 to 5 percent; BC and 2C horizons—0 to 15 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 or 3
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam
Btx horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 3 to 6
Texture—silt loam, silty clay loam
2C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 6
Texture—silt loam, silty clay loam, loam

Orrville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum; moderate or moderately rapid in the underlying material
Parent material: Recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 3 percent
Commonly adjacent soils: Chagrin, Clarksburg, Kanawha

Taxonomic class: Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Orrville silt loam, occasionally flooded, in Perry Township, Tuscarawas County; 1,340 feet north and 370 feet west of the southeast corner of sec. 4, T. 5 N., R. 1 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many roots; moderately acid; abrupt smooth boundary.
Bw—8 to 13 inches; brown (10YR 5/3) silt loam; many medium distinct yellowish brown (10YR 5/6) and common medium distinct gray (10YR 5/1) mottles; weak medium subangular blocky structure; friable; common roots; slightly acid; clear wavy boundary.

Bg1—13 to 21 inches; grayish brown (10YR 5/2) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common roots; slightly acid; clear wavy boundary.

Bg2—21 to 30 inches; grayish brown (10YR 5/2) silt loam; many medium faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; few roots; many reddish brown (5YR 5/4) stains along root channels; common black (10YR 2/1) concretions of iron and manganese oxide; slightly acid; clear wavy boundary.

BCg—30 to 36 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct reddish brown (5YR 5/4) mottles along root channels; weak medium subangular blocky structure; friable; common black (10YR 2/1) concretions of iron and manganese oxide; slightly acid; clear wavy boundary.

Cg1—36 to 42 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct reddish brown (5YR 5/4) mottles along root channels; massive; friable; few black (10YR 2/1) concretions of iron and manganese oxide; slightly acid; clear wavy boundary.

Cg2—42 to 50 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; 5 percent gravel; moderately acid; clear wavy boundary.

Cg3—50 to 60 inches; gray (5Y 5/1) sandy loam; massive; loose; 5 percent gravel; strongly acid.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—0 to 5 percent; Bw and Bg horizons—0 to 15 percent; C horizon—0 to 25 percent

Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2
Texture—silt loam

Bw horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, chroma of 3 to 6
Texture—silt loam, loam

Bg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 to 2
Texture—silt loam, loam, thin subhorizons of sandy loam or fine sandy loam in the lower part of some pedons

Cg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 to 6
Texture—silt loam, loam, sandy loam, loamy sand, or the gravelly analogs of those textures

Richland Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Colluvium
Landform: Hills
Position on the landform: Footslopes
Slope: 15 to 25 percent
Commonly adjacent soils: Bethesda, Dekalb, Lowell, Westmoreland

Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

Richland channery loam, 15 to 25 percent slopes, in Millwood Township; 3,000 feet north and 2,400 feet west of the southeast corner of sec. 4, T. 9 N., R. 7 W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) channery loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; many roots; 15 percent sandstone fragments; strongly acid; abrupt irregular boundary.

E—5 to 10 inches; dark yellowish brown (10YR 4/4) channery loam; weak fine and medium subangular blocky structure; friable; many roots; 15 percent sandstone fragments; strongly acid; clear wavy boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/4) channery loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; common roots; 15 percent sandstone fragments; strongly acid; clear smooth boundary.

Bt2—18 to 28 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; few roots; common distinct brown (7.5YR 5/4) clay films on faces of peds; few roots; 10 percent sandstone fragments; strongly acid; clear wavy boundary.

Bt3—28 to 42 inches; yellowish brown (10YR 5/4) channery loam; moderate fine and medium subangular blocky structure; friable; few roots; common distinct brown (7.5YR 5/4) clay films on faces of peds; few roots; 20 percent sandstone fragments; strongly acid; gradual smooth boundary.

BC—42 to 58 inches; dark yellowish brown (10YR 4/4) channery loam; weak coarse subangular blocky structure; friable; few faint clay films on vertical faces of peds; 20 percent sandstone fragments; moderately acid; gradual smooth boundary.

C—58 to 80 inches; dark yellowish brown (10YR 4/4) channery loam; common medium distinct grayish brown (10YR 5/2) mottles below a depth of 68 inches; massive; friable; 20 percent sandstone fragments; moderately acid.

Range in Characteristics

Thickness of the solum: 44 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: A, Ap, and E horizons—5 to 20 percent; Bt horizon—5 to 20 percent in the upper part of the horizon and 20 to 35 percent in the lower part; C horizon—20 to 55 percent
A horizon:
Color—hue of 10YR, value of 3, chroma of 2 or 3
Texture—channery loam
Ap horizon (if it occurs):
Color—hue of 10YR, value of 3 or 4, chroma of 2 to 4
E horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—loam, silt loam, or the channery analogs of those textures
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—loam, silt loam, clay loam, silty clay loam, sandy clay loam, or the channery or flaggy analogs of those textures
C horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—channery or very channery analogs of loam, clay loam, or silty clay loam

Sarahsville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Parent material: Clayey recent alluvium
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Lindside, Melvin, Newark, Nolin, Zipp

Taxonomic class: Fine, mixed, nonacid, mesic Aeric Haplaquepts

Typical Pedon

Sarahsville silty clay loam, frequently flooded, in Valley Township; 420 feet south and 440 feet east of the northwest corner of sec. 9, T. 8 N., R. 9 W.

Ap—0 to 9 inches; brown (7.5YR 4/2) silty clay loam, pinkish gray (7.5YR 6/2) dry; weak medium granular structure; friable; many roots; few dark concretions of iron and manganese oxide; moderately acid; abrupt smooth boundary.

Bg1—9 to 12 inches; brown (7.5YR 5/2) silty clay loam; common fine distinct strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure parting to weak fine granular; friable; common roots; common dark concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bg2—12 to 18 inches; brown (7.5YR 4/2) silty clay loam; many fine distinct strong brown (7.5YR 4/6) and few fine prominent gray (10YR 5/1) mottles; moderate fine and medium subangular blocky structure; firm; few roots; many distinct brown (7.5YR 5/2) silt coatings on faces of peds; many dark concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bw—18 to 27 inches; brown (7.5YR 5/4) silty clay; common fine prominent gray (10YR 5/1) and strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; firm; few roots; common distinct brown (7.5YR 4/2) silt coatings on faces of peds; common dark concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

BC—27 to 42 inches; strong brown (7.5YR 5/6) silty clay; common fine prominent gray (10YR 5/1) and common fine distinct strong brown (7.5YR 4/6) mottles; weak coarse subangular blocky structure; firm; common distinct brown (7.5YR 4/2) silt coatings on faces of peds; few distinct gray (N 6/) silt coatings in root channels and pores; strongly acid; gradual smooth boundary.

C—42 to 80 inches; reddish brown (5YR 4/4) silty clay grading to reddish brown (5YR 4/3) in the lower part; common medium prominent gray (10YR 5/1) and common medium distinct strong brown (7.5YR 4/6) mottles; massive; firm; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches

Depth to carbonates: More than 40 inches
Ap horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam
Bg and Bw horizons:
Color—hue of 5YR or 7.5YR, value of 4 or 5, chroma of 2 to 6
Texture—silty clay, clay, silty clay loam
Cg (if it occurs) and C horizons:
Color—hue of 5YR or 7.5YR, value of 4 or 5, chroma of 2 to 4
Texture—silty clay, silty clay loam

Sees Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Parent material: Colluvium
Landform: Hills
Position on the landform: Footslopes
Slope: 2 to 6 percent
Commonly adjacent soils: Brookside, Lindside, Nolin, Vandalia

Taxonomic class: Fine, mixed, mesic Aquollic Hapludalfs

Typical Pedon

Sees silty clay loam, 2 to 6 percent slopes, in Millwood Township; 620 feet south and 1,220 feet west of the northeast corner of sec. 31, T. 9 N., R. 7 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; many roots; few rock fragments; moderately acid; abrupt smooth boundary.

Bt1—9 to 15 inches; dark brown (7.5YR 3/4) silty clay; moderate fine and medium subangular blocky structure; firm; common roots; many distinct dark gray (10YR 4/1) and few distinct dark reddish gray (5YR 4/2) coatings on faces of peds; common fine dark concretions and soft accumulations of iron and manganese oxide; 5 percent rock fragments; moderately acid; clear wavy boundary.

Bt2—15 to 27 inches; brown (7.5YR 4/4) silty clay; few fine faint brown (7.5YR 4/2) mottles; moderate fine and medium subangular blocky structure; firm; few roots; many distinct brown (7.5YR 4/2) clay films on faces of peds; common fine dark concretions and soft accumulations of iron and manganese oxide; few rock fragments; moderately acid; gradual smooth boundary.

Bt3—27 to 32 inches; dark brown (7.5YR 3/4) silty clay; weak medium subangular blocky structure; firm; common distinct brown (7.5YR 4/2) clay films on faces of peds; common medium concretions and soft accumulations of iron and manganese oxide; many light olive brown (2.5Y 5/6), soft fragments of siltstone or shale; slightly acid; gradual smooth boundary.

Bt4—32 to 41 inches; dark yellowish brown (10YR 4/4) silty clay; few fine distinct gray (10YR 5/1) mottles; weak medium subangular blocky structure; firm; common distinct reddish gray (5YR 5/2) clay films on faces of peds; common dark concretions and accumulations of iron and manganese oxide; few light olive brown (2.5Y 5/6), soft fragments of siltstone or shale; slightly acid; gradual smooth boundary.

Bt5—41 to 60 inches; dark yellowish brown (10YR 4/4) silty clay; common medium distinct gray (10YR 5/1) mottles; massive; firm; few distinct reddish gray (5YR 5/2) clay films on vertical partings; few dark concretions and accumulations of iron and manganese oxide; moderately acid; gradual smooth boundary.

2C1—60 to 75 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent gray (5Y 6/1) and common medium distinct reddish gray (5YR 5/2) mottles; massive; firm; few dark concretions and accumulations of iron and manganese oxide; moderately acid; clear wavy boundary.

2C2—75 to 80 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent gray (5Y 6/1) and common medium distinct reddish gray (5YR 5/2) mottles; massive; firm; few dark concretions and accumulations of iron and manganese oxide; neutral.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap, Bt, and 2C horizons—0 to 15 percent
Ap horizon:
Color—hue of 10YR, value of 3, chroma of 1 to 3
Texture—silty clay loam
Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 3 to 6
Texture—silty clay, silty clay loam, clay
2C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silty clay loam, silty clay, clay

Upshur Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum derived from red clay shale
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 2 to 40 percent
Commonly adjacent soils: Aaron, Guernsey, Lowell, Westmoreland

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Upshur silt loam, 2 to 6 percent slopes, in Spencer Township; 880 feet south and 1,020 feet east of the northwest corner of sec. 35, T. 9 N., R. 10 W.

Ap—0 to 8 inches; dark brown (7.5YR 3/4) silt loam, light brown (7.5YR 6/4) dry; moderate medium granular structure; friable; many roots; about 5 percent mixed areas of B material; very strongly acid; abrupt smooth boundary.

Bt1—8 to 14 inches; dark red (2.5YR 3/6) silty clay; strong fine angular blocky structure; firm; common roots; many distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—14 to 29 inches; dusky red (10R 3/4) silty clay; moderate medium subangular blocky structure; firm; few roots; many prominent clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—29 to 39 inches; dusky red (10R 3/3) silty clay; common medium prominent mottles and few streaks of light olive brown (2.5Y 5/4) in the lower part; moderate medium subangular blocky structure; firm; few roots; many distinct clay films on faces of peds; few fine dark concretions of iron and manganese oxide; very strongly acid in the upper part of the horizon grading to slightly alkaline in the lower part; strong effervescence in zones; abrupt wavy boundary.

BC—39 to 45 inches; variegated dusky red (10R 3/3) and light olive brown (2.5Y 5/4) silty clay loam; weak coarse subangular structure; firm; 5 percent limestone fragments; few dark concretions of iron and manganese oxide; strong effervescence; slightly alkaline; gradual wavy boundary.

C1—45 to 55 inches; variegated light olive brown (2.5Y 5/6), olive (5Y 5/3), and reddish brown (5YR 4/3) silty clay loam; massive; firm; common medium dark concretions of iron and manganese oxide; few rock fragments; strong effervescence; slightly alkaline; abrupt wavy boundary.

C2—55 to 72 inches; variegated brownish yellow (10YR 6/8) and reddish brown (5YR 5/4) silty clay loam; common medium prominent light gray (5Y 7/1) mottles; massive; firm; few rock fragments; strong effervescence; slightly alkaline; abrupt smooth boundary.

Cr—72 to 77 inches; light olive brown (2.5Y 5/4), soft siltstone.

Range in Characteristics

Thickness of the solum: 26 to 50 inches
Depth to bedrock: 40 to 80 inches
Depth to carbonates: More than 26 inches
Content of rock fragments: Ap and Bt horizons—0 to 10 percent; C horizon—0 to 35 percent
Ap horizon:
Color—hue of 10YR to 5YR, value of 3 or 4, chroma of 2 to 4
Texture—silt loam, silty clay loam
Bt horizon:
Color—hue of 5YR to 10R, value of 3 or 4, chroma of 3 to 6
Texture—silty clay, clay
C horizon:
Color—generally hue of 10R to 5YR, value of 3 or 4, chroma of 3 to 8; commonly variegated and ranges to hue of 5Y and value of 6
Texture—silty clay loam, silty clay, clay

Vandalia Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Parent material: Colluvium derived from red clay shale and siltstone interbedded with thin layers of limestone and sandstone
Landform: Hills
Position on the landform: Footslopes
Slope: 8 to 40 percent
Commonly adjacent soils: Brookside, Guernsey, Upshur, Westmoreland

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Vandalia silty clay loam, 15 to 25 percent slopes, eroded, in Millwood Township; 1,120 feet south and 1,700 feet west of the northeast corner of sec. 25, T. 9 N., R. 7 W.

Ap—0 to 7 inches; dark brown (7.5YR 3/4) silty clay loam, light brown (7.5YR 6/4) dry; moderate fine and medium granular structure; friable; many roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—7 to 14 inches; reddish brown (5YR 4/4) silty clay loam; moderate fine and medium angular blocky structure; firm; few distinct clay films on faces of peds; many roots; 5 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—14 to 24 inches; reddish brown (5YR 4/4) silty clay; moderate medium angular and subangular blocky structure; firm; many distinct dark reddish brown (5YR 3/4) clay films on faces of peds; common roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bt3—24 to 31 inches; dark reddish brown (2.5YR 3/4) silty clay; moderate medium subangular blocky structure; firm; many distinct dark reddish brown (5YR 3/4) clay films on faces of peds; few roots; 5 percent rock fragments; moderately acid; gradual smooth boundary.

Bt4—31 to 50 inches; reddish brown (2.5YR 4/4) clay; moderate medium subangular blocky structure; firm; many distinct dark reddish brown (2.5YR 3/4) clay films on faces of peds; few roots; 5 percent rock fragments; few soft light reddish brown (5YR 6/4) secondary lime accumulations; neutral with few moderately alkaline zones that have strong effervescence; gradual wavy boundary.

BC—50 to 64 inches; dark reddish brown (2.5YR 3/4) clay; weak coarse subangular blocky structure; firm; common faint weak red (10R 4/3) clay films on faces of peds; few dark, soft accumulations of iron and manganese oxide; 5 percent rock fragments; slightly alkaline; few moderately alkaline zones with strong effervescence; clear wavy boundary.

C1—64 to 76 inches; dark reddish brown (2.5YR 3/4) clay; common medium prominent olive yellow (2.5Y 6/6), soft shale fragments; massive; firm; few faint clay films in vertical seams; few dark, soft accumulations of iron and manganese oxide; 10 percent rock fragments; strong effervescence; moderately alkaline; clear wavy boundary.

C2—76 to 80 inches; reddish brown (5YR 4/3) clay; few fine distinct strong brown (7.5YR 5/8) mottles; massive; firm; many olive (5Y 5/4), soft siltstone fragments; 5 percent rock fragments; slightly alkaline; few strongly effervescent zones that are moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 80 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: Ap horizon—5 to 15 percent; Bt and C horizons—5 to 35 percent
Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 2 to 4
Texture—silty clay loam
Upper part of the Bt horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silty clay loam, clay loam, silty clay, or the channery analogs of those textures
Lower part of the Bt horizon:
Color—hue of 5YR to 10R, value of 3 or 4, chroma of 3 to 6
Texture—silty clay, clay, silty clay loam, or the channery analogs of those textures
C horizon:
Color—hue of 5YR to 10R, value and chroma of 3 to 6
Texture—silty clay loam, clay loam, silty clay, clay, or the channery analogs of those textures

Vincent Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Parent material: Alluvium and lacustrine sediments
Landform: Terraces
Position on the landform: Treads, risers
Slope: 2 to 15 percent
Commonly adjacent soils: Omulga, Sarahsville

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Vincent silt loam, 6 to 15 percent slopes, in Richland Township; 2,160 feet north and 1,920 feet east of the southwest corner of sec. 8, T. 1 N., R. 1 W.

Ap—0 to 9 inches; brown (7.5YR 4/2) silt loam, light brown (10YR 6/4) dry; weak medium subangular blocky structure parting to weak medium granular; friable; many roots; moderately acid; abrupt smooth boundary.

Bt1—9 to 22 inches; reddish brown (5YR 4/4) silty clay loam; moderate fine angular blocky structure; friable; common roots; common distinct reddish brown (5YR 4/3) clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—22 to 38 inches; reddish brown (5YR 4/4) silty clay; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; few roots; common distinct reddish brown (5YR 4/3) clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—38 to 50 inches; reddish brown (5YR 4/3) silty clay; few fine faint dark reddish gray (5YR 4/2) and common medium distinct yellowish red (5YR 5/6) mottles; weak medium and coarse subangular blocky structure; firm; few roots; common distinct reddish brown (5YR 4/3) clay films on faces of peds; common dark concretions and stains of iron and manganese oxide; very strongly acid; clear smooth boundary.

BC—50 to 62 inches; reddish brown (5YR 4/4) silty clay; few medium distinct yellowish red (5YR 4/8) mottles; weak coarse subangular blocky structure; firm; common distinct reddish gray (5YR 5/2) clay films on faces of peds; common dark concretions and stains of iron and manganese oxide; strongly acid; gradual smooth boundary.

C1—62 to 76 inches; brown (7.5YR 4/4) silty clay loam; common fine distinct strong brown (7.5YR 5/6) and brown (7.5YR 5/2) mottles; massive; firm; common dark concretions and stains of iron and manganese oxide; moderately acid; abrupt wavy boundary.

C2—76 to 80 inches; reddish brown (5YR 4/4) silty clay loam; common fine distinct yellowish red (5YR 5/6) and reddish gray (5YR 5/2) mottles; massive; firm; many dark concretions and stains of iron and manganese oxide; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 70 inches
Depth to bedrock: More than 60 inches
Thickness of the loess mantle: 0 to 20 inches
Content of rock fragments: C horizon—0 to 3 percent
Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 or 4, chroma of 2 to 4
Texture—silt loam, silty clay loam
Bt horizon:
Color—hue of 2.5YR or 5YR (7.5YR or 10YR in the loess mantle), value of 3 to 5, chroma of 3 to 6
Texture—silty clay, clay, silty clay loam
C horizon:
Color—hue of 7.5YR to 2.5YR, value of 3 to 5, chroma of 3 to 6
Texture—silty clay loam, silty clay, clay

Wellston Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Loess and the underlying residuum derived from siltstone and fine grained sandstone
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 2 to 15 percent
Commonly adjacent soils: Westmoreland, Zanesville

Taxonomic class: Fine-silty, mixed, mesic Ultic Hapludalfs

Typical Pedon

Wellston silt loam, 2 to 8 percent slopes, in Monroe Township; 960 feet south and 840 feet east of the northwest corner of sec. 12, T. 4 N., R. 2 W.

Ap1—0 to 3 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; very friable; many roots; slightly acid; abrupt smooth boundary.

Ap2—3 to 9 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak medium granular; very friable; many roots; slightly acid; abrupt smooth boundary.

BA—9 to 15 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common roots; few distinct brown (10YR 4/3) organic coatings and tongues; moderately acid; clear smooth boundary.

Bt—15 to 37 inches; dark yellowish brown (10YR 4/6) silt loam; moderate fine and medium subangular blocky structure; friable; few roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.

2BC—37 to 43 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; few roots; few distinct brown (7.5YR 4/4) clay films on faces of peds; common soft siltstone fragments; 10 percent fine grained sandstone fragments; strongly acid; clear smooth boundary.

2C—43 to 47 inches; yellowish brown (10YR 5/4) loam; common medium faint yellowish brown (10YR 5/6) mottles; massive; friable; few distinct brown (7.5YR 4/4) clay films on fragments; many soft siltstone fragments; 10 percent fine grained sandstone fragments; strongly acid; clear wavy boundary.

2Cr—47 to 72 inches; light olive brown (2.5Y 5/4), soft, fine grained sandstone.

2R—72 to 74 inches; hard sandstone.

Range in Characteristics

Thickness of the solum: 32 to 55 inches

Depth to bedrock: 40 to 72 inches
Thickness of the loess mantle: 20 to 40 inches
Content of rock fragments: Ap and Bt horizons—0 to 2 percent; 2Bt and 2BC horizons—5 to 60 percent; 2C horizon—5 to 80 percent
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam
2Bt (if it occurs) and 2BC horizons:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam, loam, clay loam, or the channery or very channery analogs of those textures
2C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 3 to 6
Texture—loam, silt loam, clay loam, sandy loam, or the channery to extremely channery analogs of those textures

Westmore Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderate in the silty material; moderately slow or slow in the underlying material
Parent material: Loess and the underlying residuum derived from limestone, siltstone, and shale
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 2 to 15 percent
Commonly adjacent soils: Lowell, Wellston, Zanesville

Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Westmore silt loam, 8 to 15 percent slopes, eroded, in Spencer Township; 2,260 feet north and 1,480 feet east of the southwest corner of sec. 7, T. 9 N., R. 10 W.

Ap—0 to 8 inches; upper 3 inches dark brown (10YR 3/3) silt loam, grayish brown (10YR 5/2) dry; lower 5 inches brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; very friable; many roots; neutral; abrupt irregular boundary.
B/A—8 to 11 inches; mixed yellowish brown (10YR 5/4) (60 percent) and brown (10YR 4/3) (40 percent) silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; common roots; slightly acid; abrupt wavy boundary.
Bt1—11 to 16 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common roots; common faint brown (7.5YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.
Bt2—16 to 26 inches; brown (7.5YR 4/4) silty clay loam; moderate fine and medium angular blocky structure; firm; few roots; many faint brown (7.5YR 4/4) clay films on faces of peds; few soft shale fragments; moderately acid; gradual smooth boundary.
2Bt3—26 to 34 inches; brown (7.5YR 4/4) silty clay loam; moderate medium angular blocky structure; firm; few roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few dark concretions of iron and manganese oxide; about 5 percent rock fragments; moderately acid; clear wavy boundary.
2Bt4—34 to 42 inches; dark yellowish brown (10YR 4/4) clay; many medium distinct brownish yellow (10YR 6/6) mottles; moderate medium angular blocky structure; firm; many distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; common dark concretions of iron and manganese oxide; few soft limestone fragments; slightly acid; gradual smooth boundary.
2BC—42 to 54 inches; dark yellowish brown (10YR 4/4) clay; many medium distinct brownish yellow (10YR 6/6) mottles; weak coarse subangular blocky structure; firm; few distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; common soft limestone fragments; neutral; gradual smooth boundary.
2C—54 to 64 inches; variegated strong brown (7.5YR 5/6) and light olive brown (2.5Y 5/4) silty clay loam; massive; firm; many soft pale olive (5Y 6/3) limestone fragments; 5 percent hard limestone fragments; strong effervescence; moderately alkaline; abrupt smooth boundary.
2Cr—64 to 72 inches; olive (5Y 5/4), soft limestone.
2R—72 to 74 inches; hard limestone.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: 48 to 72 inches
Thickness of the loess mantle: 20 to 36 inches
Content of rock fragments: Ap and Bt horizons—0 to 5 percent; 2Bt and 2C horizons—5 to 25 percent
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 2 to 4

Texture—silt loam

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 6

Texture—silt loam, silty clay loam

2Bt horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 3 to 6

Texture—silty clay loam, silty clay, clay, or the channery analogs of those textures

2C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 6

Texture—clay, silty clay, silty clay loam, or the channery analogs of those textures

Westmoreland Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum derived from siltstone, fine grained and medium grained sandstone, and thin-bedded, nonacid shale
Landform: Hills
Position on the landform: Summits, shoulders, backslopes
Slope: 6 to 70 percent
Commonly adjacent soils: Gilpin, Lowell, Upshur, Westmore

Taxonomic class: Fine-loamy, mixed, mesic Ultic Hapludalfs

Typical Pedon

Westmoreland silt loam, in an area of Westmoreland-Berks complex, 40 to 70 percent slopes, in Cambridge Township; 3,500 feet north and 260 feet west of the southeast corner of sec. 3, T. 1 N., R. 3 W.

Oa—0.5 inch to 0; decomposed leaf litter from deciduous trees.

A—0 to 2 inches; dark brown (10YR 3/3) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; very friable; many roots; 5 percent rock fragments; strongly acid; abrupt wavy boundary.

E—2 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; many roots; 5 percent rock fragments; very strongly acid; clear wavy boundary.

Bt1—6 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; many roots; few distinct brown (7.5YR 5/4) clay films on faces of peds; 5 percent rock fragments; very strongly acid; clear smooth boundary.

Bt2—11 to 20 inches; dark yellowish brown (10YR 4/6) silt loam; moderate fine and medium subangular blocky structure; friable; common roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; 10 percent rock fragments; very strongly acid; gradual smooth boundary.

Bt3—20 to 37 inches; dark yellowish brown (10YR 4/6) channery silt loam; moderate medium subangular blocky structure; friable; few roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; 25 percent rock fragments; very strongly acid; clear wavy boundary.

C—37 to 46 inches; dark yellowish brown (10YR 4/4) extremely channery silt loam; massive; friable; few faint clay films on siltstone fragments; 70 percent rock fragments; strongly acid; abrupt smooth boundary.

R—46 to 48 inches; dark grayish brown (2.5Y 4/2), hard siltstone.

Range in Characteristics

Thickness of the solum: 20 to 45 inches
Depth to bedrock: 40 to 72 inches
Content of rock fragments: A or Ap horizon—2 to 20 percent; Bt horizon—5 to 30 percent; BC horizon (if it occurs)—15 to 70 percent; C horizon—45 to 90 percent

A horizon:

Color—hue of 10YR, value of 3, chroma of 2 or 3

Texture—silt loam

Ap horizon (if it occurs):

Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 4 to 6

Texture—silt loam, silty clay loam, loam, clay loam, or the channery analogs of those textures

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, chroma of 4 to 6

Texture—very channery or extremely channery analogs of silt loam, silty clay loam, loam, or clay loam

Woodsfield Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderate in the upper part of the solum; slow in the lower part
Parent material: Loess and the underlying residuum

derived from reddish clay shale and thin-bedded siltstone
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 1 to 15 percent
Commonly adjacent soils: Wellston, Westmore, Zanesville

Taxonomic class: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Woodsfield silt loam, 1 to 8 percent slopes, in Spencer Township; 1,520 feet south and 840 feet west of the northeast corner of sec. 27, T. 9 N., R. 10 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; many roots; neutral; abrupt smooth boundary.
BA—9 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common roots; many brown (10YR 4/3) organic coatings; neutral; clear smooth boundary.
Bt1—11 to 20 inches; strong brown (7.5YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; common roots; common distinct brown (7.5YR 5/4) clay films on faces of peds; slightly acid; clear wavy boundary.
2Bt2—20 to 37 inches; dark reddish brown (2.5YR 3/4) clay; moderate medium subangular blocky structure; firm; few roots; many faint dark reddish brown (2.5YR 3/4) clay films on faces of peds; strongly acid; gradual smooth boundary.
2BC—37 to 43 inches; dark reddish brown (2.5YR 3/4) clay; weak coarse subangular blocky structure; firm; few roots; few distinct yellowish red (5YR 5/6) clay films on faces of peds; many soft shale fragments; neutral; gradual smooth boundary.
2C—43 to 61 inches; dark reddish brown (2.5YR 3/4) silty clay loam; massive; firm; common prominent olive (5Y 5/3) mottles; many dusky red (10R 3/4), soft shale fragments; slight effervescence with strong effervescence in zones in the upper part of the horizon; slightly alkaline; abrupt smooth boundary.
2Cr—61 to 65 inches; olive (5Y 5/3), soft mudstone.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: 40 to 72 inches
Thickness of the loess mantle: 14 to 26 inches
Content of rock fragments: A and Bt horizons—0 to 5 percent; 2Bt and 2C horizons—0 to 15 percent
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Bt horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, chroma of 4 to 6
Texture—silt loam, silty clay loam
2Bt horizon:
Color—hue of 5YR to 10R, value of 3 to 5, chroma of 3 to 6
Texture—silty clay loam, silty clay, clay
2C horizon:
Color—hue of 10R to 5Y or is neutral, value of 3 to 6, chroma of 0 to 6
Texture—silty clay loam, silty clay, clay

Zanesville Series

Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderate above the fragipan; slow in the fragipan
Parent material: Loess and the underlying residuum derived from siltstone and sandstone
Landform: Hills
Position on the landform: Summits, shoulders
Slope: 2 to 15 percent
Commonly adjacent soils: Dekalb, Gilpin, Wellston, Westmore

Taxonomic class: Fine-silty, mixed, mesic Typic Fragiudalfs

Typical Pedon

Zanesville silt loam, 2 to 6 percent slopes, in Valley Township; 1,100 feet north and 40 feet east of the southwest corner of sec. 23, T. 1 N., R. 2 W.

Ap—0 to 11 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many roots; slightly acid; abrupt smooth boundary.
Bt1—11 to 24 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common roots; common faint yellowish brown (10YR 5/4) clay films on faces of peds; moderately acid; clear wavy boundary.
Bt2—24 to 32 inches; yellowish brown (10YR 5/6) silty clay loam; common faint strong brown (7.5YR 5/6) and common distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm, slightly brittle; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; few distinct brown (7.5YR 5/2) clay films

below a depth of 29 inches; common black (10YR 2/1) concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

2Btx—32 to 58 inches; yellowish brown (10YR 5/4) silty clay loam; common faint brown (10YR 5/3) mottles; weak very coarse prismatic structure parting to weak medium platy; very firm, brittle; few roots between prisms in the upper part of the horizon; few distinct brown (7.5YR 5/4) clay films on prism faces; common black (10YR 2/1) concretions of iron and manganese oxide; about 10 percent siltstone fragments; strongly acid; gradual smooth boundary.

2Cr—58 to 67 inches; light olive brown (2.5Y 5/4), thin-bedded siltstone.

2R—67 to 68 inches; hard siltstone.

Range in Characteristics

Thickness of the solum: 35 to 70 inches
Depth to bedrock: 40 to 80 inches
Depth to fragipan: 24 to 32 inches
Thickness of the loess mantle: 24 to 48 inches
Content of rock fragments: 2Btx horizon—0 to 15 percent; 2C horizon (if it occurs)—5 to 50 percent
Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silt loam
Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture—silt loam, silty clay loam
2Btx horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam
2C horizon (if it occurs):
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—silt loam, silty clay loam, or the channery or very channery analogs of those textures

Zipp Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow or very slow
Parent material: Fine textured lacustrine sediments
Landform: Flood plains
Position on the landform: Steps of flood plains
Slope: 0 to 2 percent
Commonly adjacent soils: Sarahsville

Taxonomic class: Fine, mixed, nonacid, mesic Typic Haplaquepts

Typical Pedon

Zipp silty clay loam, ponded, in Center Township; 60 feet north and 2,180 feet west of the southeast corner of sec. 3, T. 1 N., R. 2 W.

Ap1—0 to 3 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many roots; strongly acid; abrupt wavy boundary.

Ap2—3 to 8 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; many fine prominent strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; friable; common distinct grayish brown (10YR 5/2) silt coatings on faces of peds; many roots; moderately acid; clear smooth boundary.

Bg1—8 to 20 inches; gray (5Y 5/1) silty clay; many medium prominent strong brown (7.5YR 4/6) and common fine distinct yellowish brown (10YR 5/4) mottles; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few roots; common distinct gray (10YR 5/1) silt coatings on faces of peds; moderately acid; gradual smooth boundary.

Bg2—20 to 48 inches; gray (5Y 6/1) silty clay; many medium prominent strong brown (7.5YR 4/6) and many fine distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few roots to a depth of 28 inches; thin strata of silty clay loam in the lower part; moderately acid; gradual smooth boundary.

Cg—48 to 80 inches; gray (5Y 6/1) silty clay; many medium prominent strong brown (7.5YR 4/6) and many fine distinct yellowish brown (10YR 5/6) mottles; massive; firm; moderately acid.

Range in Characteristics

Thickness of the solum: 30 to 48 inches
Depth to bedrock: More than 60 inches
Ap horizon:
Color—hue of 10YR, value of 4, chroma of 1 or 2
Texture—silty clay loam
Bg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 or 1
Texture—silty clay, clay
Cg horizon:
Color—hue of 10YR to 5Y or is neutral, value of 4 to 6, chroma of 0 or 1
Texture—silty clay, clay, thin layers of silty clay loam

Formation of the Soils

This section describes how the major factors of soil formation have affected the soils in Guernsey County and explains some of the processes in soil formation.

Factors of Soil Formation

Soils form through processes acting on deposited or accumulated geologic material. The major factors in soil formation are parent material, climate, relief, living organisms, and time.

Climate and living organisms, particularly plants, are active forces in soil formation. Their effect on the parent material is modified by relief and by the length of time that the parent material has been acted upon. The relative importance of each factor differs from place to place. The interaction of all five factors generally determines the kind of soil that forms, but in some areas one factor determines most of the soil properties.

Parent Material

Parent material is the raw material that is acted upon by the other soil-forming factors. It largely determines the soil texture, which in turn affects the permeability and available water capacity of the soil. The soils in Guernsey County formed in different kinds of parent material. Many formed in residuum, which is mineral material weathered from bedrock in place, and some formed in colluvium, which is material that collected at the base of steep slopes as a result of geologic erosion. Soils on flood plains formed in alluvium deposited by flowing streams in relatively recent times. Some soils formed, at least partially, in loess, a silty material that was deposited by the wind. Others formed in lacustrine, or lake bottom, sediments. These sediments were deposited by lakes that formed during the Ice Age when glaciers, or the deposits they left behind, blocked streams flowing out of the county. Coal mining activities have produced soils that formed in spoil material from strip mines.

Residuum is the most extensive parent material in the county. The upland soils on ridgetops and the upper side slopes formed in residuum. Dekalb, Gilpin, Upshur, and Westmoreland soils formed in this parent material. Residuum derived from limestone and shale is moderately fine textured or fine textured, and soils formed in this parent material have a moderately fine textured or fine textured subsoil. Residuum derived from siltstone and fine grained sandstone is medium textured, and soils formed in this parent material have a medium textured or moderately fine textured subsoil. Residuum derived from medium grained or coarse grained sandstone is medium textured to coarse textured, and soils formed in this parent material reflect those textures in the subsoil.

The soils on the steeper, middle and lower parts of hillsides show the effects of colluvial action. The soils in these areas formed in colluvium and residuum. Colluvium consists of soil material and rock fragments that have been moved downhill as a result of the combined effects of gravity, water, animals, and frost action over long periods of time. Soils in the lower, more concave areas are deeper because of this downslope movement. Rock fragments are unoriented in these colluvial areas. Brookside, Clarksburg, Richland, and Vandalia soils formed in colluvium.

As much as 48 inches of loess overlies the residuum in some areas of Guernsey County. In these areas the upper part of the soils formed in loess. Keene, Woodsfield, and Zanesville soils formed in residuum partially capped by loess.

Lacustrine deposits are moderately extensive in the county. These deposits have a high content of silt and a narrow range of particle sizes because of the slow, even deposition of sediment in relatively still water. Fitchville, McGary, Mentor, and Vincent soils formed in lacustrine material.

When rivers and streams flood, they deposit alluvium along the flood plains. This material has been washed from soils farther upstream in the watershed. Alluvial deposits are made up of a number of thin layers, each of which was deposited by a different flood. Soils formed in alluvium have weakly developed horizons since the soil forming process starts over with each new deposition. Chagrin, Lindside, Melvin, Orrville, Sarahsville, and Zipp soils formed in alluvium.

Areas in the county have been surface mined for coal since the 1940s. Most of the mined areas are unreclaimed and consist of ungraded spoil ridges and highwalls. In areas reclaimed since 1972, the mine spoil has been graded, highwalls have been backfilled, and soil material from natural soils has been used to cover the surface. Barkcamp, Enoch, and Morristown soils formed in the mixture of broken bedrock and partly weathered fine-earth material from surface mining.

Climate

Climate influences the formation of soils in many ways. Rainfall is the most important climatic element in the formation of soils. Water dissolves soluble materials and is responsible for the leaching process. It is necessary for the growth and development of plants, which contribute organic matter to the soil. Frequency of rainfall causes wetting and drying cycles favorable to the translocation of clay minerals and the formation of soil structure, both common processes in most of the soils in the county. Water also physically ruptures the soil when it freezes.

Temperature is also a climatic factor that has a great influence on the formation of soils. It exerts a major influence on the type and quality of vegetation that the soil can support. Chemical reactions and weathering of primary minerals within the soil increase as the temperature increases. Freezing and thawing aid in the formation of soil structure.

The climate in an area the size of Guernsey County is almost a constant factor of soil formation, but it may be modified in and around certain soils or because of topographic differences. For example, the lower lying alluvial and lacustrine soils are wetter and cooler than the soils in areas around them. South- and west-facing slopes are generally warmer and receive more sunlight than the soils in nearly level areas. These contrasts account for some of the differences in microclimates within the same general climatic region. These differences can affect the amount of available moisture and the quantity and quality of vegetation. More information about the climate in Guernsey County is available under the heading “General Nature of the County.”

Relief

The topography of Guernsey County has a great influence on the formation of soils. It influences soil formation through its effect on drainage, runoff, and erosion. If a slope is steep, more water runs off the surface and less soaks into the soil. This results in a decrease in the amount of clay that is translocated within the soil profile, which is a major factor in soil development.

Geologic erosion is a constant factor on the steeper slopes as material is being continually removed, exposing unweathered underlying material. Berks, Dekalb, and Hazleton soils, which are on steep slopes, show little internal soil development. Soils on the gentler slopes, where water has more of a chance to infiltrate through the soil, show a greater degree of soil development. Glenford and Mentor soils, which are on lacustrine terraces, are examples of these soils.

Even though soils have formed in the same kind of parent material, they may be different because of the influence of topography on internal drainage. For example, Fitchville and Mentor soils both formed in the same silty lacustrine deposits. Mentor soils are well drained and have a water table that generally is at a depth of more than 48 inches. Water passes through these soils readily. Fitchville soils, which are in the lower areas, are only somewhat poorly drained and have a seasonal high water table within a depth of 12 inches.

Topography also has a great effect on the formation of soils because many areas receive soil material, or colluvium, from the steeper slopes above. Many of the soils in the county formed in colluvium. Examples are those in the Brookside, Clarksburg, Richland, and Vandalia series. Also, soils that have a stony or bouldery surface phase formed partially in colluvial material.

Living Organisms

All living organisms, which include plants, animals, bacteria, and fungi, play a role in the process of soil formation. The type of vegetation under which a soil forms has an influence on the color, structure, and organic matter content of the soil. Soils formed under forest vegetation generally have a lower content of organic matter and are lighter in color than soils formed under grass.

Most of the soils in Guernsey County formed under hardwood forest vegetation. The well drained and moderately well drained soils on uplands formed under a hardwood forest consisting mainly of oaks, maples, beech, and hickory. They include the Lowell and Westmoreland soils. Most of the somewhat poorly drained and poorly drained soils are dominated by trees that can tolerate the wetness. They include the Euclid, Holton, Melvin, Newark, Sarahsville, and Zipp soils.

As plants grow and die, their remains are added to the soil. Burrowing animals, earthworms, bacteria, and fungi help to convert those raw plant remains into organic matter. Microorganisms transform organic matter into humus from which plants can obtain nutrients. Burrowing animals and earthworms help to make the soil more porous, and as a result, water moves through the soil more rapidly. The burrowing of animals also constantly mixes the soil. Worm channels and casts are most common in the surface layer of soils that have been limed. Crawfish channels are in poorly drained and somewhat poorly drained soils.

Human activities also affect soil formation. Cultivation, surface mining, and land clearing accelerate erosion and change soil development. Many areas of the wetter soils, such as the Euclid, Fitchville, and Newark soils, have been drained, ensuring that their future formation will take place under drier conditions. Applications of lime, fertilizer, and other chemicals will change the soil chemistry by neutralizing acid soil reactions and adding bases.

Time

The relative length of time the parent material is exposed to the other soil-forming factors plays a great role in the overall development of a soil. The age of a soil is indicated to some extent by the degree of soil development.

In Guernsey County, parent material has been exposed to the soil-forming factors for various lengths of time. For example, the Bethesda soils, which formed in surface mine spoil, show little soil development because their parent material was so recently exposed to soil-forming factors, whereas the Westmoreland soils, which formed in residuum, have strongly expressed horizons because their parent material has been exposed to the soil-forming factors for a long period of time. Other young soils throughout the county are those that formed in recent alluvium, such as the Chagrin and Nolin soils. These soils show minimal development because sediment continues to be deposited on them during periods of flooding. Soils formed in lacustrine sediments, such as the Glenford and Mentor soils, show a high degree of soil development. The age of these soils falls between that of soils formed in residuum and that of soils formed in alluvium.

Older soils also have chemical differences. Some of the oldest soils in the county have the lowest base saturation. They include the Allegheny and Westmoreland soils.

Processes of Soil Formation

The process of soil formation is a complex sequence of events. It includes additions of organic and mineral materials to the soil as solids, liquids, and gases; losses of these materials from the soil; transformations of mineral and organic substances within the soil; and translocations of materials from one point to another within the soil (Simonson 1959). Plants, animals, and mineral constituents are all part of a dynamic system that helps to play a role in the processes of soil formation.

There are several types of additions of organic or mineral materials that affect soil formation in Guernsey County. One of the most important is the addition of organic matter that has been decomposed from plant material by biologic activity. Organic matter is responsible for the darkened color of the surface layer as compared to that of the subsoil. Glenford, Guernsey, and Kanawha soils have a thick, dark surface layer that has been enriched by the accumulation of organic matter. Soils that formed in recently deposited mine spoil, such as those in the Bethesda, Fairpoint, and Morristown series, have a thin or light colored surface layer with little accumulation of organic matter. Additions can also come in the form of sediments being deposited during floods or by materials eroding at one spot and being deposited at another.

Losses or removals from the soil occur mainly as a result of chemical changes within the soil or as a loss of water from evapotranspiration. Nitrogen transferred from the organic to inorganic form and the loss of carbon as a result of the oxidation of organic matter are chemical reactions that account for losses within the soil. Another chemical loss occurs under saturated conditions in the absence of oxygen. Under these conditions iron in the soil is reduced, resulting in a more soluble compound that is readily leached from the subsoil. The gray subsoil or mottles in the wetter Melvin, McGary, and Zipp soils are a result of the removal of soluble iron under saturated conditions.

Transformations within the soil are largely mineral transformations and the reduction of particle size by weathering. Iron that is reduced in wetter soils can be reoxidized when the soils are no longer saturated. This iron is less soluble than the oxidized iron, so it segregates to form concentrations or brighter colored mottles. Structure and the formation of concretions are transformations that are tied to chemical reactions. The structure of different soils is expressed in varying degrees, depending on the landscape position, drainage class, and parent material of the soils. Older soils on the more stable landscapes generally have more strongly expressed horizonation than that of soils on flood plains or on less stable landscapes.

Translocation of materials generally occurs as a result of downward movement of water carrying suspended compounds and soil particles. Leaching of calcium carbonate has occurred in many soils throughout the county. Berks, Dekalb, Coshocton, Wellston, Westmoreland, and Zanesville soils have been leached free of calcium carbonate. The translocation of silicate clays is a major morphological feature in many of the soils in the county. Many soils have a zone of eluviation, known as an E horizon. The E horizon has platy structure and is lighter in color than the B horizon, which lies directly below. The B horizon is a zone of illuviation, or clay enrichment, from the zone above. Soils in the county that have this feature within their horizonation include those in the Clarksburg, Coshocton, Elba, Fitchville, Glenford, Guernsey, Lowell, Upshur, Westmore, Woodsfield, and Zanesville series.

References

American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. 14th edition, 2 volumes.

American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Standard D 2487.

Brant, Russell A., and DeLong, Richard M. 1960. Coal resources of Ohio. Ohio Department of Natural Resources, Division of Geological Survey, Bulletin 58.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Cyrus, Col. P.B. 1911. History of Guernsey County.

DeBrosse, Theodore A. 1957. Coal beds of the Conemaugh Formation in Ohio. Ohio Department of Natural Resources, Division of Geological Survey, Report of Investigations No. 34.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February 24, 1995. Hydric soils of the United States.

Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. 1996. Field indicators of hydric soils in the United States.

Miller, F.P., D.E. McCormack, and J.R. Talbot. 1979. Soil survey: Review of data collection methodologies, confidence limits and uses. National Academy of Science, Transportation Research Board, Transportation Research Rec. 733: 57-65.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Ohio Agricultural Statistics Service. 1991. Ohio agricultural statistics and Ohio Department of Agriculture annual report.

Simonson, Roy W. 1959. Outline of a generalized theory of soil genesis. Soil Science Society of America Proceedings 23: 152-156.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conservation Service. U.S. Department of Agriculture Handbook 436. (Revised in 1999)

Soil Survey Staff. 1990. Keys to soil taxonomy. 4th edition. United States Department of Agriculture, Soil Conservation Service. (Revised in 1998)

Soil Survey Staff. 1996. National soil survey handbook, title 430-VI. United States Department of Agriculture, Natural Resources Conservation Service. (Available in the State Office of the Natural Resources Conservation Service at Columbus, Ohio, or at http://soils.usda.gov)

Somerset Publishers. 1982. Encyclopedia of Ohio.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

United States Department of Agriculture, Soil Conservation Service. 1981. Land resource regions and major land resource areas of the United States. U.S. Department of Agriculture Handbook 296.

United States Department of Commerce, Bureau of the Census. 1991. 1990 census of population and housing characteristics—Ohio.

Whiteford, C.L., A.H. Paschal, and E.C. Sease. 1944. Physical land conditions in Muskingum and Guernsey Counties, Ohio. U.S. Department of Agriculture, Soil Conservation Service, Physical Land Survey No. 32.

Wolfe, William G. 1943. Stories of Guernsey County, Ohio.

Glossary

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

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

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.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

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.

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

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

Aspect. The direction in which a slope faces.

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

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

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

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.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

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

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

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.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

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.

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

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.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

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.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse 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.

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.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

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

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

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

Drainage class (natural). Refers to the frequency and duration of 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.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

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

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

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.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

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.

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

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

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

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

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

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

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.

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).

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

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.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

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

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A 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.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

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

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

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

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

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

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

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

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

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

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

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.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

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

Lithochromic mottles. Mottles that have inherited their color from the rocks that made up the parent material of the soil.

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

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

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.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

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

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

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

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

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

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).

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.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

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

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

Pebble. A rounded or angular fragment of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. A collection of pebbles is referred to as gravel.

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

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

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water 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.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

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

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

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

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

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

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

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.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

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.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

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

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

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

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

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. 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.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. 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.

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.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

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

Nearly level	0 to 3 percent
Nearly level and gently sloping	0 to 8 percent
Gently sloping	1 to 8 percent
Sloping	6 to 15 percent
Sloping and moderately steep	8 to 25 percent
Sloping to steep	8 to 40 percent
Moderately steep	15 to 25 percent
Steep	25 to 40 percent
Steep and very steep	25 to 70 percent
Very steep	40 to 70 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

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

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

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

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

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.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

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.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

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

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded 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.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

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.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1951-88 at Cambridge, Ohio)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	36.2	18.1	27.2	66	-12	0	2.52	1.35	3.55	7	9.3
February-	40.5	20.4	30.5	67	-8	0	2.39	1.03	3.53	6	5.4
March----	52.8	29.6	41.2	81	6	31	3.51	2.08	4.78	9	2.8
April----	65.0	38.7	51.9	86	18	110	3.48	1.88	4.89	8	.9
May------	74.5	47.7	61.1	90	27	351	3.80	2.46	5.01	8	.0
June-----	81.9	56.2	69.1	94	39	573	3.66	1.85	5.23	7	.0
July-----	85.1	60.9	73.0	96	44	713	4.19	2.43	5.75	7	.0
August---	83.6	59.8	71.7	94	42	673	3.83	1.92	5.48	7	.0
September	77.7	53.2	65.5	93	34	465	2.75	1.19	4.07	5	.0
October--	65.6	41.0	53.3	83	21	170	2.65	1.40	3.74	6	.0
November-	53.3	33.6	43.5	77	12	26	3.39	1.57	4.94	8	1.1
December-	41.9	25.0	33.5	69	-1	12	2.86	1.67	3.91	7	3.6
Yearly:											
Average	63.2	40.4	51.8	---	---	---	---	---	---	---	---
Extreme	---	---	---	97	-14	---	---	---	---	---	---
Total--	---	---	---	---	---	3,124	39.03	34.54	43.88	85	23.1

* 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 (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1951-88 at Cambridge, Ohio)

Probability	Temperature		
	24^{o} F or lower	28^{o} F or lower	32^{o} F or lower
Last freezing temperature in spring:			
1 year in 10 later than	Apr. 25	May 6	May 24
2 years in 10 later than	Apr. 19	May 1	May 18
5 years in 10 later than	Apr. 9	Apr. 22	May 5
First freezing temperature in fall:			
1 year in 10 earlier than	Oct. 18	Oct. 1	Sept. 19
2 years in 10 earlier than	Oct. 24	Oct. 8	Sept. 25
5 years in 10 earlier than	Nov. 3	Oct. 21	Oct. 7

Table 3.--Growing Season

(Recorded in the period 1951-88 at Cambridge, Ohio)

Probability	Daily minimum temperature during growing season		
	Higher than 24^{o} F	Higher than 28^{o} F	Higher than 32^{o} F
	Days	Days	Days
9 years in 10	183	157	127
8 years in 10	191	166	136
5 years in 10	207	181	154
2 years in 10	222	197	172
1 year in 10	230	205	182

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AaB	Aaron silt loam, 2 to 8 percent slopes	2,408	0.7
AaC	Aaron silt loam, 8 to 15 percent slopes	5,341	1.6
AbB	Aaron-Upshur complex, 2 to 8 percent slopes	1,958	0.6
AbC2	Aaron-Upshur complex, 8 to 15 percent slopes, eroded	6,261	1.9
AgC	Allegheny loam, 8 to 15 percent slopes	407	0.1
BaD	Barkcamp loam, 8 to 25 percent slopes	279	*
BcB	Barkcamp very flaggy sandy loam, 0 to 8 percent slopes, very stony	30	*
BcD	Barkcamp very flaggy sandy loam, 8 to 40 percent slopes, very stony	158	*
BeC	Berks channery silt loam, 8 to 15 percent slopes	402	0.1
BeD	Berks channery silt loam, 15 to 25 percent slopes	849	0.3
BeE	Berks channery silt loam, 25 to 40 percent slopes	6,224	1.8
BeF	Berks channery silt loam, 40 to 70 percent slopes	10,067	3.0
BgB	Bethesda clay loam, 0 to 8 percent slopes	596	0.2
BgD	Bethesda clay loam, 8 to 25 percent slopes	895	0.3
BgE	Bethesda clay loam, 25 to 40 percent slopes	634	0.2
BhB	Bethesda channery loam, 0 to 8 percent slopes	643	0.2
BhD	Bethesda channery loam, 8 to 25 percent slopes	717	0.2
BhF	Bethesda channery loam, 25 to 70 percent slopes	4,328	1.3
BsD	Brookside silt loam, 15 to 25 percent slopes	531	0.2
BtC	Brookside-Vandalia complex, 8 to 15 percent slopes	324	*
BtD	Brookside-Vandalia complex, 15 to 25 percent slopes	4,048	1.2
BtE	Brookside-Vandalia complex, 25 to 40 percent slopes	624	0.2
Ca	Chagrin loam, occasionally flooded	977	0.3
ChD	Clarksburg channery silt loam, 15 to 25 percent slopes	12,091	3.6
CkC	Claysville-Guernsey complex, 8 to 15 percent slopes	619	0.2
CoD	Coshocton loam, 15 to 25 percent slopes	644	0.2
CsC2	Coshocton silt loam, 8 to 15 percent slopes, eroded	185	*
DkC	Dekalb channery loam, 8 to 15 percent slopes	2,423	0.7
DkD	Dekalb channery loam, 15 to 25 percent slopes	4,829	1.4
DkE	Dekalb channery loam, 25 to 40 percent slopes	6,478	1.9
DmF	Dekalb channery loam, 25 to 70 percent slopes, very stony	9,213	2.7
Dp	Dumps	87	*
Ds	Dumps, mine	99	*
EbC	Elba silty clay loam, 8 to 15 percent slopes	429	0.1
EbD	Elba silty clay loam, 15 to 25 percent slopes	586	0.2
EbE	Elba silty clay loam, 25 to 40 percent slopes	466	0.1
EkF	Elba-Berks complex, 40 to 70 percent slopes	1,245	0.4
EnB	Enoch loam, 0 to 8 percent slopes	177	*
EnD	Enoch loam, 8 to 25 percent slopes	408	0.1
EuA	Euclid silt loam, rarely flooded	1,822	0.5
FcB	Fairpoint silty clay loam, 0 to 8 percent slopes	334	*
FcD	Fairpoint silty clay loam, 8 to 25 percent slopes	579	0.2
FcE	Fairpoint silty clay loam, 25 to 40 percent slopes	346	0.1
FtA	Fitchville silt loam, 0 to 3 percent slopes	505	0.1
GdB	Gilpin silt loam, 2 to 8 percent slopes	4,813	1.4
GdC	Gilpin silt loam, 8 to 15 percent slopes	18,610	5.5
GdD	Gilpin silt loam, 15 to 25 percent slopes	10,179	3.0
GnA	Glenford silt loam, 0 to 2 percent slopes	1,651	0.5
GnB	Glenford silt loam, 2 to 6 percent slopes	1,141	0.3
GpA	Glenford-Urban land complex, 0 to 2 percent slopes	731	0.2
GrC	Guernsey silt loam, 8 to 15 percent slopes	1,913	0.6
GrD2	Guernsey silt loam, 15 to 25 percent slopes, eroded	6,182	1.8
GuC	Guernsey-Upshur complex, 8 to 15 percent slopes	7,407	2.2
GuD	Guernsey-Upshur complex, 15 to 25 percent slopes	21,368	6.3
HaF	Hazleton channery loam, 25 to 70 percent slopes, stony	14,753	4.4
HbE	Hazleton channery loam, 25 to 40 percent slopes	8	*
He	Hartshorn silt loam, occasionally flooded	591	0.2
Ho	Holton silt loam, occasionally flooded	1,347	0.4
KaB	Kanawha loam, 2 to 6 percent slopes	1,506	0.4
KeB	Keene silt loam, 1 to 8 percent slopes	793	0.2
KeC	Keene silt loam, 8 to 15 percent slopes	409	0.1
Lc	Lindside silt loam, occasionally flooded	55	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
Ld	Lindside silt loam, frequently flooded	8,280	2.4
LoC	Lowell silt loam, 8 to 15 percent slopes	3,517	1.0
LoD	Lowell silt loam, 15 to 25 percent slopes	1,832	0.5
LuE	Lowell-Upshur complex, 25 to 40 percent slopes	2,354	0.7
LwC	Lowell-Westmoreland complex, 8 to 15 percent slopes	3,333	1.0
LwD	Lowell-Westmoreland complex, 15 to 25 percent slopes	8,386	2.5
LwE	Lowell-Westmoreland complex, 25 to 40 percent slopes	6,752	2.0
LwF	Lowell-Westmoreland complex, 40 to 70 percent slopes	1,453	0.4
McA	McGary silt loam, 0 to 3 percent slopes	676	0.2
Md	Melvin silt loam, ponded	1,384	0.4
MeB	Mentor silt loam, 2 to 8 percent slopes	2,595	0.8
MeC	Mentor silt loam, 8 to 15 percent slopes	1,863	0.6
MeD	Mentor silt loam, 15 to 25 percent slopes	1,567	0.5
MfB	Mentor-Urban land complex, 2 to 8 percent slopes	152	*
MnB	Morristown silty clay loam, 0 to 8 percent slopes	302	*
MnD	Morristown silty clay loam, 8 to 25 percent slopes	357	0.1
MoF	Morristown channery clay loam, 40 to 70 percent slopes	963	0.3
Nd	Newark silt loam, occasionally flooded	102	*
Ne	Newark silt loam, frequently flooded	9,258	2.7
No	Nolin silt loam, frequently flooded	3,775	1.1
OmB	Omulga silt loam, 1 to 6 percent slopes	1,796	0.5
OmC	Omulga silt loam, 6 to 15 percent slopes	2,650	0.8
Or	Orrville silt loam, occasionally flooded	326	*
RcC	Richland channery loam, 8 to 15 percent slopes	19	*
RcD	Richland channery loam, 15 to 25 percent slopes	471	0.1
Sa	Sarahsville silty clay loam, frequently flooded	6,536	1.9
SeB	Sees silty clay loam, 2 to 6 percent slopes	443	0.1
Ub	Udorthents, loamy-Rock outcrop complex	280	*
Uc	Udorthents-Pits complex	864	0.3
Ud	Udorthents-Urban land complex	3,505	1.0
UpB	Upshur silt loam, 2 to 6 percent slopes	1,519	0.4
UrC	Upshur silty clay loam, 6 to 15 percent slopes	2,307	0.7
UrD	Upshur silty clay loam, 15 to 25 percent slopes	1,228	0.4
UrD3	Upshur silty clay loam, 15 to 25 percent slopes, severely eroded	35	*
VaD2	Vandalia silty clay loam, 15 to 25 percent slopes, eroded	526	0.2
VtC	Vincent silt loam, 6 to 15 percent slopes	217	*
VwB	Vincent silty clay loam, 2 to 6 percent slopes	269	*
W	Water	3,469	1.0
WhB	Wellston silt loam, 2 to 8 percent slopes	2,798	0.8
WhC	Wellston silt loam, 8 to 15 percent slopes	2,095	0.6
WkB	Westmore silt loam, 2 to 8 percent slopes	1,886	0.6
WkC2	Westmore silt loam, 8 to 15 percent slopes, eroded	1,464	0.4
WmC	Westmoreland silt loam, 8 to 15 percent slopes	1,215	0.4
WmD	Westmoreland silt loam, 15 to 25 percent slopes	8,501	2.5
WmE	Westmoreland silt loam, 25 to 40 percent slopes	23,435	6.9
WnF	Westmoreland-Berks complex, 40 to 70 percent slopes	13,951	4.1
WrC	Westmoreland-Urban land complex, 6 to 15 percent slopes	979	0.3
WrD	Westmoreland-Urban land complex, 15 to 25 percent slopes	237	*
WtB	Woodsfield silt loam, 1 to 8 percent slopes	636	0.2
WtC	Woodsfield silt loam, 8 to 15 percent slopes	400	0.1
ZnB	Zanesville silt loam, 2 to 6 percent slopes	6,703	2.0
ZnC	Zanesville silt loam, 6 to 15 percent slopes	1,446	0.4
Zp	Zipp silty clay loam, frequently flooded	537	0.2
Zs	Zipp silty clay loam, ponded	803	0.2
	Total	338,170	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the “Percent” column is about 1.3 percent of the survey area.

Table 5.--Main Cropland Limitations and Hazards

(Absence of an entry indicates that the soil is not suited to cropland or crops generally are not grown on the soil)

Map symbol and soil name	Cropland limitations and hazards
AaB:	
Aaron	High potential for ground-water pollution Surface compaction Easily eroded Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
AaC:	
Aaron	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
AbB:	
Aaron	High potential for ground-water pollution Surface compaction Easily eroded Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
Upshur	High potential for ground-water pollution Surface compaction Easily eroded
AbC2:	
Aaron	High potential for ground-water pollution Surface compaction Part of original surface layer removed by erosion Fair tilth Easily eroded Slope Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
Upshur	High potential for ground-water pollution Surface compaction Part of original surface layer removed by erosion Fair tilth Easily eroded Slope
AgC:	
Allegheny	Wind erosion Easily eroded Slope

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
BeC:	
Berks	High potential for ground-water pollution
	Limited available water capacity
	Easily eroded
	Slope
	Depth to rock
BeD:	
Berks	High potential for ground-water pollution
	Limited available water capacity
	Easily eroded
	Slope
	Depth to rock
BgB:	
Bethesda	Surface compaction
	Limited available water capacity
	Fair tilth
	Easily eroded
	Limited organic matter content
BgD:	
Bethesda	Surface compaction
	Limited available water capacity
	Fair tilth
	Easily eroded
	Slope
	Limited organic matter content
BsD:	
Brookside	Surface compaction
	Easily eroded
	Slope
BtC:	
Brookside	Surface compaction
	Easily eroded
	Slope
Vandalia	Surface compaction
	Fair tilth
	Easily eroded
	Slope
	Surface crusting
	Limited organic matter content
BtD:	
Brookside	Surface compaction
	Easily eroded
	Slope
Vandalia	Surface compaction
	Fair tilth
	Easily eroded
	Slope
	Surface crusting
	Limited organic matter content
Ca:	
Chagrin	Occasional flooding

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
ChD:	
Clarksburg	Wind erosion Easily eroded Slope Limited rooting depth Seasonal high water table Limited organic matter content
CkC:	
Claysville	Surface compaction Fair tilth Easily eroded Slope Seasonal high water table Frost heave
Guernsey	High potential for ground-water pollution Surface compaction Easily eroded Slope Surface crusting Seasonal high water table Limited organic matter content Frost heave
CoD:	
Coshocton	High potential for ground-water pollution Easily eroded Slope Restricted permeability Seasonal high water table Limited organic matter content Frost heave
CsC2:	
Coshocton	High potential for ground-water pollution Surface compaction Part of original surface layer removed by erosion Fair tilth Easily eroded Slope Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
DkC:	
Dekalb	High potential for ground-water pollution Limited available water capacity Easily eroded Slope Depth to rock Excessive permeability
DkD:	
Dekalb	High potential for ground-water pollution Limited available water capacity Easily eroded Slope Depth to rock Excessive permeability

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
EbC:	
Elba	High potential for ground-water pollution Surface compaction Limited rooting depth Limited available water capacity Fair tilth Easily eroded Slope Restricted permeability Surface crusting Limited organic matter content
EbD:	
Elba	High potential for ground-water pollution Surface compaction Limited rooting depth Fair tilth Easily eroded Slope Restricted permeability Surface crusting Limited organic matter content
EuA:	
Euclid	Rare flooding High potential for ground-water pollution Surface compaction Surface crusting Seasonal high water table Limited organic matter content Frost heave
FcB:	
Fairpoint	Surface compaction Limited available water capacity Fair tilth Easily eroded Surface crusting Limited organic matter content
FcD:	
Fairpoint	Surface compaction Limited available water capacity Fair tilth Easily eroded Slope Surface crusting Limited organic matter content
FtA:	
Fitchville	Surface compaction Surface crusting Seasonal high water table Limited organic matter content Frost heave
GdB:	
Gilpin	High potential for ground-water pollution Surface compaction Limited available water capacity Easily eroded Depth to rock

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
GdC:	
Gilpin	High potential for ground-water pollution Surface compaction Limited available water capacity Easily eroded Slope Depth to rock
GdD:	
Gilpin	High potential for ground-water pollution Surface compaction Limited available water capacity Easily eroded Slope Depth to rock
GnA:	
Glenford	Surface compaction Surface crusting Limited organic matter content Frost heave
GnB:	
Glenford	Surface compaction Easily eroded Surface crusting Limited organic matter content Frost heave
GrC:	
Guernsey	High potential for ground-water pollution Surface compaction Easily eroded Slope Surface crusting Seasonal high water table Limited organic matter content Frost heave
GrD2:	
Guernsey	High potential for ground-water pollution Surface compaction Part of original surface layer removed by erosion Fair tilth Easily eroded Slope Surface crusting Seasonal high water table Limited organic matter content Frost heave
GuC:	
Guernsey	High potential for ground-water pollution Surface compaction Easily eroded Slope Surface crusting Seasonal high water table Limited organic matter content Frost heave

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
GuC:	
Upshur	High potential for ground-water pollution Surface compaction Easily eroded Slope
GuD:	
Guernsey	High potential for ground-water pollution Surface compaction Easily eroded Slope Surface crusting Seasonal high water table Limited organic matter content Frost heave
Upshur	High potential for ground-water pollution Surface compaction Easily eroded Slope
He:	
Hartshorn	Occasional flooding High potential for ground-water pollution Surface compaction Surface crusting Limited organic matter content
Ho:	
Holton	Occasional flooding High potential for ground-water pollution Surface compaction Surface crusting Seasonal high water table Limited organic matter content Frost heave
KaB:	
Kanawha	Moderate potential for ground-water pollution Limited organic matter content
KeB:	
Keene	High potential for ground-water pollution Surface compaction Easily eroded Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave
KeC:	
Keene	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
Lc:	
Lindside	Occasional flooding High potential for ground-water pollution Surface compaction Seasonal high water table Frost heave
Ld:	
Lindside	Frequent flooding High potential for ground-water pollution Surface compaction Seasonal high water table Frost heave
LoC:	
Lowell	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability
LoD:	
Lowell	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability
LwC:	
Lowell	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability
Westmoreland	High potential for ground-water pollution Surface compaction Easily eroded Slope
LwD:	
Lowell	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability
Westmoreland	High potential for ground-water pollution Surface compaction Easily eroded Slope
McA:	
McGary	Surface compaction Restricted permeability Surface crusting Seasonal high water table Limited organic matter content Frost heave

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
MeB:	
Mentor	Surface compaction Easily eroded Surface crusting Limited organic matter content Frost heave
MeC:	
Mentor	Surface compaction Easily eroded Slope Surface crusting Limited organic matter content Frost heave
MeD:	
Mentor	Surface compaction Easily eroded Slope Surface crusting Limited organic matter content Frost heave
MnB:	
Morristown	Surface compaction Limited available water capacity Fair tilth Easily eroded Surface crusting Limited organic matter content
MnD:	
Morristown	Surface compaction Limited available water capacity Fair tilth Easily eroded Slope Surface crusting Limited organic matter content
Nd:	
Newark	Occasional flooding High potential for ground-water pollution Surface compaction Seasonal high water table Frost heave
Ne:	
Newark	Frequent flooding High potential for ground-water pollution Surface compaction Seasonal high water table Frost heave
No:	
Nolin	Frequent flooding Surface compaction

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
OmB:	
Omulga	Surface compaction Limited rooting depth Easily eroded Surface crusting Limited organic matter content Frost heave
OmC:	
Omulga	Surface compaction Limited rooting depth Easily eroded Slope Surface crusting Limited organic matter content Frost heave
Or:	
Orrville	Occasional flooding High potential for ground-water pollution Surface compaction Seasonal high water table Frost heave
RcC:	
Richland	Easily eroded Slope Limited organic matter content
RcD:	
Richland	Easily eroded Slope Limited organic matter content
Sa:	
Sarahsville	Frequent flooding High potential for ground-water pollution Surface compaction Fair tilth Restricted permeability Seasonal high water table Frost heave
SeB:	
Sees	Surface compaction Fair tilth Easily eroded Seasonal high water table
UpB:	
Upshur	High potential for ground-water pollution Surface compaction Easily eroded
UrC:	
Upshur	High potential for ground-water pollution Surface compaction Fair tilth Easily eroded Slope Surface crusting Limited organic matter content

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
VaD2:	
Vandalia	Surface compaction
	Part of original surface layer removed by erosion
	Fair tilth
	Easily eroded
	Slope
	Surface crusting
	Limited organic matter content
VtC:	
Vincent	Surface compaction
	Easily eroded
	Slope
	Surface crusting
	Limited organic matter content
VwB:	
Vincent	Surface compaction
	Fair tilth
	Easily eroded
	Surface crusting
	Limited organic matter content
WhB:	
Wellston	High potential for ground-water pollution
	Surface compaction
	Easily eroded
	Restricted permeability
	Surface crusting
	Limited organic matter content
	Frost heave
WhC:	
Wellston	High potential for ground-water pollution
	Surface compaction
	Easily eroded
	Slope
	Restricted permeability
	Surface crusting
	Limited organic matter content
	Frost heave
WkB:	
Westmore	High potential for ground-water pollution
	Surface compaction
	Easily eroded
	Surface crusting
	Limited organic matter content
	Frost heave
WkC2:	
Westmore	High potential for ground-water pollution
	Surface compaction
	Part of original surface layer removed by erosion
	Fair tilth
	Easily eroded
	Slope
	Surface crusting
	Limited organic matter content
	Frost heave

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
WmC:	
Westmoreland	High potential for ground-water pollution Surface compaction Easily eroded Slope
WmD:	
Westmoreland	High potential for ground-water pollution Surface compaction Limited available water capacity Easily eroded Slope
WtB:	
Woodsfield	High potential for ground-water pollution Surface compaction Easily eroded Restricted permeability Surface crusting Limited organic matter content
WtC:	
Woodsfield	High potential for ground-water pollution Surface compaction Easily eroded Slope Restricted permeability Surface crusting Limited organic matter content
ZnB:	
Zanesville	High potential for ground-water pollution Surface compaction Limited rooting depth Easily eroded Restricted permeability Surface crusting Limited organic matter content Frost heave
ZnC:	
Zanesville	High potential for ground-water pollution Surface compaction Limited rooting depth Easily eroded Slope Restricted permeability Surface crusting Limited organic matter content Frost heave
Zp:	
Zipp	Frequent flooding High potential for ground-water pollution Surface compaction Fair tilth Restricted permeability Surface crusting Seasonal high water table Limited organic matter content

Table 5.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
Zs:	
Zipp	Frequent flooding High potential for ground-water pollution Surface compaction Fair tilth Restricted permeability Surface crusting Limited organic matter content

Table 6.--Land Capability and 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	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
AaB-------------- Aaron	2E	110	21	4.0	5.0	5.5	6.5
AaC-------------- Aaron	3E	90	19	4.0	4.2	5.0	6.0
AbB-------------- Aaron-Upshur	2E	110	19	3.8	---	5.5	6.5
AbC2------------- Aaron-Upshur	3E	100	18	3.8	---	5.0	6.0
AgC-------------- Allegheny	3E	105	21	3.8	4.8	5.8	6.0
BaD-------------- Barkcamp	6S	---	---	---	---	---	2.0
BcB-------------- Barkcamp	8S	---	---	---	---	---	---
BcD-------------- Barkcamp	8S	---	---	---	---	---	---
BeC-------------- Berks	3E	75	15	3.0	3.5	4.5	5.0
BeD-------------- Berks	4E	70	14	2.5	3.0	4.2	4.5
BeE-------------- Berks	6E	---	---	---	---	2.2	3.6
BeF-------------- Berks	7E	---	---	---	---	---	---
BgB-------------- Bethesda	3S	---	---	2.0	---	2.4	5.0
BgD-------------- Bethesda	4S	---	---	1.5	---	2.2	4.0
BgE-------------- Bethesda	6E	---	---	---	---	1.6	3.0
BhB-------------- Bethesa	6S	---	---	---	---	1.6	3.0
BhD-------------- Bethesda	6S	---	---	---	---	1.6	3.0
BhF-------------- Bethesda	7E	---	---	---	---	---	---
BsD-------------- Brookside	4E	90	18	3.6	4.0	4.5	5.8

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
BtC: Brookside-Vandalia	3E	100	19	3.6	---	---	6.0
BtD: Brookside-Vandalia	4E	90	18	3.5	---	---	5.8
BtE: Brookside-Vandalia	6E	---	---	---	---	---	5.0
Ca: Chagrin	2W	105	22	4.5	5.0	6.0	6.8
ChD: Clarksburg	4E	80	16	3.2	3.8	4.5	5.8
CkC: Claysville-Guernsey	3W	90	17	3.5	---	5.0	6.0
CoD: Coshocton	4E	87	17	3.2	4.0	4.5	5.8
CsC2: Coshocton	3E	90	18	4.0	4.8	5.0	6.0
DkC: Dekalb	3E	75	15	3.0	3.2	4.5	5.0
DkD: Dekalb	4E	70	14	2.5	3.0	4.2	4.0
DkE: Dekalb	6E	---	---	---	---	2.1	3.0
DmF: Dekalb	7S	---	---	---	---	---	---
Dp. Dumps							
Ds. Dumps, mine							
EbC: Elba	3E	95	18	4.0	5.0	4.7	6.0
EbD: Elba	4E	85	16	3.6	4.5	4.2	5.8
EbE: Elba	6E	---	---	3.0	3.5	4.0	3.5
EkF: Elba-Berks	7E	---	---	---	---	---	---
EnB: Enoch	6S	---	---	---	---	---	4.0

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
EnD-------------- Enoch	6S	---	---	---	---	---	3.0
EuA-------------- Euclid	2W	110	23	---	5.0	---	---
FcB-------------- Fairpoint	3S	---	---	2.0	---	2.5	5.0
FcD-------------- Fairpoint	4S	---	---	2.0	---	2.2	4.5
FcE-------------- Fairpoint	6E	---	---	---	---	1.2	3.0
FtA-------------- Fitchville	2W	110	22	4.3	5.0	6.4	7.0
GdB-------------- Gilpin	2E	90	18	3.8	4.5	5.0	6.0
GdC-------------- Gilpin	3E	85	16	3.5	3.8	4.8	5.5
GdD-------------- Gilpin	4E	80	15	3.0	3.5	4.5	5.0
GnA-------------- Glenford	1	115	24	4.8	5.8	5.8	7.0
GnB-------------- Glenford	2E	110	22	4.8	5.8	5.8	7.0
GpA. Glenford-Urban land							
GrC-------------- Guernsey	3E	90	18	4.0	4.2	5.0	6.0
GrD2------------- Guernsey	4E	85	16	3.6	4.0	4.5	5.8
GuC-------------- Guernsey-Upshur	3E	90	18	3.8	4.2	5.0	6.0
GuD-------------- Guernsey-Upshur	4E	85	16	3.5	4.0	4.5	5.5
HaF-------------- Hazleton	7S	---	---	---	---	---	---
HbE-------------- Hazleton	6E	---	---	---	---	---	---
He--------------- Hartshorn	2S	100	20	4.0	5.0	6.0	6.5
Ho--------------- Holton	3W	95	19	4.0	5.4	5.3	6.8

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
KaB-------------- Kanawha	2E	120	23	4.0	4.5	6.0	6.5
KeB-------------- Keene	2E	110	22	4.4	5.0	5.6	6.5
KeC-------------- Keene	3E	100	20	4.2	4.6	5.4	6.0
Lc--------------- Lindside	2W	120	24	4.4	4.6	5.6	6.8
Ld--------------- Lindside	2W	100	20	4.2	4.4	5.4	6.5
LoC-------------- Lowell	3E	100	19	4.0	4.8	5.0	6.0
LoD-------------- Lowell	4E	85	16	3.8	4.5	4.5	5.8
LuE-------------- Lowell-Upshur	6E	---	---	---	---	2.5	4.0
LwC-------------- Lowell-Westmoreland	3E	100	19	4.0	4.6	5.0	5.5
LwD-------------- Lowell-Westmoreland	4E	85	16	3.6	4.3	4.5	5.0
LwE-------------- Lowell-Westmoreland	6E	---	---	3.0	3.5	2.5	4.0
LwF-------------- Lowell-Westmoreland	7E	---	---	---	---	---	---
McA-------------- McGary	3W	100	20	3.3	3.8	5.4	6.5
Md--------------- Melvin	5W	---	---	---	---	---	---
MeB-------------- Mentor	2E	130	23	5.5	6.2	5.8	7.0
MeC-------------- Mentor	3E	115	21	5.0	5.8	5.6	6.5
MeD-------------- Mentor	6E	---	18	3.8	4.8	5.0	6.0
MfB. Mentor-Urban land							
MnB-------------- Morristown	3S	---	---	3.0	---	2.5	5.0

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
MnD-------------- Morristown	4S	---	---	2.5	---	2.2	4.0
MoF-------------- Morristown	7E	---	---	---	---	---	---
Nd--------------- Newark	2W	100	19	4.2	4.5	6.5	6.8
Ne--------------- Newark	2W	90	19	4.0	4.3	6.3	6.5
No--------------- Nolin	2W	115	23	4.8	5.0	6.0	6.8
OmB-------------- Omulga	2E	105	20	4.4	5.2	4.8	6.5
OmC-------------- Omulga	3E	95	18	4.0	5.0	4.5	6.2
Or--------------- Orrville	2W	100	20	4.2	5.5	6.5	6.8
RcC-------------- Richland	3E	85	17	3.5	4.5	5.0	6.0
RcD-------------- Richland	4E	80	15	3.0	4.0	4.5	5.0
Sa--------------- Sarahsville	4W	85	17	4.0	3.8	6.0	6.5
SeB-------------- Sees	2W	90	18	4.0	4.5	6.3	6.5
Ub. Udorthents-Rock outcrop							
Uc. Udorthents-Pits							
Ud. Udorthents-Urban land							
UpB-------------- Upshur	3E	95	18	3.5	4.0	4.6	6.0
UrC-------------- Upshur	4E	90	17	3.4	4.0	4.4	5.5
UrD-------------- Upshur	6E	70	14	3.2	3.5	4.2	5.2
UrD3------------- Upshur	7E	---	---	3.0	3.3	3.8	4.8
VaD2------------- Vandalia	4E	90	17	3.4	3.8	4.5	5.5

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Orchardgrass-alfalfa hay	Alfalfa hay	Bluegrass-ladino	Orchard-grass
		Bu	Tons	Tons	Tons	AUM	AUM
VtC-------------- Vincent	3E	95	18	3.8	4.5	5.8	6.0
VwB-------------- Vincent	2E	115	21	4.0	5.0	5.8	6.5
W. Water							
WhB-------------- Wellston	2E	110	21	4.5	5.0	6.0	6.2
WhC-------------- Wellston	3E	100	20	4.0	4.8	5.8	6.0
WkB-------------- Westmore	2E	110	21	4.5	5.5	5.5	6.7
WkC2------------- Westmore	3E	105	20	4.2	5.0	5.0	6.3
WmC-------------- Westmoreland	3E	100	19	3.8	4.8	5.5	6.5
WmD-------------- Westmoreland	4E	85	17	3.5	4.4	4.5	5.5
WmE-------------- Westmoreland	6E	---	---	3.0	3.5	5.0	3.5
WnF-------------- Westmoreland-Berks	7E	---	---	---	---	---	---
WrC. Westmoreland-Urban land							
WrD. Westmoreland-Urban land							
WtB-------------- Woodsfield	2E	102	20	4.4	4.8	6.0	6.5
WtC-------------- Woodsfield	3E	96	19	4.2	4.5	5.5	6.0
ZnB-------------- Zanesville	2E	110	20	4.0	4.5	4.8	5.8
ZnC-------------- Zanesville	3E	95	18	3.6	4.0	4.5	5.6
Zp--------------- Zipp	4W	80	16	3.1	3.0	5.0	5.7
Zs--------------- Zipp	5W	---	---	---	---	---	---

Table 7.--Capability Classes and Subclasses

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	1,651	---	---	---
II	55,436	29,302	25,543	591
III	67,723	63,849	2,642	1,232
IV	92,234	83,330	7,073	1,831
V	2,187	---	2,187	---
VI	52,340	50,116	---	2,224
VII	56,008	32,042	---	23,966
VIII	188	---	---	188

Table 8.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban and 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
AaB	Aaron silt loam, 2 to 8 percent slopes
AbB	Aaron-Upshur complex, 2 to 8 percent slopes
Ca	Chagrin loam, occasionally flooded
EuA	Euclid silt loam, rarely flooded (where drained)
FtA	Fitchville silt loam, 0 to 3 percent slopes (where drained)
GdB	Gilpin silt loam, 2 to 8 percent slopes
GnA	Glenford silt loam, 0 to 2 percent slopes
GnB	Glenford silt loam, 2 to 6 percent slopes
He	Hartshorn silt loam, occasionally flooded
Ho	Holton silt loam, occasionally flooded (where drained)
KaB	Kanawha loam, 2 to 6 percent slopes
KeB	Keene silt loam, 1 to 8 percent slopes
Lc	Lindside silt loam, occasionally flooded
Ld	Lindside silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
McA	McGary silt loam, 0 to 3 percent slopes (where drained)
MeB	Mentor silt loam, 2 to 8 percent slopes
Nd	Newark silt loam, occasionally flooded (where drained)
Ne	Newark silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
No	Nolin silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
OmB	Omulga silt loam, 1 to 6 percent slopes
Or	Orrville silt loam, occasionally flooded (where drained)
SeB	Sees silty clay loam, 2 to 6 percent slopes
UpB	Upshur silt loam, 2 to 6 percent slopes
VwB	Vincent silty clay loam, 2 to 6 percent slopes
WhB	Wellston silt loam, 2 to 8 percent slopes
WkB	Westmore silt loam, 2 to 8 percent slopes
WtB	Woodsfield silt loam, 1 to 8 percent slopes
ZnB	Zanesville silt loam, 2 to 6 percent slopes
Zp	Zipp silty clay loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)

Table 9.--Woodland Management and Productivity

(Only soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
AaB:									
Aaron	4C	Slight	Slight	Slight	Severe	chinkapin oak	81	4	white ash,
						hickory	---	---	northern red oak,
						black walnut	---	---	yellow-poplar,
						eastern redcedar	---	---	eastern white pine,
						northern red oak	---	---	white oak
						sugar maple	---	---	
						black oak	85	5	
						black locust	78	---	
						American elm	---	---	
						white ash	76	5	
AaC:									
Aaron	4C	Slight	Slight	Slight	Severe	chinkapin oak	81	4	white ash,
						hickory	---	---	northern red oak,
						black walnut	---	---	yellow-poplar,
						eastern redcedar	---	---	eastern white pine,
						northern red oak	---	---	white oak
						sugar maple	---	---	
						black oak	85	5	
						black locust	78	---	
						American elm	---	---	
						white ash	76	5	
AbB:									
Aaron	4C	Slight	Slight	Slight	Severe	chinkapin oak	81	4	white ash,
						hickory	---	---	northern red oak,
						black walnut	---	---	yellow-poplar,
						eastern redcedar	---	---	eastern white pine,
						northern red oak	---	---	white oak
						sugar maple	---	---	
						black oak	85	5	
						black locust	78	---	
						American elm	---	---	
						white ash	76	5	
Upshur	3C	Slight	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						yellow-poplar	80	4	eastern white pine,
						eastern white pine	80	13	Virginia pine,
						Virginia pine	66	7	shortleaf pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
AbC2:									
Aaron	4C	Slight	Slight	Slight	Severe	chinkapin oak	81	4	white ash,
						hickory	---	---	northern red oak,
						black walnut	---	---	yellow-poplar,
						eastern redcedar	---	---	eastern white pine,
						northern red oak	---	---	white oak
						sugar maple	---	---	
						black oak	85	5	
						black locust	78	---	
						American elm	---	---	
						white ash	76	5	
Upshur	3C	Moderate	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						yellow-poplar	80	4	eastern white pine,
						Virginia pine	66	7	Virginia pine,
						eastern white pine	80	13	shortleaf pine
AgC:									
Allegheny	4A	Slight	Slight	Slight	Severe	black oak	78	4	white ash,
						sugar maple	---	---	yellow-poplar,
						pignut hickory	---	---	shortleaf pine,
						Virginia pine	72	8	northern red oak,
						red maple	---	---	black walnut,
						American elm	---	---	eastern white pine,
						northern red oak	---	---	white oak
						white ash	---	---	
						yellow-poplar	93	7	
						shortleaf pine	80	9	
BeC:									
Berks	4F	Slight	Moderate	Slight	Moderate	northern red oak	70	4	Virginia pine,
						black oak	70	4	Japanese larch,
						Virginia pine	70	8	Norway spruce,
									red pine,
									eastern white pine
BeD:									
Berks (north aspect)	4R	Slight	Moderate	Slight	Moderate	northern red oak	70	4	Virginia pine,
						black oak	70	4	Japanese larch,
						Virginia pine	70	8	Norway spruce,
									red pine,
									eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
BeD:									
Berks (south aspect)	3R	Slight	Moderate	Slight	Moderate	northern red oak	60	3	Virginia pine,
						black oak	60	3	Japanese larch,
						Virginia pine	60	6	Norway spruce,
									red pine,
									eastern white pine
BeE:									
Berks (north aspect)	4R	Slight	Moderate	Slight	Moderate	northern red oak	70	4	Virginia pine,
						black oak	70	4	Japanese larch,
						Virginia pine	70	8	Norway spruce,
									red pine,
									eastern white pine
BeE:									
Berks (south aspect)	3R	Slight	Moderate	Slight	Moderate	northern red oak	60	3	Virginia pine,
						black oak	60	3	Japanese larch,
						Virginia pine	60	6	Norway spruce,
									red pine,
									eastern white pine
BeF:									
Berks (north aspect)	4R	Moderate	Moderate	Slight	Moderate	northern red oak	70	4	Virginia pine,
						black oak	70	4	Japanese larch,
						Virginia pine	70	8	Norway spruce,
									red pine,
									eastern white pine
BeF:									
Berks (south aspect)	3R	Moderate	Moderate	Slight	Moderate	northern red oak	60	3	Virginia pine,
						black oak	60	3	Japanese larch,
						Virginia pine	60	6	Norway spruce,
									red pine,
									eastern white pine
BgB:									
Bethesda	---	Slight	Moderate	Slight	Moderate	---	---	---	red maple,
									red pine,
									eastern white pine,
									Scotch pine,
									black cherry,
									black locust

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
BgD:									
Bethesda	---	Moderate	Moderate	Slight	Moderate	---	---	---	red maple, red pine, eastern white pine, Scotch pine, black cherry, black locust
BgE:									
Bethesda	---	Moderate	Moderate	Slight	Moderate	---	---	---	red maple, red pine, eastern white pine, Scotch pine, black cherry, black locust
BhB:									
Bethesda	4F	Slight	Severe	Slight	Moderate	northern red oak	70	4	white ash, yellow-poplar, northern red oak, black locust, red pine, eastern white pine
						black cherry	---	---	
						white ash	---	---	
						yellow-poplar	90	6	
						red maple	---	---	
						black locust	75	3	
BhD:									
Bethesda	4R	Moderate	Severe	Slight	Moderate	northern red oak	70	4	white ash, yellow-poplar, northern red oak, black locust, red pine, eastern white pine
						black cherry	---	---	
						white ash	---	---	
						yellow-poplar	90	6	
						red maple	---	---	
						black locust	75	3	
BhF:									
Bethesda	4R	Severe	Severe	Slight	Moderate	northern red oak	70	4	white ash, yellow-poplar, northern red oak, black locust, red pine, eastern white pine
						black cherry	---	---	
						white ash	---	---	
						yellow-poplar	90	6	
						red maple	---	---	
						black locust	75	3	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
BsD:									
Brookside (north aspect)	5R	Moderate	Slight	Slight	Moderate	northern red oak	86	5	white ash,
						yellow-poplar	96	7	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						black cherry	---	---	northern red oak,
						white oak	---	---	red pine,
						sugar maple	---	---	eastern white pine
BsD:									
Brookside (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	80	5	white ash,
						white oak	75	4	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						black cherry	---	---	northern red oak,
						yellow-poplar	---	---	red pine,
						sugar maple	---	---	eastern white pine
BtC:									
Brookside	5A	Slight	Slight	Slight	Moderate	northern red oak	86	5	white ash,
						black cherry	---	---	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	96	7	northern red oak,
						white oak	---	---	red pine,
						sugar maple	---	---	eastern white pine
Vandalia	4C	Moderate	Slight	Slight	Moderate	northern red oak	73	4	yellow-poplar,
						yellow-poplar	75	4	Virginia pine,
						Virginia pine	70	8	black walnut,
									eastern white pine
BtD:									
Brookside (north aspect)	5R	Moderate	Slight	Slight	Moderate	northern red oak	86	5	white ash,
						yellow-poplar	96	7	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						black cherry	---	---	northern red oak,
						white oak	---	---	red pine,
						sugar maple	---	---	eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
BtD:									
Vandalia (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	77	4	yellow-poplar,
						yellow-poplar	90	6	Virginia pine,
						Virginia pine	80	8	black walnut,
									eastern white pine
BtD:									
Brookside (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	80	4	white ash,
						white oak	75	4	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	---	---	northern red oak,
						black cherry	---	---	red pine,
						sugar maple	---	---	eastern white pine
Vandalia (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	68	4	yellow-poplar,
						yellow-poplar	75	4	Virginia pine,
						Virginia pine	70	8	black walnut,
									eastern white pine
BtE:									
Brookside (north aspect)	5R	Moderate	Slight	Slight	Moderate	northern red oak	86	5	white ash,
						yellow-poplar	96	7	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						black cherry	---	---	northern red oak,
						white oak	---	---	red pine,
						sugar maple	---	---	eastern white pine
Vandalia (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	77	4	yellow-poplar,
						yellow-poplar	90	6	Virginia pine,
						Virginia pine	80	8	black walnut,
									eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
BtE:									
Brookside (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	80	4	white ash,
						white oak	75	4	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	---	---	northern red oak,
						black cherry	---	---	red pine,
						sugar maple	---	---	eastern white pine
Vandalia (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	68	4	yellow-poplar,
						yellow-poplar	75	4	Virginia pine,
						Virginia pine	70	8	black walnut,
									eastern white pine
Ca:									
Chagrin	5A	Slight	Slight	Slight	Severe	northern red oak	86	5	white ash,
						black cherry	---	---	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	96	7	northern red oak,
						white oak	---	---	red pine,
						sugar maple	86	4	eastern white pine
ChD:									
Clarksburg	4R	Moderate	Slight	Slight	Moderate	northern red oak	75	4	yellow-poplar,
						yellow-poplar	85	6	Japanese larch,
									Norway spruce,
									eastern white pine
CkC:									
Claysville	4C	Slight	Moderate	Severe	Severe	northern red oak	75	4	yellow-poplar,
						sugar maple	---	---	white oak,
						yellow-poplar	90	6	pin oak,
						white oak	70	4	eastern white pine
						pin oak	90	5	
Guernsey	4A	Slight	Slight	Slight	Severe	northern red oak	78	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	red pine,
									eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
CoD: Coshocton (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	80	4	white ash,
						white oak	75	5	yellow-poplar,
						yellow-poplar	90	6	white oak,
						white ash	---	---	northern red oak,
						sugar maple	---	---	red pine,
						black cherry	---	---	eastern white pine
CoD: Coshocton (south aspect)	3R	Moderate	Slight	Severe	Severe	white oak	65	3	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	---	---	northern red oak,
						northern red oak	---	---	red pine,
						sugar maple	---	---	eastern white pine
CsC2: Coshocton	4A	Slight	Slight	Slight	Severe	northern red oak	80	4	white ash,
						yellow-poplar	90	6	yellow-poplar,
						white oak	75	5	white oak,
						sugar maple	---	---	northern red oak,
						white ash	---	---	red pine,
						black cherry	---	---	eastern white pine
DkC: Dekalb	3F	Slight	Moderate	Slight	Slight	northern red oak	57	3	Japanese larch,
									Austrian pine,
									red pine,
									eastern white pine,
									Virginia pine
DkD: Dekalb (north aspect)	4R	Slight	Moderate	Slight	Slight	northern red oak	68	4	Norway spruce,
						black cherry	---	---	white spruce,
						sugar maple	---	---	eastern white pine,
						white oak	---	---	Virginia pine
DkD: Dekalb (south aspect)	3R	Slight	Moderate	Slight	Slight	northern red oak	58	3	Norway spruce,
						black cherry	---	---	white spruce,
						sugar maple	---	---	eastern white pine,
						white oak	---	---	Virginia pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
DkE:									
Dekalb (north aspect)-	4R	Slight	Moderate	Slight	Slight	northern red oak---	68	4	Norway spruce,
						black cherry-------	---	---	white spruce,
						sugar maple--------	---	---	eastern white pine,
						white oak----------	---	---	Virginia pine
DkE:									
Dekalb (south aspect)-	3R	Slight	Severe	Slight	Slight	northern red oak---	58	3	Norway spruce,
						black cherry-------	---	---	white spruce,
						sugar maple--------	---	---	eastern white pine,
						white oak----------	---	---	Virginia pine
DmF:									
Dekalb (north aspect)-	4R	Slight	Moderate	Slight	Slight	northern red oak---	68	4	Norway spruce,
						black cherry-------	---	---	white spruce,
						sugar maple--------	---	---	eastern white pine,
						white oak----------	---	---	Virginia pine
DmF:									
Dekalb (south aspect)-	3R	Slight	Severe	Slight	Slight	northern red oak---	58	3	Norway spruce,
						black cherry-------	---	---	white spruce,
						sugar maple--------	---	---	eastern white pine,
						white oak----------	---	---	Virginia pine
EbC:									
Elba------------------	3C	Slight	Severe	Severe	Slight	northern red oak---	66	3	red maple,
						black cherry-------	---	---	yellow-poplar,
						white oak----------	---	---	green ash,
						white ash----------	---	---	Austrian pine,
						slippery elm-------	---	---	eastern white pine,
						red maple----------	---	---	pin oak
						yellow-poplar------	76	4	
EbD:									
Elba (north aspect)---	3R	Moderate	Severe	Severe	Slight	northern red oak---	66	3	red maple,
						black cherry-------	---	---	yellow-poplar,
						white oak----------	---	---	green ash,
						white ash----------	---	---	Austrian pine,
						slippery elm-------	---	---	eastern white pine,
						yellow-poplar------	76	4	pin oak
						red maple----------	---	---	
EbD:									
Elba (south aspect)---	3R	Moderate	Severe	Severe	Slight	northern red oak---	56	3	eastern white pine,
						white oak----------	55	3	yellow-poplar,
									white oak

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
EbE:									
Elba (north aspect)---	3R	Moderate	Severe	Severe	Slight	northern red oak---	66	3	red maple,
						black cherry-------	---	---	yellow-poplar,
						white oak----------	---	---	green ash,
						white ash----------	---	---	Austrian pine,
						slippery elm-------	---	---	eastern white pine,
						yellow-poplar------	76	4	pin oak
						red maple----------	---	---	
EbE:									
Elba (south aspect)---	3R	Moderate	Severe	Severe	Slight	northern red oak---	56	3	eastern white pine,
						white oak----------	55	3	yellow-poplar,
									white oak
EkF:									
Elba (north aspect)---	3R	Severe	Severe	Severe	Slight	northern red oak---	66	3	red maple,
						black cherry-------	---	---	yellow-poplar,
						white oak----------	---	---	green ash,
						white ash----------	---	---	Austrian pine,
						slippery elm-------	---	---	eastern white pine,
						red maple----------	---	---	pin oak
						yellow-poplar------	76	4	
Berks (north aspect)--	4R	Moderate	Moderate	Slight	Moderate	northern red oak---	70	4	Virginia pine,
						black oak----------	70	4	Japanese larch,
						Virginia pine------	70	8	Norway spruce,
									red pine,
									eastern white pine
EkF:									
Elba (south aspect)---	3R	Moderate	Severe	Severe	Slight	northern red oak---	56	3	eastern white pine,
						white oak----------	55	3	yellow-poplar,
									white oak
Berks (south aspect)--	3R	Moderate	Moderate	Slight	Moderate	northern red oak---	60	3	Virginia pine,
						black oak----------	60	3	Japanese larch,
						Virginia pine------	60	6	Norway spruce,
									red pine,
									eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Trees to plant
		Management concerns				Potential productivity			
EuA:									
Euclid	5A	Slight	Slight	Slight	Severe	pin oak	86	5	white ash,
						black cherry	---	---	yellow-poplar,
						northern red oak	80	4	white oak,
						white ash	---	---	northern red oak,
						yellow-poplar	---	---	red pine,
						white oak	---	---	eastern white pine
						sugar maple	---	---	
FcB:									
Fairpoint	---	Slight	Moderate	Slight	Moderate	---	---	---	yellow-poplar, Norway spruce, white spruce, blue spruce, eastern white pine, Scotch pine, black locust
FcD:									
Fairpoint	---	Moderate	Moderate	Slight	Moderate	---	---	---	yellow-poplar, Norway spruce, white spruce, blue spruce, eastern white pine, Scotch pine, black locust
FcE:									
Fairpoint	---	Moderate	Moderate	Slight	Moderate	---	---	---	yellow-poplar, Norway spruce, white spruce, blue spruce, eastern white pine, Scotch pine, black locust
FtA:									
Fitchville	5A	Slight	Slight	Slight	Severe	pin oak	90	5	yellow-poplar,
						northern red oak	80	4	northern red oak,
						yellow-poplar	---	---	white ash,
						sugar maple	---	---	green ash, Norway spruce, white spruce, red pine, eastern white pine, Scotch pine, white oak

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
GdB:									
Gilpin	4A	Slight	Slight	Slight	Moderate	northern red oak	80	4	yellow-poplar,
						yellow-poplar	95	7	Japanese larch,
									eastern white pine,
									Virginia pine,
									black cherry
GdC:									
Gilpin	4A	Slight	Slight	Slight	Moderate	northern red oak	80	4	yellow-poplar,
						yellow-poplar	95	7	Japanese larch,
									eastern white pine,
									Virginia pine,
									black cherry
GdD:									
Gilpin (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	80	4	yellow-poplar,
						yellow-poplar	95	7	Japanese larch,
									eastern white pine,
									Virginia pine,
									black cherry
GdD:									
Gilpin (south aspect)	4R	Moderate	Slight	Moderate	Moderate	northern red oak	70	4	yellow-poplar,
						yellow-poplar	---	---	Japanese larch,
									eastern white pine,
									Virginia pine,
									black cherry
GnA:									
Glenford	5A	Slight	Slight	Slight	Severe	northern red oak	86	5	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	96	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	Norway spruce,
									blue spruce,
									red pine,
									eastern white pine,
									Scotch pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
GnB: Glenford	5A	Slight	Slight	Slight	Severe	northern red oak	86	5	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	96	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	Norway spruce,
									blue spruce,
									red pine,
									eastern white pine,
									Scotch pine
GrC: Guernsey	4A	Slight	Slight	Slight	Severe	northern red oak	78	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	red pine,
									eastern white pine
GrD2: Guernsey (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	78	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	red pine,
									eastern white pine
GrD2: Guernsey (south aspect)	4R	Moderate	Slight	Severe	Severe	northern red oak	70	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	---	---	northern red oak,
						white oak	65	3	green ash,
						sugar maple	---	---	red pine,
									eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
GuC:									
Guernsey	4A	Slight	Slight	Slight	Severe	northern red oak	78	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	red pine,
									eastern white pine
Upshur	3C	Moderate	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						yellow-poplar	80	4	eastern white pine,
						eastern white pine	80	13	Virginia pine,
						Virginia pine	66	7	shortleaf pine
GuD:									
Guernsey (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	78	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	---	---	green ash,
						sugar maple	---	---	red pine,
									eastern white pine
Upshur (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	70	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						Virginia pine	70	8	Virginia pine,
						eastern white pine	90	15	shortleaf pine
GuD:									
Guernsey (south aspect)	4R	Moderate	Slight	Severe	Severe	northern red oak	70	4	white ash,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						yellow-poplar	---	---	northern red oak,
						white oak	65	3	green ash,
						sugar maple	---	---	red pine,
									eastern white pine
Upshur (south aspect)	3R	Moderate	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						eastern white pine	75	12	eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
HaF: Hazleton (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	70	4	Japanese larch, Norway spruce, Austrian pine, eastern white pine, black cherry
						yellow-poplar	80	5	
HaF: Hazleton (south aspect)	3R	Moderate	Severe	Slight	Slight	northern red oak	60	3	Japanese larch, Norway spruce, Austrian pine, eastern white pine, black cherry
						yellow-poplar	70	4	
HbE: Hazleton (north aspect)	4R	Slight	Slight	Slight	Moderate	northern red oak	70	4	Japanese larch, Norway spruce, Austrian pine, eastern white pine, black cherry
						yellow-poplar	80	5	
HbE: Hazleton (south aspect)	3R	Slight	Slight	Slight	Moderate	northern red oak	60	3	Japanese larch, Norway spruce, Austrian pine, eastern white pine, black cherry
						yellow-poplar	---	---	
						black oak	60	3	
He: Hartshorn	5A	Slight	Slight	Slight	Moderate	northern red oak	86	5	white ash, black walnut, yellow-poplar, white oak, northern red oak, red pine, eastern white pine
						black cherry	---	---	
						white ash	---	---	
						black walnut	---	---	
						yellow-poplar	96	7	
						white oak	---	---	
						sugar maple	---	---	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Ho:									
Holton	5A	Slight	Slight	Moderate	Severe	pin oak	85	5	pin oak,
						yellow-poplar	90	6	red maple,
						sugar maple	80	4	white ash,
						northern red oak	80	4	green ash,
									sweetgum,
									American sycamore,
									black cherry,
									swamp white oak,
									bur oak,
									baldcypress
KaB:									
Kanawha	4A	Slight	Slight	Slight	Severe	northern red oak	80	4	black walnut,
						black oak	80	4	yellow-poplar,
						black locust	---	---	white oak,
						black walnut	---	---	northern red oak,
						yellow-poplar	90	6	eastern white pine,
						Virginia pine	70	8	black cherry
						white oak	80	4	
KeB:									
Keene	4A	Slight	Slight	Slight	Severe	northern red oak	80	4	white ash,
						black cherry	---	---	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	75	4	red pine,
						sugar maple	---	---	eastern white pine
KeC:									
Keene	4A	Slight	Slight	Slight	Severe	northern red oak	80	4	white ash,
						black cherry	---	---	black walnut,
						white ash	---	---	yellow-poplar,
						black walnut	---	---	white oak,
						yellow-poplar	95	7	northern red oak,
						white oak	75	4	red pine,
						sugar maple	---	---	eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Trees to plant
Lc:									
Lindside	5A	Slight	Slight	Slight	Severe	northern red oak	86	5	white ash,
						white ash	85	4	black walnut,
						black walnut	---	---	yellow-poplar,
						yellow-poplar	95	7	white oak,
						white oak	85	5	northern red oak,
						red maple	---	---	Japanese larch,
									Norway spruce,
									shortleaf pine,
									eastern white pine,
									black oak
Ld:									
Lindside	5A	Slight	Slight	Slight	Severe	northern red oak	86	5	white ash,
						white ash	85	4	black walnut,
						black walnut	---	---	yellow-poplar,
						yellow-poplar	95	7	white oak,
						white oak	85	5	northern red oak,
						red maple	---	---	Japanese larch,
									Norway spruce,
									shortleaf pine,
									eastern white pine,
									black oak
LoC:									
Lowell	4C	Slight	Slight	Slight	Severe	northern red oak	70	4	yellow-poplar,
						yellow-poplar	---	---	eastern white pine,
									Virginia pine
LoD:									
Lowell	5R	Moderate	Slight	Slight	Severe	black oak	88	5	white ash,
						hickory	---	---	northern red oak,
						Virginia pine	78	8	yellow-poplar,
						northern red oak	---	---	eastern white pine,
						sugar maple	---	---	white oak
						black locust	77	---	
						white ash	78	5	
LuE:									
Lowell (north aspect)	5R	Moderate	Slight	Slight	Severe	black oak	88	5	white ash,
						hickory	---	---	northern red oak,
						Virginia pine	78	8	yellow-poplar,
						northern red oak	---	---	eastern white pine,
						sugar maple	---	---	white oak
						black locust	77	---	
						white ash	78	5	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
LuE:									
Upshur (north aspect)	4R	Severe	Slight	Slight	Moderate	northern red oak	70	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						Virginia pine	70	8	Virginia pine,
						eastern white pine	90	15	shortleaf pine
LuE:									
Lowell (south aspect)	5R	Moderate	Slight	Slight	Severe	black oak	88	5	white ash,
						hickory	---	---	northern red oak,
						Virginia pine	78	8	yellow-poplar,
						northern red oak	---	---	eastern white pine,
						sugar maple	---	---	white oak
						black locust	77	---	
						white ash	78	5	
Upshur (south aspect)	3R	Moderate	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						eastern white pine	75	12	eastern white pine
LwC:									
Lowell	4C	Slight	Slight	Slight	Severe	northern red oak	70	4	yellow-poplar,
						yellow-poplar	---	---	eastern white pine,
									Virginia pine
Westmoreland	4A	Slight	Slight	Slight	Severe	northern red oak	75	4	yellow-poplar,
						yellow-poplar	85	6	eastern white pine,
						eastern white pine	70	10	Virginia pine
LwD:									
Lowell (north aspect)	5R	Moderate	Slight	Slight	Severe	black oak	88	5	white ash,
						hickory	---	---	northern red oak,
						Virginia pine	78	8	yellow-poplar,
						northern red oak	---	---	eastern white pine,
						sugar maple	---	---	white oak
						black locust	77	---	
						white ash	78	5	
Westmoreland (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	81	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						eastern white pine	75	12	black walnut

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordi- nation symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortal- ity	Management concerns: Wind- throw hazard	Management concerns: Plant competi- tion	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc- tivity class*	Trees to plant
LwD:									
Lowell (south aspect)-	5R	Moderate	Slight	Slight	Severe	black oak----------	88	5	white ash,
						hickory------------	---	---	northern red oak,
						Virginia pine------	78	8	yellow-poplar,
						northern red oak---	---	---	eastern white pine,
						sugar maple--------	---	---	white oak
						black locust-------	77	---	
						white ash----------	78	5	
Westmoreland (south aspect)--------------	4R	Moderate	Slight	Slight	Severe	northern red oak---	70	4	yellow-poplar,
						yellow-poplar------	80	5	eastern white pine,
						eastern white pine-	65	8	black walnut
LwE:									
Lowell (north aspect)-	5R	Moderate	Slight	Slight	Severe	black oak----------	88	5	white ash,
						hickory------------	---	---	northern red oak,
						Virginia pine------	78	8	yellow-poplar,
						northern red oak---	---	---	eastern white pine,
						sugar maple--------	---	---	white oak
						black locust-------	77	---	
						white ash----------	78	5	
Westmoreland (north aspect)--------------	4R	Moderate	Slight	Slight	Severe	northern red oak---	81	4	yellow-poplar,
						yellow-poplar------	90	6	eastern white pine,
						eastern white pine-	75	12	black walnut
LwE:									
Lowell (south aspect)-	5R	Moderate	Slight	Slight	Severe	black oak----------	88	5	white ash,
						hickory------------	---	---	northern red oak,
						Virginia pine------	78	8	yellow-poplar,
						northern red oak---	---	---	eastern white pine,
						sugar maple--------	---	---	white oak
						black locust-------	77	---	
						white ash----------	78	5	
Westmoreland (south aspect)--------------	4R	Moderate	Slight	Slight	Severe	northern red oak---	70	4	yellow-poplar,
						yellow-poplar------	80	5	eastern white pine,
						eastern white pine-	65	8	black walnut

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Trees to plant
LwF:									
Lowell (north aspect)-	5R	Severe	Slight	Slight	Severe	black oak----------	88	5	white ash,
						hickory------------	---	---	northern red oak,
						Virginia pine------	78	8	yellow-poplar,
						northern red oak---	---	---	eastern white pine,
						sugar maple--------	---	---	white oak
						black locust-------	77	---	
						white ash----------	78	5	
Westmoreland (north aspect)--------------	4R	Severe	Slight	Slight	Severe	northern red oak---	81	4	yellow-poplar,
						yellow-poplar------	90	6	eastern white pine,
						eastern white pine-	75	12	black walnut
LwF:									
Lowell (south aspect)-	5R	Moderate	Slight	Slight	Severe	black oak----------	88	5	white ash,
						hickory------------	---	---	northern red oak,
						Virginia pine------	78	8	yellow-poplar,
						northern red oak---	---	---	eastern white pine,
						sugar maple--------	---	---	white oak
						black locust-------	77	---	
						white ash----------	78	5	
Westmoreland (south aspect)--------------	4R	Moderate	Slight	Slight	Severe	northern red oak---	70	4	yellow-poplar,
						yellow-poplar------	80	5	eastern white pine,
						eastern white pine-	65	8	black walnut
McA:									
McGary----------------	4W	Slight	Slight	Moderate	Severe	white oak----------	70	4	sweetgum,
						pin oak------------	85	5	pin oak,
						sweetgum-----------	80	---	red maple,
						yellow-poplar------	85	6	green ash,
									American sycamore,
									eastern cottonwood,
									swamp white oak,
									bur oak,
									baldcypress
Md:									
Melvin----------------	6W	Slight	Severe	Severe	Severe	pin oak------------	90	6	pin oak,
						hickory------------	---	---	sweetgum,
						hackberry----------	---	---	baldcypress
						American sycamore--	---	---	
						eastern cottonwood-	---	---	
						black willow-------	---	---	
						red maple----------	---	---	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
MeB:									
Mentor----------------	5A	Slight	Slight	Slight	Severe	northern red oak---	86	5	white ash,
						black cherry-------	---	---	black walnut,
						white ash----------	---	---	yellow-poplar,
						black walnut-------	---	---	white oak,
						yellow-poplar------	---	---	northern red oak,
						white oak----------	---	---	red pine,
						sugar maple--------	---	---	eastern white pine
MeC:									
Mentor----------------	5A	Slight	Slight	Slight	Severe	northern red oak---	86	5	white ash,
						black cherry-------	---	---	black walnut,
						white ash----------	---	---	yellow-poplar,
						black walnut-------	---	---	white oak,
						yellow-poplar------	---	---	northern red oak,
						white oak----------	---	---	red pine,
						sugar maple--------	---	---	eastern white pin
MeD:									
Mentor----------------	5R	Moderate	Slight	Slight	Severe	northern red oak---	86	5	white ash,
						black cherry-------	---	---	black walnut,
						white ash----------	---	---	yellow-poplar,
						black walnut-------	---	---	white oak,
						yellow-poplar------	---	---	northern red oak,
						white oak----------	---	---	red pine,
						sugar maple--------	---	---	eastern white pine
MnB:									
Morristown-----------	---	Slight	Moderate	Slight	Moderate	---	---	---	white ash,
									black walnut,
									Norway spruce,
									white spruce,
									eastern white pine,
									Scotch pine,
									Virginia pine,
									American sycamore,
									eastern cottonwood,
									black locust

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
MnD:									
Morristown	---	Moderate	Moderate	Slight	Moderate	---	---	---	white ash, black walnut, Norway spruce, white spruce, eastern white pine, Scotch pine, Virginia pine, American sycamore, eastern cottonwood, black locust
MoF:									
Morristown	---	Severe	Moderate	Slight	Moderate	northern red oak	73	4	white ash, black locust, Norway spruce, white spruce, red pine, eastern white pine, Scotch pine, Virginia pine, American sycamore, eastern cottonwood
						yellow-poplar	88	6	
						red maple	100	5	
						black oak	70	4	
						white ash	50	2	
						black locust	68	---	
Nd:									
Newark	5W	Slight	Slight	Moderate	Severe	pin oak	96	5	sweetgum, eastern cottonwood, American sycamore
						cherrybark oak	---	---	
						eastern cottonwood	89	7	
						overcup oak	---	---	
						green ash	---	---	
						Shumard oak	---	---	
						sweetgum	85	---	
Ne:									
Newark	5W	Slight	Slight	Moderate	Severe	pin oak	96	5	sweetgum, eastern cottonwood, American sycamore
						cherrybark oak	---	---	
						eastern cottonwood	89	7	
						overcup oak	---	---	
						green ash	---	---	
						Shumard oak	---	---	
						sweetgum	85	---	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
No:									
Nolin	5A	Slight	Moderate	Slight	Severe	northern red oak	90	5	sweetgum,
						American sycamore	---	---	eastern cottonwood,
						cherrybark oak	97	6	cherrybark oak,
						river birch	---	---	green ash,
						black willow	---	---	pin oak
						sweetgum	92	---	
						eastern cottonwood	---	---	
OmB:									
Omulga	4D	Slight	Slight	Moderate	Severe	northern red oak	80	4	white ash,
						white ash	---	---	black walnut,
						black walnut	---	---	yellow-poplar,
						yellow-poplar	---	---	black cherry,
						black cherry	---	---	white oak,
						white oak	---	---	northern red oak,
						sugar maple	---	---	green ash,
									red pine,
									eastern white pine,
									black locust
OmC:									
Omulga	4D	Slight	Slight	Moderate	Severe	northern red oak	80	4	white ash,
						white ash	---	---	black walnut,
						black walnut	---	---	yellow-poplar,
						yellow-poplar	---	---	black cherry,
						black cherry	---	---	white oak,
						white oak	---	---	northern red oak,
						sugar maple	---	---	green ash,
									red pine,
									eastern white pine,
									black locust
Or:									
Orrville	5A	Slight	Slight	Slight	Severe	pin oak	85	5	white ash,
						black cherry	---	---	yellow-poplar,
						northern red oak	80	4	white oak,
						white ash	---	---	northern red oak,
						yellow-poplar	90	6	green ash,
						white oak	---	---	Norway spruce,
						sugar maple	80	4	white spruce,
									red pine,
									eastern white pine,
									Scotch pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
RcC:									
Richland	5A	Slight	Slight	Slight	Moderate	northern red oak	85	5	white ash,
						black walnut	---	---	black walnut,
						yellow-poplar	95	7	yellow-poplar,
						white ash	---	---	northern red oak,
									red pine,
									eastern white pine,
									white oak
RcD:									
Richland (north aspect)	5R	Moderate	Slight	Slight	Moderate	northern red oak	85	5	white ash,
						black walnut	---	---	black walnut,
						yellow-poplar	95	7	yellow-poplar,
						white ash	---	---	northern red oak,
									red pine,
									eastern white pine,
									white oak
RcD:									
Richland (south aspect)	4R	Moderate	Moderate	Slight	Slight	northern red oak	80	4	white ash,
						black walnut	---	---	black walnut,
						yellow-poplar	90	6	yellow-poplar,
						white ash	---	---	northern red oak,
									red pine,
									eastern white pine,
									white oak
Sa:									
Sarahsville	5W	Slight	Severe	Severe	Severe	pin oak	90	5	red maple,
						red maple	---	---	green ash,
						green ash	---	---	eastern cottonwood,
						black cherry	---	---	swamp white oak,
						eastern cottonwood	---	---	pin oak,
						swamp white oak	---	---	silver maple,
									sweetgum,
									American sycamore,
									baldcypress

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
SeB:									
Sees	4C	Slight	Moderate	Slight	Severe	white oak	85	4	yellow-poplar,
						hackberry	---	---	white oak,
						black walnut	---	---	white ash,
						eastern redcedar	---	---	eastern white pine
						black locust	---	---	
						elm	---	---	
						yellow-poplar	---	---	
						shagbark hickory	---	---	
UpB:									
Upshur	3C	Slight	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						yellow-poplar	80	4	eastern white pine,
						Virginia pine	66	7	Virginia pine,
						eastern white pine	80	13	shortleaf pine
UrC:									
Upshur	3C	Moderate	Slight	Slight	Moderate	northern red oak	65	3	yellow-poplar,
						yellow-poplar	80	4	eastern white pine,
						Virginia pine	66	7	Virginia pine,
						eastern white pine	80	13	shortleaf pine
UrD:									
Upshur (north aspect)	4R	Moderate	Severe	Severe	Moderate	northern red oak	70	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						Virginia pine	70	8	Virginia pine,
						eastern white pine	90	15	shortleaf pine
UrD:									
Upshur (south aspect)	3R	Moderate	Severe	Severe	Moderate	northern red oak	65	3	yellow-poplar,
						eastern white pine	75	12	eastern white pine
UrD3:									
Upshur (north aspect)	4R	Moderate	Severe	Severe	Moderate	northern red oak	70	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						Virginia pine	70	8	Virginia pine,
						eastern white pine	90	15	shortleaf pine
UrD3:									
Upshur (south aspect)	3R	Moderate	Severe	Severe	Moderate	northern red oak	65	3	yellow-poplar,
						eastern white pine	75	12	eastern white pine

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
VaD2:									
Vandalia (north aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	77	4	yellow-poplar,
						yellow-poplar	90	6	Virginia pine,
						Virginia pine	80	8	black walnut,
									eastern white pine
VaD2:									
Vandalia (south aspect)	4R	Moderate	Slight	Slight	Moderate	northern red oak	68	4	yellow-poplar,
						yellow-poplar	75	4	Virginia pine,
						Virginia pine	70	8	black walnut,
									eastern white pine
VtC:									
Vincent	4C	Slight	Moderate	Severe	Severe	northern red oak	70	4	red maple,
						white ash	---	---	yellow-poplar,
						white oak	65	3	green ash,
						sugar maple	---	---	Austrian pine,
						red maple	---	---	American sycamore,
									eastern cottonwood,
									pin oak, black oak
VwB:									
Vincent	4C	Slight	Moderate	Severe	Severe	northern red oak	70	4	red maple,
						white ash	---	---	yellow-poplar,
						white oak	65	3	green ash,
						sugar maple	---	---	Austrian pine,
						red maple	---	---	American sycamore,
									eastern cottonwood,
									pin oak, black oak
WhB:									
Wellston	4A	Slight	Slight	Slight	Severe	northern red oak	81	4	white ash,
						Virginia pine	70	8	black walnut,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						black walnut	---	---	northern red oak,
						yellow-poplar	90	6	green ash, red pine,
						white oak	---	---	eastern white pine
						sugar maple	---	---	

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
WhC:									
Wellston	4A	Slight	Slight	Slight	Severe	northern red oak	81	4	white ash,
						Virginia pine	70	8	black walnut,
						black cherry	---	---	yellow-poplar,
						white ash	---	---	white oak,
						black walnut	---	---	northern red oak,
						yellow-poplar	90	6	green ash, red pine,
						white oak	---	---	eastern white pine
						sugar maple	---	---	
WkB:									
Westmore	4A	Slight	Slight	Moderate	Severe	northern red oak	68	4	white ash,
						black walnut	---	---	black walnut,
						yellow-poplar	91	6	yellow-poplar,
						white ash	---	---	northern red oak,
									red pine,
									eastern white pine,
									white oak
WkC2:									
Westmore	4A	Slight	Slight	Moderate	Severe	northern red oak	68	4	white ash,
						black walnut	---	---	black walnut,
						yellow-poplar	91	6	yellow-poplar,
						white ash	---	---	northern red oak,
									red pine,
									eastern white pine,
									white oak
WmC:									
Westmoreland	4A	Slight	Slight	Slight	Severe	northern red oak	75	4	yellow-poplar,
						yellow-poplar	85	6	eastern white pine,
						eastern white pine	70	10	Virginia pine
WmD:									
Westmoreland (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	81	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						eastern white pine	75	12	black walnut
WmD:									
Westmoreland (south aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	70	4	yellow-poplar,
						yellow-poplar	80	5	eastern white pine,
						eastern white pine	65	8	black walnut

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Erosion hazard	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Trees to plant
WmE:									
Westmoreland (north aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	81	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						eastern white pine	75	12	black walnut
WmE:									
Westmoreland (south aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	70	4	yellow-poplar,
						yellow-poplar	80	5	eastern white pine,
						eastern white pine	65	8	black walnut
WnF:									
Westmoreland (north aspect)	4R	Severe	Slight	Slight	Severe	northern red oak	81	4	yellow-poplar,
						yellow-poplar	90	6	eastern white pine,
						eastern white pine	75	12	black walnut
Berks (north aspect)	4R	Moderate	Moderate	Slight	Moderate	northern red oak	70	4	Virginia pine,
						black oak	70	4	Japanese larch,
						Virginia pine	70	8	Norway spruce,
									red pine,
									eastern white pine
WnF:									
Westmoreland (south aspect)	4R	Moderate	Slight	Slight	Severe	northern red oak	70	4	yellow-poplar,
						yellow-poplar	80	5	eastern white pine,
						eastern white pine	65	8	black walnut
Berks (south aspect)	3R	Moderate	Moderate	Slight	Moderate	northern red oak	60	3	Virginia pine,
						black oak	60	3	Japanese larch,
						Virginia pine	60	6	Norway spruce,
									red pine,
									eastern white pine
WtB:									
Woodsfield	4C	Slight	Moderate	Moderate	Severe	white oak	76	4	red maple,
						black cherry	---	---	green ash,
						white ash	---	---	yellow-poplar,
						slippery elm	---	---	Austrian pine,
						red maple	---	---	American sycamore,
									pin oak, black oak

Table 9.--Woodland Management and Productivity

Map symbol and soil name	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Produc- tivity class*	
WtC:									
Woodsfield	4C	Slight	Moderate	Moderate	Severe	white oak	76	4	red maple, green ash, yellow-poplar, Austrian pine, American sycamore, pin oak, black oak
						black cherry	---	---	
						white ash	---	---	
						slippery elm	---	---	
						red maple	---	---	
ZnB:									
Zanesville	4D	Slight	Slight	Slight	Moderate	white oak	69	4	yellow-poplar, shortleaf pine, white oak, white ash, eastern white pine, northern red oak
						sweetgum	---	---	
						Virginia pine	66	7	
						black oak	75	4	
						yellow-poplar	90	6	
						hickory	---	---	
						shortleaf pine	63	7	
ZnC:									
Zanesville	4D	Slight	Slight	Slight	Moderate	white oak	69	4	yellow-poplar, shortleaf pine, white oak, white ash, eastern white pine, northern red oak
						sweetgum	---	---	
						Virginia pine	66	7	
						black oak	75	4	
						yellow-poplar	90	6	
						hickory	---	---	
						shortleaf pine	63	7	
Zp:									
Zipp	5W	Slight	Severe	Severe	Severe	pin oak	86	5	sweetgum, red maple, white ash, eastern white pine, baldcypress
						white oak	75	4	
						sweetgum	90	---	
Zs:									
Zipp	5W	Slight	Severe	Severe	Severe	pin oak	86	5	sweetgum, red maple, white ash, eastern white pine, baldcypress
						white oak	75	4	
						sweetgum	90	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

Table 10.--Woodland Harvesting and Regeneration Activities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates the soil was not rated.)

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
AaB:				
Aaron	Severe: low strength	Severe: low strength	Slight	Slight
AaC:				
Aaron	Severe: low strength	Severe: low strength, slope	Slight	Slight
AbB:				
Aaron	Severe: low strength	Severe: low strength	Slight	Slight
Upshur	Severe: low strength	Severe: low strength	Slight	Slight
AbC2:				
Aaron	Severe: low strength	Severe: low strength, slope	Slight	Slight
Upshur	Severe: low strength	Severe: low strength, slope	Slight	Slight
AgC:				
Allegheny	Slight	Moderate: slope	Slight	Slight
BaD:				
Barkcamp	Moderate: slope, too cobbly	Severe: slope	Moderate: slope	Moderate: slope
BcB:				
Barkcamp	Severe: too stony	Severe: too stony	Moderate: too stony	Moderate: too stony
BcD:				
Barkcamp	Severe: too stony	Severe: too stony, slope	Moderate: too stony, slope	Moderate: too stony, slope
BeC:				
Berks	Moderate: depth to rock	Moderate: depth to rock, slope	Slight	Slight
BeD:				
Berks	Moderate: slope, depth to rock	Severe: slope, depth to rock	Moderate: slope	Moderate: slope
BeE:				
Berks	Moderate: slope, depth to rock	Severe: slope, depth to rock	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for--			
	Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
BeF:				
Berks	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope	Severe: slope
BgB:				
Bethesda	Moderate: too clayey, too cobbly	Moderate: too clayey, too cobbly	Slight	Slight
BgD:				
Bethesda	Moderate: slope, too clayey, too cobbly	Severe: slope	Moderate: slope	Moderate: slope
BgE:				
Bethesda	Moderate: slope, too clayey, too cobbly	Severe: slope	Moderate: slope	Moderate: slope
BhB:				
Bethesda	Moderate: too cobbly	Moderate: too cobbly	Slight	Slight
BhD:				
Bethesda	Moderate: slope, too cobbly	Severe: slope	Moderate: slope	Moderate: slope
BhF:				
Bethesda	Severe: slope	Severe: slope	Severe: slope	Severe: slope
BsD:				
Brookside	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
BtC:				
Brookside	Severe: low strength	Severe: low strength, slope	Slight	Slight
Vandalia	Severe: low strength	Severe: low strength, slope	Slight	Slight
BtD:				
Brookside	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
Vandalia	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
BtE:				
Brookside	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
Vandalia	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
Ca:				
Chagrin	Moderate: flooding	Moderate: flooding	Slight	Slight
ChD:				
Clarksburg	Moderate: low strength	Moderate: low strength, slope	Moderate: slope	Moderate: slope
CkC:				
Claysville	Severe: wetness, low strength, too clayey	Severe: wetness, low strength, too clayey, slope	Severe: wetness	Severe: wetness
Guernsey	Severe: low strength	Severe: low strength, slope	Slight	Slight
CoD:				
Coshocton	Severe: low strength	Severe: slope, low strength	Moderate: slope	Moderate: slope
CsC2:				
Coshocton	Severe: low strength	Severe: low strength	Slight	Slight
DkC:				
Dekalb	Moderate: depth to rock, too cobbly	Moderate: depth to rock, too cobbly, slope	Slight	Slight
DkD:				
Dekalb	Moderate: depth to rock, slope, too cobbly	Severe: slope, depth to rock	Moderate: slope	Moderate: slope
DkE:				
Dekalb	Moderate: depth to rock, slope, too cobbly	Severe: slope, depth to rock	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
DmF:				
Dekalb	Severe: too stony, slope, depth to rock	Severe: too stony, slope, depth to rock	Severe: slope	Severe: slope, too stony
Dp:				
Dumps.				
Ds:				
Dumps, mine.				
EbC:				
Elba	Severe: low strength	Severe: low strength, slope	Slight	Slight
EbD:				
Elba	Severe: low strength	Severe: slope, low strength	Moderate: slope	Moderate: slope
EbE:				
Elba	Severe: low strength	Severe: slope, low strength	Moderate: slope	Moderate: slope
EkF:				
Elba	Severe: low strength, slope	Severe: slope, low strength	Severe: slope	Severe: slope
Berks	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope	Severe: slope
EnB:				
Enoch	Slight	Slight	Slight	Slight
EnD:				
Enoch	Moderate: slope	Severe: slope	Moderate: slope	Moderate: slope
EuA:				
Euclid	Severe: wetness, low strength	Severe: wetness, low strength	Severe: wetness	Severe: wetness
FcB:				
Fairpoint	Moderate: too clayey, too cobbly	Moderate: too clayey, too cobbly	Slight	Slight
FcD:				
Fairpoint	Moderate: slope, too clayey, too cobbly	Severe: slope, too clayey, too cobbly	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
FcE: Fairpoint	Moderate: slope, too clayey, too cobbly	Severe: slope	Moderate: slope	Moderate: slope
FtA: Fitchville	Severe: wetness, low strength	Severe: wetness, low strength	Severe: wetness	Severe: wetness
GdB: Gilpin	Moderate: depth to rock	Moderate: depth to rock	Slight	Slight
GdC: Gilpin	Moderate: depth to rock	Moderate: slope, depth to rock	Slight	Slight
GdD: Gilpin	Moderate: depth to rock	Severe: slope, depth to rock	Moderate: slope	Moderate: slope
GnA: Glenford	Severe: low strength	Severe: low strength	Slight	Slight
GnB: Glenford	Severe: low strength	Severe: low strength	Slight	Slight
GpA: Glenford.				
Urban land.				
GrC: Guernsey	Severe: low strength	Severe: low strength, slope	Slight	Slight
GrD2: Guernsey	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
GuC: Guernsey	Severe: low strength	Severe: low strength, slope	Slight	Slight
Upshur	Severe: low strength	Severe: low strength, slope	Slight	Slight

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
GuD:				
Guernsey	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
Upshur	Severe: low strength, slippage	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
HaF:				
Hazleton	Severe: too stony, slope	Severe: too stony, slope	Severe: slope	Severe: slope
HbE:				
Hazleton	Moderate: slope	Severe: slope	Moderate: slope	Moderate: slope
He:				
Hartshorn	Moderate: flooding	Moderate: flooding	Slight	Slight
Ho:				
Holton	Severe: wetness, flooding	Severe: wetness, flooding	Severe: wetness	Severe: wetness
KaB:				
Kanawha	Slight	Slight	Slight	Slight
KeB:				
Keene	Severe: low strength	Severe: low strength	Slight	Slight
KeC:				
Keene	Severe: low strength	Severe: low strength, slope	Slight	Slight
Lc:				
Lindside	Severe: low strength, flooding	Severe: low strength, flooding	Slight	Slight
Ld:				
Lindside	Severe: low strength	Severe: low strength	Moderate: flooding	Moderate: flooding
LoC:				
Lowell	Severe: low strength	Severe: low strength, slope	Slight	Slight
LoD:				
Lowell	Severe: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
LuE:				
Lowell	Severe: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
Upshur	Severe: low strength, slippage, slope	Severe: slope, low strength, slippage	Moderate: slope	Moderate: slope
LwC:				
Lowell	Severe: low strength	Severe: low strength, slope	Slight	Slight
Westmoreland	Moderate: low strength	Moderate: low strength, slope	Slight	Slight
LwD:				
Lowell	Severe: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
Westmoreland	Moderate: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
LwE:				
Lowell	Severe: low strength, slope	Severe: slope, low strength	Severe: slope	Severe: slope
Westmoreland	Moderate: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
LwF:				
Lowell	Severe: low strength, slope	Severe: slope, low strength	Severe: slope	Severe: slope
Westmoreland	Severe: slope, low strength	Severe: slope, low strength	Severe: slope	Severe: slope
McA:				
McGary	Severe: wetness, low strength	Severe: wetness, low strength	Severe: wetness	Severe: wetness
Md:				
Melvin	Severe: wetness, low strength, flooding	Severe: wetness, flooding, low strength	Severe: wetness, flooding	Severe: wetness, flooding
MeB:				
Mentor	Severe: low strength	Severe: low strength	Slight	Slight

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
MeC:				
Mentor	Severe: low strength	Severe: low strength, slope	Slight	Slight
MeD:				
Mentor	Severe: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
MfB:				
Mentor.				
Urban land.				
MnB:				
Morristown	Moderate: too clayey, too cobbly	Moderate: too clayey, too cobbly	Slight	Slight
MnD:				
Morristown	Moderate: slope, too clayey, too cobbly	Severe: slope, too clayey, too cobbly	Moderate: slope	Moderate: slope
MoF:				
Morristown	Severe: slope, too clayey, too cobbly	Severe: slope, too clayey, too cobbly	Severe: slope	Severe: slope
Nd:				
Newark	Severe: wetness, low strength	Severe: wetness, low strength	Severe: wetness	Severe: wetness
Ne:				
Newark	Severe: wetness, low strength, flooding	Severe: wetness, flooding, low strength	Severe: wetness, flooding	Severe: wetness, flooding
No:				
Nolin	Severe: low strength, flooding	Severe: flooding, low strength	Moderate: flooding	Moderate: flooding
OmB:				
Omulga	Severe: low strength	Severe: low strength	Slight	Slight
OmC:				
Omulga	Severe: low strength	Severe: low strength, slope	Slight	Slight
Or:				
Orrville	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
RcC:				
Richland	Moderate: low strength	Moderate: low strength, slope	Slight	Slight
RcD:				
Richland	Moderate: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
Sa:				
Sarahsville	Severe: wetness, low strength, flooding	Severe: wetness, flooding, low strength	Severe: wetness, flooding	Severe: wetness, flooding
SeB:				
Sees	Severe: low strength, too clayey	Severe: low strength, too clayey	Slight	Slight
Ub:				
Udorthents.				
Rock outcrop.				
Uc:				
Udorthents.				
Pits.				
Ud:				
Udorthents.				
Urban land.				
UpB:				
Upshur	Severe: low strength	Severe: low strength	Slight	Slight
UrC:				
Upshur	Severe: low strength, too clayey	Severe: low strength, too clayey, slope	Slight	Slight
UrD:				
Upshur	Severe: low strength, slippage, too clayey	Severe: slope, low strength, slippage, too clayey	Moderate: slope	Moderate: slope
UrD3:				
Upshur	Severe: low strength, slippage, too clayey	Severe: slope, low strength, slippage, too clayey	Moderate: slope	Moderate: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
VaD2:				
Vandalia------------	Severe: low strength, slippage, too clayey	Severe: slope, low strength, slippage, too clayey	Moderate: slope	Moderate: slope
VtC:				
Vincent-------------	Severe: low strength	Severe: low strength, slope	Slight	Slight
VwB:				
Vincent-------------	Severe: low strength, too clayey	Severe: low strength, too clayey	Slight	Slight
W:				
Water.				
WhB:				
Wellston------------	Moderate: low strength	Moderate: low strength	Slight	Slight
WhC:				
Wellston------------	Moderate: low strength	Moderate: low strength, slope	Slight	Slight
WkB:				
Westmore------------	Severe: low strength	Severe: low strength	Slight	Slight
WkC2:				
Westmore------------	Severe: low strength	Severe: low strength, slope	Slight	Slight
WmC:				
Westmoreland--------	Moderate: low strength	Severe: low strength, slope	Slight	Slight
WmD:				
Westmoreland--------	Moderate: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
WmE:				
Westmoreland--------	Moderate: low strength, slope	Severe: slope, low strength	Moderate: slope	Moderate: slope
WnF:				
Westmoreland--------	Severe: slope, low strength	Severe: slope, low strength	Severe: slope	Severe: slope
Berks---------------	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope	Severe: slope

Table 10.--Woodland Harvesting and Regeneration Activities--Continued

Soil name and map symbol	Limitations for-- Haul roads	Log landings	Skid trails and logging areas	Site preparation and planting
WrC:				
Westmoreland.				
Urban land.				
WrD:				
Westmoreland.				
Urban land.				
WtB:				
Woodsfield----------	Severe: low strength	Severe: low strength	Slight	Slight
WtC:				
Woodsfield----------	Severe: low strength	Severe: low strength, slope	Slight	Slight
ZnB:				
Zanesville----------	Severe: low strength	Severe: low strength	Slight	Slight
ZnC:				
Zanesville----------	Severe: low strength	Severe: low strength, slope	Slight	Slight
Zp:				
Zipp----------------	Severe: wetness, low strength, flooding	Severe: wetness, flooding, low strength	Severe: wetness	Severe: wetness
Zs:				
Zipp----------------	Severe: wetness, low strength, flooding	Severe: wetness, flooding, low strength	Severe: wetness, flooding	Severe: wetness, flooding

Table 11.--Windbreaks and Environmental Plantings

(The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil or that soil is not generally used for windbreaks and environmental plantings)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
AaB:					
Aaron	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
AaC:					
Aaron	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
AbB:					
Aaron	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
AbC2:					
Aaron-----------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Upshur----------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
AgC:					
Allegheny-------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak
BaD, BcB, BcD: Barkcamp.					
BeC:					
Berks-----------	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
BeD:					
Berks	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
BeE:					
Berks	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
BeF:					
Berks	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
BgD, BgE:					
Bethesda.					
BhB:					
Bethesda	Manyflower cotoneaster	Amur maple, Siberian peashrub, silky dogwood, gray dogwood, eastern redcedar, lilac, American cranberrybush	---	Norway spruce, jack pine, red pine	Eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
BhD:					
Bethesda	Manyflower cotoneaster	Amur maple, Siberian peashrub, silky dogwood, gray dogwood, eastern redcedar, lilac, American cranberrybush	---	Norway spruce, jack pine, red pine	Eastern white pine
BhF:					
Bethesda	Manyflower cotoneaster	Amur maple, Siberian peashrub, silky dogwood, gray dogwood, eastern redcedar, lilac, American cranberrybush	---	Norway spruce, jack pine, red pine	Eastern white pine
BsD:					
Brookside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, northern whitecedar	Norway spruce	Eastern white pine, pin oak
BtC:					
Brookside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
Vandalia	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
BtD:					
Brookside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
Vandalia	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
BtE:					
Brookside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
Vandalia	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Ca:					
Chagrin	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
ChD:					
Clarksburg------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
CkC:					
Claysville------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Pin oak	---
Guernsey--------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
CoD:					
Coshocton-------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
CsC2:					
Coshocton-------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
DkC: Dekalb	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
DkD: Dekalb	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
DkE: Dekalb	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
DmF: Dekalb	Siberian peashrub, Washington hawthorn	Autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
Dp: Dumps.					

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Ds:					
Dumps, mine.					
EbC:					
Elba	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
EbD:					
Elba	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
EbE:					
Elba	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
EkF:					
Elba	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
EkF:					
Berks	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
EnB, EnD:					
Enoch.					
EuA:					
Euclid	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
FcB, FcD, FcE:					
Fairpoint.					
FtA:					
Fitchville	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
GdB:					
Gilpin	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
GdC:					
Gilpin----------	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
GdD:					
Gilpin----------	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
GnA:					
Glenford--------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
GnB:					
Glenford--------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
GpA:					
Glenford--------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
GpA:					
Urban land.					
GrC:					
Guernsey--------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
GrD2:					
Guernsey--------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
GuC:					
Guernsey--------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Upshur----------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
GuD:					
Guernsey	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
HaF:					
Hazleton	---	Washington hawthorn, Amur privet, Amur honeysuckle, Tatarian honeysuckle, American cranberrybush	Eastern redcedar, Osage-orange, Austrian pine, northern whitecedar	Norway spruce, red pine, eastern white pine	---
HbE:					
Hazleton	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
He:					
Hartshorn	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
Ho:					
Holton	---	Silky dogwood, Washington hawthorn, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Austrian pine, blue spruce, northern whitecedar	Norway spruce, pin oak	Eastern white pine
KaB:					
Kanawha	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
KeB:					
Keene	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
KeC:					
Keene	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Lc:					
Lindside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
Ld:					
Lindside	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
LoC:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak
LoD:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, QUAP2
LuE:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
LuE:					
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
LwC:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
LwD:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, QUAPA2
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
LwE:					
Lowell	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
LwE:					
Westmoreland----	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
LwF:					
Lowell----------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce	Austrian pine, eastern white pine, pin oak
Westmoreland----	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
McA:					
McGary----------	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Md:					
Melvin.					
MeB:					
Mentor----------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
MeC:					
Mentor----------	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
MeD:					
Mentor	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
MfB:					
Mentor	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
Urban land.					
MnB:					
Morristown	Siberian peashrub	Washington hawthorn, Russian-olive, eastern redcedar, Osage-orange, jack pine	Northern catalpa, honeylocust	---	---
MnD:					
Morristown	Siberian peashrub	Washington hawthorn, Russian-olive, eastern redcedar, Osage-orange, jack pine	Northern catalpa, honeylocust	---	---
MoF:					
Morristown	---	Amur maple, Siberian peashrub, silky dogwood, gray dogwood, eastern redcedar, lilac	---	Norway spruce, jack pine, red pine	Eastern white pine
Nd:					
Newark	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce, eastern white pine	Pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Ne: Newark	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar	Eastern white pine	Pin oak
No: Nolin	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak
OmB: Omulga	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
OmC: Omulga	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Or: Orrville	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar	Norway spruce	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
RcC:					
Richland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
RcD:					
Richland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
Sa:					
Sarahsville	Amur honeysuckle, lilac	Eastern redcedar	Austrian pine, Virginia pine	---	---
SeB:					
Sees	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Ub:					
Udorthents.					
Rock outcrop.					
Uc:					
Udorthents.					
Pits.					
Ud:					
Udorthents.					
Urban land.					

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
UpB:					
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
UrC:					
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
UrD:					
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
UrD3:					
Upshur	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
VaD2: Vandalia	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
VtC: Vincent	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
VwB: Vincent	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
W: Water.					
WhB: Wellston	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
WhC: Wellston	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WkB:					
Westmore	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
WkC2:					
Westmore	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
WmC:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
WmD:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
WmE:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
WnF:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
WnF:					
Berks	Siberian peashrub	Washington hawthorn, autumn olive, eastern redcedar, Amur honeysuckle, Tatarian honeysuckle, radiant crabapple, lilac	Jack pine, Austrian pine, red pine, eastern white pine	---	---
WrC:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
Urban land.					
WrD:					
Westmoreland	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, blue spruce, northern whitecedar	Norway spruce, Austrian pine	Eastern white pine, pin oak
Urban land.					
WtB:					
Woodsfield	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
WtC:					
Woodsfield	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush	Green ash, Osage-orange, Austrian pine	Eastern white pine, pin oak	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
ZnB:					
Zanesville	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
ZnC:					
Zanesville	---	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, Tatarian honeysuckle, arrowwood, American cranberrybush	Hackberry, Osage-orange, Austrian pine	Eastern white pine, pin oak	---
Zp:					
Zipp	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar	Eastern white pine	Pin oak
Zs:					
Zipp	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar	Eastern white pine	Pin oak

Table 12.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates the soil was not rated. The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AaB:					
Aaron----------	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: erodes easily	Moderate: wetness
AaC:					
Aaron----------	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: wetness, slope
AbB:					
Aaron----------	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: erodes easily	Moderate: wetness
Upshur---------	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Severe: erodes easily	Slight
AbC2:					
Aaron----------	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: wetness, slope
Upshur---------	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
AgC:					
Allegheny------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
BaD:					
Barkcamp-------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
BcB:					
Barkcamp-------	Severe: small stones, too acid	Severe: small stones, too acid	Severe: large stones, small stones	Moderate: large stones	Severe: too acid, small stones, large stones
BcD:					
Barkcamp-------	Severe: slope, small stones	Severe: slope, small stones	Severe: large stones, slope, small stones	Moderate: large stones, slope	Severe: too acid, small stones, large stones
BeC:					
Berks----------	Severe: small stones	Severe: small stones	Severe: slope, small stones	Slight	Severe: small stones

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BeD:					
Berks	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Moderate: slope	Severe: small stones, slope
BeE:					
Berks	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope	Severe: small stones, slope
BeF:					
Berks	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope	Severe: small stones, slope
BgB:					
Bethesda	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, small stones, percs slowly	Slight	Moderate: droughty
BgD:					
Bethesda	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
BgE:					
Bethesda	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
BhB:					
Bethesda	Moderate: small stones, percs slowly	Moderate: small stones, percs slowly	Severe: small stones	Slight	Severe: droughty
BhD:					
Bethesda	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: droughty, slope
BhF:					
Bethesda	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
BsD:					
Brookside	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
BtC:					
Brookside	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
Vandalia	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
BtD:					
Brookside	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Vandalia	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BtE:					
Brookside	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Vandalia	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Ca:					
Chagrin	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
ChD:					
Clarksburg	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: wetness, slope	Severe: slope
CkC:					
Claysville	Severe: wetness	Moderate: slope, wetness	Severe: slope, wetness	Moderate: wetness	Moderate: wetness, slope
Guernsey	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope, wetness
CoD:					
Coshocton	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
CsC2:					
Coshocton	Moderate: slope, wetness	Moderate: slope, wetness	Severe: slope	Severe: erodes easily	Moderate: wetness, slope
DkC:					
Dekalb	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Moderate: large stones	Severe: small stones
DkD:					
Dekalb	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, large stones	Severe: slope, small stones
DkE:					
Dekalb	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope, small stones
DmF:					
Dekalb	Severe: slope, small stones	Severe: slope, small stones	Severe: large stones, slope, small stones	Severe: slope	Severe: small stones, slope
Dp:					
Dumps.					
Ds:					
Dumps, mine.					

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
EbC:					
Elba	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope, large stones
EbD:					
Elba	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
EbE:					
Elba	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
EkF:					
Elba	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Berks	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope	Severe: small stones, slope
EnB:					
Enoch	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, small stones, percs slowly	Slight	Moderate: droughty
EnD:					
Enoch	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
EuA:					
Euclid	Severe: flooding, wetness	Moderate: wetness, percs slowly	Severe: wetness	Moderate: wetness	Moderate: wetness
FcB:					
Fairpoint	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, small stones, percs slowly	Slight	Severe: droughty
FcD:					
Fairpoint	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: droughty, slope
FcE:					
Fairpoint	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: droughty, slope
FtA:					
Fitchville	Severe: wetness	Moderate: wetness, percs slowly	Severe: wetness	Moderate: wetness	Moderate: wetness
GdB:					
Gilpin	Slight	Slight	Moderate: slope, small stones	Slight	Moderate: thin layer

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GdC:					
Gilpin---------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope, thin layer
GdD:					
Gilpin---------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
GnA:					
Glenford-------	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: wetness	Slight
GnB:					
Glenford-------	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Moderate: wetness	Slight
GpA:					
Glenford-------	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: wetness	Slight
Urban land.					
GrC:					
Guernsey-------	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope, wetness
GrD2:					
Guernsey-------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
GuC:					
Guernsey-------	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope, wetness
Upshur---------	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
GuD:					
Guernsey-------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Upshur---------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
HaF:					
Hazleton-------	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
HbE:					
Hazleton-------	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
He: Hartshorn	Severe: flooding	Slight	Moderate: small stones, flooding	Slight	Moderate: droughty, flooding
Ho: Holton	Severe: flooding, wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
KaB: Kanawha	Slight	Slight	Moderate: slope, small stones	Slight	Slight
KeB: Keene	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Slight	Moderate: wetness
KeC: Keene	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: wetness, slope
Lc: Lindside	Severe: flooding	Moderate: wetness, percs slowly	Moderate: wetness, flooding	Moderate: wetness	Moderate: wetness, flooding
Ld: Lindside	Severe: flooding	Moderate: flooding, wetness, percs slowly	Severe: flooding	Moderate: wetness, flooding	Severe: flooding
LoC: Lowell	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
LoD: Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
LuE: Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Upshur	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
LwC: Lowell	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
Westmoreland	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LwD:					
Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
LwE:					
Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
LwF:					
Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
McA:					
McGary	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness, erodes easily	Severe: wetness
Md:					
Melvin	Severe: flooding, ponding	Severe: ponding	Severe: ponding, flooding	Severe: ponding	Severe: ponding, flooding
MeB:					
Mentor	Slight	Slight	Moderate: slope	Slight	Slight
MeC:					
Mentor	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
MeD:					
Mentor	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
MfB:					
Mentor	Slight	Slight	Moderate: slope	Slight	Slight
Urban land.					
MnB:					
Morristown	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Severe: erodes easily	Moderate: droughty
MnD:					
Morristown	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MoF: Morristown	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
Nd: Newark	Severe: flooding, wetness	Severe: wetness	Severe: wetness	Severe: wetness, erodes easily	Severe: wetness
Ne: Newark	Severe: flooding, wetness	Severe: wetness	Severe: wetness, flooding	Severe: wetness, erodes easily	Severe: wetness, flooding
No: Nolin	Severe: flooding	Moderate: flooding	Moderate flooding	Severe: erodes easily	Severe: flooding
OmB: Omulga	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Slight	Slight
OmC: Omulga	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
Or: Orrville	Severe: flooding, wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Moderate: wetness, flooding
RcC: Richland	Moderate: small stones, slope	Moderate: slope, small stones	Severe: large stones, slope	Moderate: large stones	Moderate: small stones, large stones, slope
RcD: Richland	Severe: slope	Severe: slope	Severe: large stones, slope	Moderate: slope, large stones	Severe: slope
Sa: Sarahsville	Severe: flooding, wetness, percs slowly	Severe: percs slowly	Severe: wetness, flooding	Moderate: wetness, flooding	Severe: flooding
SeB: Sees	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: erodes easily	Moderate: large stones, wetness
Ub: Udorthents.					
Rock outcrop.					

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Uc:					
Udorthents.					
Pits.					
Ud:					
Udorthents.					
Urban land.					
UpB:					
Upshur----------	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Severe: erodes easily	Slight
UrC:					
Upshur----------	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
UrD:					
Upshur----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
UrD3:					
Upshur----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
VaD2:					
Vandalia--------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
VtC:					
Vincent---------	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Slight	Moderate: slope
VwB:					
Vincent---------	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Slight	Slight
W:					
Water.					
WhB:					
Wellston--------	Slight	Slight	Moderate: slope	Slight	Slight
WhC:					
Wellston--------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
WkB:					
Westmore--------	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Slight	Slight
WkC2:					
Westmore--------	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
WmC:					
Westmoreland---	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
WmD:					
Westmoreland---	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
WmE:					
Westmoreland---	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
WnF:					
Westmoreland---	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Berks----------	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope	Severe: small stones, slope
WrC:					
Westmoreland---	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
Urban land.					
WrD:					
Westmoreland---	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Urban land.					
WtB:					
Woodsfield-----	Moderate: percs slowly	Moderate: percs slowly	Moderate: slope, percs slowly	Slight	Slight
WtC:					
Woodsfield-----	Moderate: slope, percs slowly	Moderate: slope, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
ZnB:					
Zanesville-----	Moderate: wetness, percs slowly	Moderate: wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: erodes easily	Slight
ZnC:					
Zanesville-----	Moderate: slope, wetness, percs slowly	Moderate: slope, wetness, percs slowly	Severe: slope	Severe: erodes easily	Moderate: slope
Zp:					
Zipp-----------	Severe: flooding, ponding, percs slowly	Severe: ponding, percs slowly	Severe: ponding, flooding	Severe: ponding	Severe: ponding, flooding

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Zs:					
Zipp-----------	Severe: flooding, ponding, percs slowly	Severe: ponding, percs slowly	Severe: ponding, flooding	Severe: ponding	Severe: ponding, flooding

Table 13.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated)

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
AaB:										
Aaron	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
AaC:										
Aaron	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
AbB:										
Aaron	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Upshur	Fair	Good	Fair	Good	Good	Poor	Very poor	Fair	Good	Very poor
AbC2:										
Aaron	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Upshur	Fair	Good	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
AgC:										
Allegheny	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BaD:										
Barkcamp	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
BcB:										
Barkcamp	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
BcD:										
Barkcamp	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
BeC:										
Berks	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
BeD:										
Berks	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
BeE:										
Berks	Very poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
BeF:										
Berks	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
BgB:										
Bethesda	Fair	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor

Table 13.--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
BgD:										
Bethesda	Poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
BgE:										
Bethesda	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
BhB:										
Bethesda	Very poor	Very poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor
BhD:										
Bethesda	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
BhF:										
Bethesda	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
BsD:										
Brookside	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
BtC:										
Brookside	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Vandalia	Fair	Good	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
BtD:										
Brookside	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Vandalia	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
BtE:										
Brookside	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Vandalia	Very poor	Fair	Fair	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Ca:										
Chagrin	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ChD:										
Clarksburg	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CkC:										
Claysville	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Guernsey	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 13.--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
CoD:										
Coshocton	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CsC2:										
Coshocton	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DkC:										
Dekalb	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
DkD:										
Dekalb	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
DkE:										
Dekalb	Very poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
DmF:										
Dekalb	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Dp:										
Dumps.										
Ds:										
Dumps, mine.										
EbC:										
Elba	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
EbD:										
Elba	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
EbE:										
Elba	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
EkF:										
Elba	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Berks	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
EnB:										
Enoch	Very poor	Very poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor
EnD:										
Enoch	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
EuA:										
Euclid	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair

Table 13.--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
FcB:										
Fairpoint-------	Fair	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
FcD:										
Fairpoint-------	Poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
FcE:										
Fairpoint-------	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Poor	Very poor
FtA:										
Fitchville------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
GdB:										
Gilpin----------	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
GdC:										
Gilpin----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
GdD:										
Gilpin----------	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
GnA:										
Glenford--------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
GnB:										
Glenford--------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
GpA:										
Glenford--------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Urban land.										
GrC:										
Guernsey--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
GrD2:										
Guernsey--------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
GuC:										
Guernsey--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Upshur----------	Fair	Good	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
GuD:										
Guernsey--------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Upshur----------	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 13.--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
HaF:										
Hazleton	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
HbE:										
Hazleton	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Fair	Very poor
He:										
Hartshorn	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ho:										
Holton	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
KaB:										
Kanawha	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
KeB:										
Keene	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
KeC:										
Keene	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Lc:										
Lindside	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Ld:										
Lindside	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor
LoC:										
Lowell	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LoD:										
Lowell	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LuE:										
Lowell	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Upshur	Very poor	Fair	Fair	Good	Good	Very poor	Very poor	Poor	Good	Very poor
LwC:										
Lowell	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Westmoreland	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LwD:										
Lowell	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Westmoreland	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 13.--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
LwE:										
Lowell----------	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Westmoreland----	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LwF:										
Lowell----------	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Westmoreland----	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
McA:										
McGary----------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Md:										
Melvin----------	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
MeB:										
Mentor----------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MeC:										
Mentor----------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
MeD:										
Mentor----------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MfB:										
Mentor----------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land.										
MnB:										
Morristown------	Fair	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
MnD:										
Morristown------	Poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
MoF:										
Morristown------	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
Nd:										
Newark----------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
Ne:										
Newark----------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
No:										
Nolin-----------	Poor	Fair	Fair	Good	Good	Poor	Very poor	Fair	Fair	Very poor

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
OmB:										
Omulga----------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
OmC:										
Omulga----------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Or:										
Orrville--------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
RcC:										
Richland--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
RcD:										
Richland--------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Sa:										
Sarahsville-----	Fair	Good	Good	Good	Good	Fair	Fair	Fair	Good	Fair
SeB:										
Sees------------	Fair	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Ub:										
Udorthents.										
Rock outcrop.										
Uc:										
Udorthents.										
Pits.										
Ud:										
Udorthents.										
Urban land.										
UpB:										
Upshur----------	Fair	Good	Fair	Good	Good	Poor	Very poor	Fair	Good	Very poor
UrC:										
Upshur----------	Fair	Good	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
UrD:										
Upshur----------	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
UrD3:										
Upshur----------	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
VaD2:										
Vandalia--------	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 13.--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
VtC:										
Vincent---------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
VwB:										
Vincent---------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Poor
W:										
Water.										
WhB:										
Wellston--------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
WhC:										
Wellston--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
WkB:										
Westmore--------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
WkC2:										
Westmore--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
WmC:										
Westmoreland----	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
WmD:										
Westmoreland----	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
WmE:										
Westmoreland----	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
WnF:										
Westmoreland----	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Berks-----------	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
WrC:										
Westmoreland----	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Urban land.										
WrD:										
Westmoreland----	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Urban land.										
WtB:										
Woodsfield------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 13.--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
WtC:										
Woodsfield------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ZnB:										
Zanesville------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ZnC:										
Zanesville------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Zp:										
Zipp------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Zs:										
Zipp------------	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good

Table 14.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates the soil was not rated. The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AaB:						
Aaron-----------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Moderate: wetness
AaC:						
Aaron-----------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: wetness, slope
AbB:						
Aaron-----------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Moderate: wetness
Upshur----------	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
AbC2:						
Aaron-----------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: wetness, slope
Upshur----------	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength	Moderate: slope
AgC:						
Allegheny-------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope	Moderate: slope
BaD:						
Barkcamp--------	Severe: cutbanks cave, slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BcB:						
Barkcamp	Severe: cutbanks cave	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: too acid, small stones, large stones
BcD:						
Barkcamp	Severe: cutbanks cave, slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: too acid, small stones, large stones
BeC:						
Berks	Moderate: depth to rock, large stones, slope	Moderate: slope, large stones	Moderate: depth to rock, slope, large stones	Severe: slope	Moderate: slope, large stones	Severe: small stones
BeD:						
Berks	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, slope
BeE:						
Berks	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, slope
BeF:						
Berks	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, slope
BgB:						
Bethesda	Moderate: dense layer	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Moderate: droughty
BgD:						
Bethesda	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope
BgE:						
Bethesda	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BhB:						
Bethesda	Moderate: dense layer, large stones	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: droughty
BhD:						
Bethesda	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: droughty, slope
BhF:						
Bethesda	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: droughty, slope
BsD:						
Brookside	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, slippage, shrink-swell	Severe: slope
BtC:						
Brookside	Moderate: too clayey, wetness, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell, slippage	Severe: low strength, shrink-swell	Moderate: slope
Vandalia	Moderate: too clayey, wetness, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: slope
BtD:						
Brookside	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, slippage, shrink-swell	Severe: slope
Vandalia	Severe: slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BtE:						
Brookside	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, slippage, shrink-swell	Severe: slope
Vandalia	Severe: slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope
Ca:						
Chagrin	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
ChD:						
Clarksburg	Severe: wetness, slope	Severe: slope	Severe: wetness, slope	Severe: slope	Severe: slope	Severe: slope
CkC:						
Claysville	Severe: wetness, slope, slippage	Severe: wetness, shrink-swell, slippage	Severe: wetness, shrink-swell, slippage	Severe: wetness, shrink-swell, slippage	Severe: shrink-swell, low strength, slippage	Moderate: wetness, slope
Guernsey	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: slope, shrink-swell	Severe: shrink-swell, low strength	Moderate: slope, wetness
CoD:						
Coshocton	Severe: wetness, slope	Severe: slope	Severe: wetness, slope	Severe: slope	Severe: low strength, slope, frost action	Severe: slope
CsC2:						
Coshocton	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: wetness	Severe: slope	Severe: low strength, frost action	Moderate: wetness, slope
DkC:						
Dekalb	Severe: depth to rock	Moderate: slope, depth to rock, large stones	Severe: depth to rock	Severe: slope	Moderate: depth to rock, slope, large stones	Severe: small stones

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DkD:						
Dekalb	Severe: slope, depth to rock	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, small stones
DkE:						
Dekalb	Severe: slope, depth to rock	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, small stones
DmF:						
Dekalb	Severe: depth to rock, cutbanks cave, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: small stones, slope
Dp:						
Dumps.						
Ds:						
Dumps, mine.						
EbC:						
Elba	Moderate: slope, too clayey, depth to rock	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell	Severe: low strength, shrink-swell	Moderate: slope, large stones
EbD:						
Elba	Severe: slope	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: low strength, slope, shrink-swell	Severe: slope
EbE:						
Elba	Severe: slope	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: low strength, slope, shrink-swell	Severe: slope
EkF:						
Elba	Severe: slope	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: slope, shrink-swell	Severe: low strength, slope, shrink-swell	Severe: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
EkF:						
Berks-----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, slope
EnB:						
Enoch-----------	Slight	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Moderate: droughty
EnD:						
Enoch-----------	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope
EuA:						
Euclid----------	Severe: wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: low strength, frost action	Moderate: wetness
FcB:						
Fairpoint-------	Slight	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: droughty
FcD:						
Fairpoint-------	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: droughty, slope
FcE:						
Fairpoint-------	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: droughty, slope
FtA:						
Fitchville------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: low strength, frost action	Moderate: wetness
GdB:						
Gilpin----------	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: frost action	Moderate: thin layer
GdC:						
Gilpin----------	Moderate: slope, depth to rock	Moderate: slope	Moderate: slope, depth to rock	Severe: slope	Moderate: slope, frost action	Moderate: slope, thin layer

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GdD:						
Gilpin----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
GnA:						
Glenford--------	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell	Severe: low strength, frost action	Slight
GnB:						
Glenford--------	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: low strength, frost action	Slight
GpA:						
Glenford--------	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell	Severe: low strength, frost action	Slight
Urban land.						
GrC:						
Guernsey--------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: slope, shrink-swell	Severe: shrink-swell, low strength	Moderate: slope, wetness
GrD2:						
Guernsey--------	Severe: wetness, slope, slippage	Severe: slope, slippage, shrink-swell	Severe: wetness, slope, shrink-swell	Severe: slope, slippage, shrink-swell	Severe: shrink-swell, low strength, slope	Severe: slope
GuC:						
Guernsey--------	Severe: wetness	Severe: shrink-swell	Severe: wetness, shrink-swell	Severe: slope, shrink-swell	Severe: shrink-swell, low strength	Moderate: slope, wetness
Upshur----------	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength	Moderate: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GuD:						
Guernsey	Severe: wetness, slope, slippage	Severe: slope, slippage, shrink-swell	Severe: wetness, slope, shrink-swell	Severe: slope, slippage, shrink-swell	Severe: shrink-swell, low strength, slope	Severe: slope
Upshur	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength, slope	Severe: slope
HaF:						
Hazleton	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
HbE:						
Hazleton	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
He:						
Hartshorn	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: droughty, flooding
Ho:						
Holton	Severe: cutbanks cave, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: wetness, flooding, frost action	Severe: wetness
KaB:						
Kanawha	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
KeB:						
Keene	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: low strength, frost action	Moderate: wetness
KeC:						
Keene	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: wetness	Severe: slope	Severe: low strength, frost action	Moderate: wetness, slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Lc:						
Lindside	Severe: wetness	Severe: flooding	Severe: flooding, wetness	Severe: flooding	Severe: low strength, flooding, frost action	Moderate: wetness, flooding
Ld:						
Lindside	Severe: wetness	Severe: flooding	Severe: flooding, wetness	Severe: flooding	Severe: low strength, flooding, frost action	Severe: flooding
LoC:						
Lowell	Moderate: depth to rock, too clayey, slope	Moderate: shrink-swell, slope	Moderate: wetness, depth to rock, slope	Severe: slope	Severe: low strength	Moderate: slope
LoD:						
Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
LuE:						
Lowell	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Upshur	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength, slope	Severe: slope
LwC:						
Lowell	Moderate: depth to rock, too clayey, slope	Moderate: shrink-swell, slope	Moderate: wetness, depth to rock, slope	Severe: slope	Severe: low strength	Moderate: slope
Westmoreland	Moderate: depth to rock, slope	Moderate: slope	Moderate: depth to rock, slope	Severe: slope	Moderate: low strength, slope, frost action	Moderate: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LwD:						
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Westmoreland----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
LwE:						
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Westmoreland----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
LwF:						
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Westmoreland----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
McA:						
McGary----------	Severe: wetness	Severe: wetness, shrink-swell	Severe: wetness, shrink-swell	Severe: wetness, shrink-swell	Severe: shrink-swell, low strength, wetness	Severe: wetness
Md:						
Melvin----------	Severe: ponding	Severe: flooding, ponding	Severe: flooding, ponding	Severe: flooding, ponding	Severe: flooding, ponding, low strength	Severe: ponding, flooding
MeB:						
Mentor----------	Moderate: wetness	Slight	Moderate: wetness	Moderate: slope	Severe: low strength, frost action	Slight
MeC:						
Mentor----------	Moderate: slope, wetness	Moderate: slope	Moderate: slope, wetness	Severe: slope	Severe: low strength, frost action	Moderate: slope

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MeD:						
Mentor	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope, low strength, frost action	Severe: slope
MfB:						
Mentor	Moderate: wetness	Slight	Moderate: wetness	Moderate: slope	Severe: low strength, frost action	Slight
Urban land.						
MnB:						
Morristown	Moderate: dense layer	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Moderate: droughty
MnD:						
Morristown	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope
MoF:						
Morristown	Severe: slope	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: droughty, slope
Nd:						
Newark	Severe: wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: low strength, wetness, flooding	Severe: wetness
Ne:						
Newark	Severe: wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: low strength, wetness, flooding	Severe: wetness, flooding
No:						
Nolin	Moderate: wetness, flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: low strength, flooding	Severe: flooding
OmB:						
Omulga	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell	Severe: low strength, frost action	Slight

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OmC:						
Omulga	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: wetness	Severe: slope	Severe: low strength, frost action	Moderate: slope
Or:						
Orrville	Severe: cutbanks cave, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, frost action	Moderate: wetness, flooding
RcC:						
Richland	Moderate: wetness, slope	Moderate: shrink-swell, slope	Moderate: wetness, slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: small stones, large stones, slope
RcD:						
Richland	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Sa:						
Sarahsville	Severe: wetness	Severe: flooding, wetness, shrink-swell	Severe: flooding, wetness, shrink-swell	Severe: flooding, wetness, shrink-swell	Severe: shrink-swell, low strength, flooding	Severe: flooding
SeB:						
Sees	Severe: wetness	Moderate: wetness, shrink-swell	Severe: wetness	Moderate: wetness, shrink-swell, slope	Severe: low strength	Moderate: large stones, wetness
Ub:						
Udorthents.						
Rock outcrop.						
Uc:						
Udorthents.						
Pits.						
Ud:						
Udorthents.						
Urban land.						

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
UpB:						
Upshur----------	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
UrC:						
Upshur----------	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength	Moderate: slope
UrD:						
Upshur----------	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength, slope	Severe: slope
UrD3:						
Upshur----------	Severe: slope, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: slope, shrink-swell, slippage	Severe: shrink-swell, low strength, slope	Severe: slope
VaD2:						
Vandalia--------	Severe: slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope
VtC:						
Vincent---------	Moderate: too clayey, wetness, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: low strength, shrink-swell	Moderate: slope
VwB:						
Vincent---------	Moderate: too clayey, wetness	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: low strength, shrink-swell	Slight
W:						
Water.						
WhB:						
Wellston--------	Slight	Slight	Slight	Moderate: slope	Severe: frost action	Slight

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
WhC:						
Wellston	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Severe: frost action	Moderate: slope
WkB:						
Westmore	Moderate: too clayey, depth to rock	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
WkC2:						
Westmore	Moderate: slope, too clayey, depth to rock	Severe: shrink-swell	Severe: shrink-swell	Severe: slope, shrink-swell	Severe: shrink-swell, low strength	Moderate: slope
WmC:						
Westmoreland	Moderate: depth to rock, slope	Moderate: slope	Moderate: depth to rock, slope	Severe: slope	Moderate: low strength, slope, frost action	Moderate: slope
WmD:						
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
WmE:						
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
WnF:						
Westmoreland	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Berks	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, slope
WrC:						
Westmoreland	Moderate: depth to rock, slope	Moderate: slope	Moderate: depth to rock, slope	Severe: slope	Moderate: low strength, slope, frost action	Moderate: slope
Urban land.						

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
WrD:						
Westmoreland----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Urban land.						
WtB:						
Woodsfield------	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: low strength, shrink-swell	Slight
WtC:						
Woodsfield------	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: low strength, shrink-swell	Moderate: slope
ZnB:						
Zanesville------	Moderate: depth to rock, wetness	Moderate: wetness	Severe: wetness	Moderate: wetness, slope	Severe: low strength	Slight
ZnC:						
Zanesville------	Moderate: slope, wetness, depth to rock	Moderate: wetness, slope	Severe: wetness	Severe: slope	Severe: low strength	Moderate: slope
Zp:						
Zipp------------	Severe: ponding	Severe: flooding, ponding, shrink-swell	Severe: flooding, ponding, shrink-swell	Severe: flooding, ponding, shrink-swell	Severe: shrink-swell, low strength, ponding	Severe: ponding, flooding
Zs:						
Zipp------------	Severe: ponding	Severe: flooding, ponding, shrink-swell	Severe: flooding, ponding, shrink-swell	Severe: flooding, ponding, shrink-swell	Severe: shrink-swell, low strength, ponding	Severe: ponding, flooding

Table 15.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates the soil was not rated. The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaB:					
Aaron-----------	Severe: wetness, percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, wetness	Moderate: depth to rock, wetness	Poor: too clayey, hard to pack
AaC:					
Aaron-----------	Severe: wetness, percs slowly	Severe: slope	Severe: depth to rock, wetness	Moderate: depth to rock, wetness, slope	Poor: too clayey, hard to pack
AbB:					
Aaron-----------	Severe: wetness, percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, wetness	Moderate: depth to rock, wetness	Poor: too clayey, hard to pack
Upshur----------	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, too clayey	Moderate: depth to rock	Poor: too clayey, hard to pack
AbC2:					
Aaron-----------	Severe: wetness, percs slowly	Severe: slope	Severe: depth to rock, wetness	Moderate: depth to rock, wetness, slope	Poor: too clayey, hard to pack
Upshur----------	Severe: percs slowly	Severe: slope	Severe: depth to rock, too clayey	Moderate: depth to rock, slope	Poor: too clayey, hard to pack
AgC:					
Allegheny-------	Moderate: slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: too clayey, small stones, slope
BaD:					
Barkcamp--------	Severe: slope, poor filter, unstable fill	Severe: seepage, slope, unstable fill	Severe: seepage, slope, too acid	Severe: seepage, slope, unstable fill	Poor: small stones, slope, too acid

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BcB:					
Barkcamp	Severe: poor filter, unstable fill	Severe: seepage, large stones	Severe: seepage, large stones	Severe: seepage, unstable fill	Poor: small stones, too acid
BcD:					
Barkcamp	Severe: slope, poor filter, unstable fill	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, unstable fill	Poor: small stones, slope, too acid
BeC:					
Berks	Severe: depth to rock	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage	Severe: depth to rock, seepage	Poor: depth to rock, small stones
BeD:					
Berks	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope
BeE:					
Berks	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope
BeF:					
Berks	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope
BgB:					
Bethesda	Severe: percs slowly, unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Poor: small stones
BgD:					
Bethesda	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BgE:					
Bethesda	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope
BhB:					
Bethesda	Severe: percs slowly, unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Poor: small stones
BhD:					
Bethesda	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope
BhF:					
Bethesda	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope
BsD:					
Brookside	Severe: wetness, percs slowly, slope	Severe: slope, wetness, slippage	Severe: slope, too clayey, slippage	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
BtC:					
Brookside	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: too clayey	Moderate: slope, wetness	Poor: too clayey, hard to pack
Vandalia	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: too clayey, hard to pack
BtD:					
Brookside	Severe: wetness, percs slowly, slope	Severe: slope, wetness, slippage	Severe: slope, too clayey, slippage	Severe: slope, slippage	Poor: too clayey, hard to pack, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BtD:					
Vandalia	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
BtE:					
Brookside	Severe: wetness, percs slowly, slope	Severe: slope, wetness, slippage	Severe: slope, too clayey, slippage	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
Vandalia	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Ca:					
Chagrin	Severe: flooding	Severe: flooding	Severe: flooding, wetness	Severe: flooding	Fair: thin layer
ChD:					
Clarksburg	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: depth to rock, wetness, slope	Severe: slope	Poor: small stones, slope
CkC:					
Claysville	Severe: wetness, percs slowly, slippage	Severe: slope, slippage	Severe: wetness, too clayey	Severe: wetness, slippage	Poor: too clayey, hard to pack
Guernsey	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: seepage, too clayey	Moderate: wetness, slope	Poor: too clayey, hard to pack
CoD:					
Coshocton	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: seepage, wetness, slope	Severe: slope	Poor: too clayey, hard to pack, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CsC2:					
Coshocton-------	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: seepage, wetness	Moderate: wetness, slope	Poor: too clayey, hard to pack
DkC:					
Dekalb----------	Severe: depth to rock, poor filter	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage	Severe: depth to rock, seepage	Poor: small stones, area reclaim
DkD:					
Dekalb----------	Severe: depth to rock, poor filter, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: slope, small stones, area reclaim
DkE:					
Dekalb----------	Severe: depth to rock, poor filter, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: slope, small stones, area reclaim
DmF:					
Dekalb----------	Severe: depth to rock, poor filter, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope
Dp:					
Dumps.					
Ds:					
Dumps, mine.					
EbC:					
Elba------------	Severe: percs slowly	Severe: slope	Severe: depth to rock, seepage	Moderate: slope	Poor: too clayey, hard to pack
EbD:					
Elba------------	Severe: slope, percs slowly	Severe: slope	Severe: slope, depth to rock, seepage	Severe: slope	Poor: slope, too clayey, hard to pack

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EbE:					
Elba	Severe: slope, percs slowly	Severe: slope	Severe: slope, depth to rock, seepage	Severe: slope	Poor: slope, too clayey, hard to pack
EkF:					
Elba	Severe: slope, percs slowly	Severe: slope	Severe: slope, depth to rock, seepage	Severe: slope	Poor: slope, too clayey, hard to pack
Berks	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope
EnB:					
Enoch	Severe: percs slowly, unstable fill	Severe: unstable fill	Severe: too acid, unstable fill	Severe: unstable fill	Poor: small stones, too acid
EnD:					
Enoch	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, too acid, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope, too acid
EuA:					
Euclid	Severe: wetness, percs slowly	Severe: wetness	Severe: wetness	Severe: wetness	Poor: wetness
FcB:					
Fairpoint	Severe: percs slowly, unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Poor: small stones
FcD:					
Fairpoint	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FcE:					
Fairpoint	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope
FtA:					
Fitchville	Severe: wetness, percs slowly	Severe: wetness	Severe: wetness	Severe: wetness	Poor: wetness
GdB:					
Gilpin	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: area reclaim, thin layer
GdC:					
Gilpin	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Severe: depth to rock	Poor: area reclaim, thin layer
GdD:					
Gilpin	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: slope, area reclaim, thin layer
GnA:					
Glenford	Severe: wetness, percs slowly	Severe: wetness	Moderate: wetness, too clayey	Moderate: wetness	Fair: too clayey, wetness
GnB:					
Glenford	Severe: wetness, percs slowly	Severe: wetness	Moderate: wetness, too clayey	Moderate: wetness	Fair: too clayey, wetness
GpA:					
Glenford	Severe: wetness, percs slowly	Severe: wetness	Moderate: wetness, too clayey	Moderate: wetness	Fair: too clayey, wetness
Urban land.					

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GrC:					
Guernsey	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: seepage, too clayey	Moderate: wetness, slope	Poor: too clayey, hard to pack
GrD2:					
Guernsey	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: seepage, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
GuC:					
Guernsey	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: seepage, too clayey	Moderate: wetness, slope	Poor: too clayey, hard to pack
Upshur	Severe: percs slowly	Severe: slope	Severe: depth to rock, too clayey	Moderate: depth to rock, slope	Poor: too clayey, hard to pack
GuD:					
Guernsey	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: seepage, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Upshur	Severe: slope, percs slowly, slippage	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
HaF:					
Hazleton	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: depth to rock, seepage, slope	Severe: seepage, slope	Poor: small stones, slope
HbE:					
Hazleton	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: depth to rock, seepage, slope	Severe: seepage, slope	Poor: small stones, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
He:					
Hartshorn-------	Severe: flooding, poor filter	Severe: seepage, flooding	Severe: flooding, depth to rock, seepage	Severe: flooding, seepage	Poor: seepage, too sandy, small stones
Ho:					
Holton----------	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Poor: wetness
KaB:					
Kanawha---------	Moderate: percs slowly	Severe: seepage	Severe: seepage	Slight	Fair: too clayey, small stones
KeB:					
Keene-----------	Severe: wetness, percs slowly	Severe: wetness	Severe: seepage, wetness	Moderate: wetness	Poor: too clayey, hard to pack
KeC:					
Keene-----------	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: seepage, wetness	Moderate: wetness, slope	Poor: too clayey, hard to pack
Lc:					
Lindside--------	Severe: flooding, wetness, percs slowly	Severe: seepage, flooding, wetness	Severe: flooding, seepage, wetness	Severe: flooding, wetness	Fair: too clayey, wetness
Ld:					
Lindside--------	Severe: flooding, wetness, percs slowly	Severe: seepage, flooding, wetness	Severe: flooding, seepage, wetness	Severe: flooding, wetness	Fair: too clayey, wetness
LoC:					
Lowell----------	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: depth to rock, too clayey	Moderate: depth to rock, wetness, slope	Poor: too clayey, hard to pack

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LoD:					
Lowell	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: depth to rock, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
LuE:					
Lowell	Severe: percs slowly, slope	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Upshur	Severe: slope, percs slowly, slippage	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
LwC:					
Lowell	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: depth to rock, too clayey	Moderate: depth to rock, wetness, slope	Poor: too clayey, hard to pack
Westmoreland	Moderate: depth to rock, percs slowly, slope	Severe: slope	Severe: depth to rock	Moderate: depth to rock, slope	Poor: small stones
LwD:					
Lowell	Severe: wetness, percs slowly, slope	Severe: slope, wetness	Severe: depth to rock, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
LwE:					
Lowell	Severe: percs slowly, slope	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LwF:					
Lowell	Severe: percs slowly, slope	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
McA:					
McGary	Severe: wetness, percs slowly	Severe: wetness	Severe: wetness, too clayey	Severe: wetness	Poor: too clayey, hard to pack, wetness
Md:					
Melvin	Severe: flooding, ponding	Severe: flooding, ponding	Severe: flooding, ponding	Severe: flooding, ponding	Poor: ponding
MeB:					
Mentor	Moderate: wetness	Moderate: slope, seepage, wetness	Severe: wetness	Moderate: wetness	Good
MeC:					
Mentor	Moderate: slope, wetness	Severe: slope	Severe: wetness	Moderate: slope, wetness	Fair: slope
MeD:					
Mentor	Severe: slope	Severe: slope	Severe: wetness, slope	Severe: slope	Poor: slope
MfB:					
Mentor	Moderate: wetness	Moderate: slope, seepage, wetness	Severe: wetness	Moderate: wetness	Good
Urban land.					

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MnB:					
Morristown	Severe: percs slowly, unstable fill	Severe: unstable fill	Severe: unstable fill	Severe: unstable fill	Fair: too clayey
MnD:					
Morristown	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: slope
MoF:					
Morristown	Severe: percs slowly, slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Severe: slope, unstable fill	Poor: small stones, slope
Nd:					
Newark	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Poor: wetness
Ne:					
Newark	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Poor: wetness
No:					
Nolin	Severe: flooding, wetness	Severe: seepage, flooding	Severe: flooding, seepage, wetness	Severe: flooding, wetness	Fair: too clayey, wetness
OmB:					
Omulga	Severe: wetness, percs slowly	Severe: wetness	Moderate: wetness, too clayey	Moderate: wetness	Fair: too clayey, wetness
OmC:					
Omulga	Severe: wetness, percs slowly	Severe: slope, wetness	Moderate: wetness, slope, too clayey	Moderate: wetness, slope	Fair: too clayey, slope, wetness

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Or:					
Orrville--------	Severe: flooding, wetness	Severe: seepage, flooding, wetness	Severe: flooding, seepage, wetness	Severe: flooding, wetness	Poor: wetness
RcC:					
Richland--------	Severe: wetness	Severe: slope, wetness	Severe: wetness	Severe: wetness	Fair: too clayey, small stones, slope
RcD:					
Richland--------	Severe: wetness, slope	Severe: slope, wetness	Severe: wetness, slope	Severe: wetness, slope	Poor: slope
Sa:					
Sarahsville-----	Severe: flooding, wetness, percs slowly	Severe: flooding	Severe: flooding, wetness, too clayey	Severe: flooding, wetness	Poor: too clayey, hard to pack, wetness
SeB:					
Sees------------	Severe: wetness, percs slowly	Severe: wetness	Severe: depth to rock, wetness	Moderate: depth to rock, wetness	Poor: too clayey, hard to pack
Ub:					
Udorthents.					
Rock outcrop.					
Uc:					
Udorthents.					
Pits.					
Ud:					
Udorthents.					
Urban land.					

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
UpB:					
Upshur----------	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, too clayey	Moderate: depth to rock	Poor: too clayey, hard to pack
UrC:					
Upshur----------	Severe: percs slowly	Severe: slope	Severe: depth to rock, too clayey	Moderate: depth to rock, slope	Poor: too clayey, hard to pack
UrD:					
Upshur----------	Severe: slope, percs slowly, slippage	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
UrD3:					
Upshur----------	Severe: slope, percs slowly, slippage	Severe: slope	Severe: depth to rock, slope, too clayey	Severe: slope, slippage	Poor: too clayey, hard to pack, slope
VaD2:					
Vandalia--------	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, hard to pack, slope
VtC:					
Vincent---------	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: too clayey, hard to pack
VwB:					
Vincent---------	Severe: percs slowly	Moderate: slope	Severe: too clayey	Slight	Poor: too clayey, hard to pack
W:					
Water.					
WhB:					
Wellston--------	Moderate: depth to rock	Moderate: seepage, slope	Severe: seepage	Slight	Fair: area reclaim, too clayey

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WhC:					
Wellston	Moderate: depth to rock, slope	Severe: slope	Severe: seepage	Moderate: slope	Fair: area reclaim, too clayey, slope
WkB:					
Westmore	Severe: percs slowly	Moderate: depth to rock, slope, seepage	Severe: depth to rock, seepage	Slight	Poor: too clayey, hard to pack
WkC2:					
Westmore	Severe: percs slowly	Severe: slope	Severe: depth to rock, seepage	Moderate: slope	Poor: too clayey, hard to pack
WmC:					
Westmoreland	Moderate: depth to rock, percs slowly, slope	Severe: slope	Severe: depth to rock	Moderate: depth to rock, slope	Poor: small stones
WmD:					
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
WmE:					
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
WnF:					
Westmoreland	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
Berks	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, seepage, slope	Poor: depth to rock, small stones, slope

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WrC:					
Westmoreland----	Moderate: depth to rock, percs slowly, slope	Severe: slope	Severe: depth to rock	Moderate: depth to rock, slope	Poor: small stones
Urban land.					
WrD:					
Westmoreland----	Severe: slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Poor: small stones, slope
Urban land.					
WtB:					
Woodsfield------	Severe: percs slowly	Moderate: seepage, slope	Severe: seepage, too clayey	Slight	Poor: too clayey, hard to pack
WtC:					
Woodsfield------	Severe: percs slowly	Severe: slope	Severe: seepage, too clayey	Moderate: slope	Poor: too clayey, hard to pack
ZnB:					
Zanesville------	Severe: wetness, percs slowly	Severe: wetness	Severe: depth to rock	Moderate: depth to rock, wetness	Fair: too clayey, area reclaim
ZnC:					
Zanesville------	Severe: wetness, percs slowly	Severe: slope, wetness	Severe: depth to rock	Moderate: depth to rock, wetness, slope	Fair: slope, too clayey, area reclaim
Zp:					
Zipp------------	Severe: flooding, ponding, percs slowly	Severe: flooding, ponding	Severe: flooding, ponding, too clayey	Severe: flooding, ponding	Poor: too clayey, hard to pack, ponding
Zs:					
Zipp------------	Severe: flooding, ponding, percs slowly	Severe: flooding, ponding	Severe: flooding, ponding, too clayey	Severe: flooding, ponding	Poor: too clayey, hard to pack, ponding

Table 16.--Construction Materials

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

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AaB:				
Aaron	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
AaC:				
Aaron	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
AbB:				
Aaron	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
AbC2:				
Aaron	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
AgC:				
Allegheny	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim, slope
BaD:				
Barkcamp	Fair: large stones, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, too acid
BcB:				
Barkcamp	Fair: large stones	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, too acid
BcD:				
Barkcamp	Fair: large stones, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, too acid
BeC:				
Berks	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
BeD:				
Berks-----------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
BeE:				
Berks-----------	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
BeF:				
Berks-----------	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
BgB:				
Bethesda--------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones
BgD:				
Bethesda--------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, slope
BgE:				
Bethesda--------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, slope
BhB:				
Bethesda--------	Fair: large stones	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones
BhD:				
Bethesda--------	Fair: large stones, slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, slope
BhF:				
Bethesda--------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, slope
BsD:				
Brookside-------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones, area reclaim
BtC:				
Brookside-------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Vandalia--------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
BtD:				
Brookside	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones, area reclaim
Vandalia	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
BtE:				
Brookside	Poor: shrink-swell, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones, area reclaim
Vandalia	Poor: shrink-swell, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
Ca:				
Chagrin	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones
ChD:				
Clarksburg	Fair: shrink-swell, wetness, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
CkC:				
Claysville	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones
Guernsey	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, too clayey
CoD:				
Coshocton	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
CsC2:				
Coshocton	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
DkC:				
Dekalb	Poor: area reclaim	Improbable: excess fines	Improbable: excess fines	Poor: small stones
DkD:				
Dekalb	Poor: area reclaim	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
DkE:				
Dekalb----------	Poor: slope, area reclaim	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
DmF:				
Dekalb----------	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
Dp:				
Dumps.				
Ds:				
Dumps, mine.				
EbC:				
Elba------------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: large stones, area reclaim
EbD:				
Elba------------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: large stones, slope, area reclaim
EbE:				
Elba------------	Poor: low strength, slope, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: large stones, slope, area reclaim
EkF:				
Elba------------	Poor: low strength, slope, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: large stones, slope, area reclaim
Berks-----------	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
EnB:				
Enoch-----------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, too acid
EnD:				
Enoch-----------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, too acid
EuA:				
Euclid----------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Good
FcB:				
Fairpoint-------	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
FcD:				
Fairpoint-------	Fair: shrink-swell, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
FcE:				
Fairpoint-------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
FtA:				
Fitchville------	Fair: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Good
GdB:				
Gilpin----------	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones
GdC:				
Gilpin----------	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones
GdD:				
Gilpin----------	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
GnA:				
Glenford--------	Fair: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Good
GnB:				
Glenford--------	Fair: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Good
GpA:				
Glenford--------	Fair: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Good
Urban land.				
GrC:				
Guernsey--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, too clayey
GrD2:				
Guernsey--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope, too clayey
GuC:				
Guernsey--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, too clayey

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
GuC:				
Upshur----------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
GuD:				
Guernsey--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope, too clayey
Upshur----------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
HaF:				
Hazleton--------	Poor: slope	Improbable: excess fines, large stones	Improbable: excess fines, large stones	Poor: small stones, area reclaim, slope
HbE:				
Hazleton--------	Poor: slope	Improbable: excess fines, large stones	Improbable: excess fines, large stones	Poor: small stones, area reclaim, slope
He:				
Hartshorn-------	Fair: area reclaim, thin layer	Improbable: thin layer	Improbable: thin layer	Poor: small stones, area reclaim
Ho:				
Holton----------	Poor: wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
KaB:				
Kanawha---------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
KeB:				
Keene-----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, area reclaim
KeC:				
Keene-----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, area reclaim
Lc:				
Lindside--------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim
Ld:				
Lindside--------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LoC:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
LoD:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, slope
LuE:				
Lowell	Poor: low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: thin layer, slope
Upshur	Poor: shrink-swell, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
LwC:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Westmoreland	Fair: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
LwD:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, slope
Westmoreland	Fair: depth to rock, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
LwE:				
Lowell	Poor: low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: thin layer, slope
Westmoreland	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
LwF:				
Lowell	Poor: low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: thin layer, slope
Westmoreland	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
McA:				
McGary	Poor: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, wetness

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Md:				
Melvin----------	Poor: wetness, low strength	Improbable: excess fines	Improbable: excess fines	Poor: wetness
MeB:				
Mentor----------	Good	Improbable: excess fines	Improbable: excess fines	Good
MeC:				
Mentor----------	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
MeD:				
Mentor----------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
MfB:				
Mentor----------	Good	Improbable: excess fines	Improbable: excess fines	Good
Urban land.				
MnB:				
Morristown------	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
MnD:				
Morristown------	Fair: shrink-swell, slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, slope
MoF:				
Morristown------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, slope
Nd:				
Newark----------	Poor: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
Ne:				
Newark----------	Poor: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
No:				
Nolin-----------	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim
OmB:				
Omulga----------	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Fair: small stones
OmC:				
Omulga----------	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Fair: small stones, slope

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Or:				
Orrville	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim
RcC:				
Richland	Fair: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
RcD:				
Richland	Fair: low strength, slope, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Sa:				
Sarahsville	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
SeB:				
Sees	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Ub:				
Udorthents.				
Rock outcrop.				
Uc:				
Udorthents.				
Pits.				
Ud:				
Udorthents.				
Urban land.				
UpB:				
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
UrC:				
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
UrD:				
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
UrD3:				
Upshur	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
VaD2: Vandalia--------	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
VtC: Vincent---------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Good
VwB: Vincent---------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
W: Water.				
WhB: Wellston--------	Fair: area reclaim, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
WhC: Wellston--------	Fair: area reclaim, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
WkB: Westmore--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones
WkC2: Westmore--------	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: small stones
WmC: Westmoreland----	Fair: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
WmD: Westmoreland----	Fair: depth to rock, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
WmE: Westmoreland----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
WnF: Westmoreland----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
WnF:				
Berks	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, slope
WrC:				
Westmoreland	Fair: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Urban land.				
WrD:				
Westmoreland	Fair: depth to rock, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Urban land.				
WtB:				
Woodsfield	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim
WtC:				
Woodsfield	Poor: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim, slope
ZnB:				
Zanesville	Severe: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
ZnC:				
Zanesville	Severe: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Zp:				
Zipp	Poor: shrink-swell, low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, wetness
Zs:				
Zipp	Poor: shrink-swell, low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, wetness

Table 17.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates the soil was not evaluated. The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
AaB:						
Aaron	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Percs slowly, frost action, slope	Erodes easily, wetness	Erodes easily, percs slowly
AaC:						
Aaron	Severe: slope	Severe: hard to pack	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
AbB:						
Aaron	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Percs slowly, frost action, slope	Erodes easily, wetness	Erodes easily, percs slowly
Upshur	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Deep to water	Erodes easily, percs slowly	Erodes easily, percs slowly
AbC2:						
Aaron	Severe: slope	Severe: hard to pack	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
Upshur	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
AgC:						
Allegheny	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
BaD:						
Barkcamp	Severe: seepage, slope	Moderate: large stones	Severe: no water	Deep to water	Slope, large stones, too sandy	Large stones, slope, droughty
BcB:						
Barkcamp	Severe: seepage	Severe: seepage, large stones	Severe: no water	Deep to water	Large stones, too sandy	Large stones, droughty

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BcD:						
Barkcamp	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, too sandy	Large stones, slope, droughty
BeC:						
Berks	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
BeD:						
Berks	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
BeE:						
Berks	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
BeF:						
Berks	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
BgB:						
Bethesda	Moderate: slope	Severe: seepage, piping	Severe: no water	Deep to water	Large stones, erodes easily	Large stones, erodes easily
BgD:						
Bethesda	Severe: slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
BgE:						
Bethesda	Severe: slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
BhB:						
Bethesda	Moderate: slope	Severe: seepage, piping	Severe: no water	Deep to water	Large stones	Large stones, droughty

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BhD:						
Bethesda--------	Severe: slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, large stones, slippage	Large stones, slope, droughty
BhF:						
Bethesda--------	Severe: slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, large stones, slippage	Large stones, slope, droughty
BsD:						
Brookside-------	Severe: slope, slippage	Moderate: thin layer, hard to pack, wetness	Severe: no water	Slope	Slope, erodes easily, slippage	Slope, erodes easily
BtC:						
Brookside-------	Severe: slope	Moderate: thin layer, hard to pack, wetness	Severe: no water	Slope	Slope, erodes easily	Slope, erodes easily
Vandalia--------	Severe: slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
BtD:						
Brookside-------	Severe: slope, slippage	Moderate: thin layer, hard to pack, wetness	Severe: no water	Slope	Slope, erodes easily, slippage	Slope, erodes easily
Vandalia--------	Severe: slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
BtE:						
Brookside-------	Severe: slope, slippage	Moderate: thin layer, hard to pack, wetness	Severe: no water	Slope	Slope, erodes easily, slippage	Slope, erodes easily

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BtE:						
Vandalia	Severe: slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
Ca:						
Chagrin	Moderate: seepage	Severe: piping	Severe: cutbanks cave	Deep to water	Favorable	Favorable
ChD:						
Clarksburg	Severe: slope	Severe: piping	Severe: no water	Percs slowly, slope	Slope, wetness	Slope, rooting depth
CkC:						
Claysville	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Percs slowly, frost action, slippage	Slope, erodes easily, slippage	Wetness, slope, erodes easily
Guernsey	Severe: slope	Severe: hard to pack	Severe: no water	Percs slowly, slope, frost action	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
CoD:						
Coshocton	Severe: slope	Moderate: thin layer, hard to pack, wetness	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
CsC2:						
Coshocton	Severe: slope	Moderate: thin layer, hard to pack, wetness	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
DkC:						
Dekalb	Severe: seepage, slope	Severe: piping, large stones	Severe: no water	Deep to water	Slope, large stones, depth to rock	Slope, large stones, droughty
DkD:						
Dekalb	Severe: seepage, slope	Severe: piping, large stones	Severe: no water	Deep to water	Slope, large stones, depth to rock	Slope, large stones, droughty

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
DkE:						
Dekalb	Severe: seepage, slope	Severe: piping, large stones	Severe: no water	Deep to water	Slope, large stones, depth to rock	Slope, large stones, droughty
DmF:						
Dekalb	Severe: seepage, slope	Severe: piping, large stones	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
Dp:						
Dumps.						
Ds:						
Dumps, mine.						
EbC:						
Elba	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
EbD:						
Elba	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
EbE:						
Elba	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
EkF:						
Elba	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
Berks	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
EnB:						
Enoch	Moderate: slope	Moderate: seepage, piping, large stones	Severe: no water	Deep to water	Large stones, erodes easily	Large stones, erodes easily

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
EnD: Enoch	Severe: slope	Moderate: seepage, piping, large stones	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
EuA: Euclid	Slight	Severe: piping, wetness	Severe: slow refill	Frost action	Erodes easily, wetness	Wetness, erodes easily
FcB: Fairpoint	Moderate: slope	Severe: piping	Severe: no water	Deep to water	Large stones, erodes easily	Large stones, erodes easily
FcD: Fairpoint	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
FcE: Fairpoint	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily
FtA: Fitchville	Moderate: seepage	Severe: piping	Severe: no water	Frost action	Erodes easily, wetness	Wetness, erodes easily
GdB: Gilpin	Moderate: seepage, depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Large stones, depth to rock	Large stones, depth to rock
GdC: Gilpin	Severe: slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, depth to rock
GdD: Gilpin	Severe: slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, depth to rock

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
GnA:						
Glenford	Moderate: seepage	Severe: piping	Severe: no water	Frost action	Erodes easily, wetness	Erodes easily
GnB:						
Glenford	Moderate: seepage, slope	Severe: piping	Severe: no water	Frost action, slope	Erodes easily, wetness	Erodes easily
GpA:						
Glenford	Moderate: seepage	Severe: piping	Severe: no water	Frost action	Erodes easily, wetness	Erodes easily
Urban land.						
GrC:						
Guernsey	Severe: slope	Severe: hard to pack	Severe: no water	Percs slowly, slope, frost action	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
GrD2:						
Guernsey	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Percs slowly, slope, frost action	Slope, erodes easily, slippage	Slope, erodes easily, percs slowly
GuC:						
Guernsey	Severe: slope	Severe: hard to pack	Severe: no water	Percs slowly, slope, frost action	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
Upshur	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
GuD:						
Guernsey	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Percs slowly, slope, frost action	Slope, erodes easily, slippage	Slope, erodes easily, percs slowly
Upshur	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
HaF:						
Hazleton	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, too sandy	Large stones, slope, droughty
HbE:						
Hazleton	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, too sandy	Large stones, slope, droughty
He:						
Hartshorn	Severe: seepage	Severe: seepage	Severe: no water	Deep to water	Too sandy	Droughty
Ho:						
Holton	Moderate: seepage	Severe: piping, wetness	Severe: cutbanks cave	Flooding, frost action	Erodes easily, wetness	Wetness, erodes easily
KaB:						
Kanawha	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Favorable	Favorable
KeB:						
Keene	Moderate: seepage, slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Percs slowly, frost action, slope	Erodes easily, wetness	Erodes easily, percs slowly
KeC:						
Keene	Severe: slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, percs slowly
Lc:						
Lindside	Severe: seepage	Severe: piping, wetness	Severe: slow refill	Flooding, frost action	Erodes easily, wetness	Erodes easily
Ld:						
Lindside	Severe: seepage	Severe: piping, wetness	Severe: slow refill	Flooding, frost action	Erodes easily, wetness	Erodes easily

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
LoC:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Slope	Slope, erodes easily, wetness	Slope, erodes easily
LoD:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Slope	Slope, erodes easily, wetness	Slope, erodes easily
LuE:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily
Upshur----------	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
LwC:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Slope	Slope, erodes easily, wetness	Slope, erodes easily
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
LwD:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Slope	Slope, erodes easily, wetness	Slope, erodes easily
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
LwE:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
LwF:						
Lowell----------	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
LwF: Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
McA: McGary----------	Slight	Severe: wetness	Severe: no water	Percs slowly, frost action	Erodes easily, wetness	Wetness, erodes easily
Md: Melvin----------	Moderate: seepage	Severe: piping, ponding	Moderate: slow refill	Ponding, flooding	Erodes easily, ponding	Wetness, erodes easily
MeB: Mentor----------	Moderate: seepage, slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Erodes easily	Erodes easily
MeC: Mentor----------	Severe: slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Slope, erodes easily	Slope, erodes easily
MeD: Mentor----------	Severe: slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Slope, erodes easily	Slope, erodes easily
MfB: Mentor----------	Moderate: seepage, slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Erodes easily	Erodes easily
Urban land.						
MnB: Morristown------	Moderate: slope	Severe: piping	Severe: no water	Deep to water	Large stones, erodes easily	Large stones, erodes easily
MnD: Morristown------	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, large stones, erodes easily	Large stones, slope, erodes easily

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
MoF: Morristown	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, large stones	Large stones, slope, droughty
Nd: Newark	Moderate: seepage	Severe: piping, wetness	Moderate: slow refill	Flooding, frost action	Erodes easily, wetness	Wetness, erodes easily
Ne: Newark	Moderate: seepage	Severe: piping, wetness	Moderate: slow refill	Flooding, frost action	Erodes easily, wetness	Wetness, erodes easily
No: Nolin	Severe: seepage	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Erodes easily	Erodes easily
OmB: Omulga	Moderate: seepage, slope	Severe: piping	Severe: no water	Percs slowly, frost action, slope	Erodes easily, wetness	Erodes easily, rooting depth
OmC: Omulga	Severe: slope	Severe: piping	Severe: no water	Percs slowly, frost action, slope	Slope, erodes easily, wetness	Slope, erodes easily, rooting depth
Or: Orrville	Moderate: seepage	Severe: piping, wetness	Severe: cutbanks cave	Flooding, frost action	Erodes easily, wetness	Wetness, erodes easily
RcC: Richland	Severe: slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Slope	Slope
RcD: Richland	Severe: slope	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Slope	Slope

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Sa: Sarahsville-----	Slight	Severe: hard to pack, wetness	Severe: slow refill	Percs slowly, flooding, frost action	Erodes easily, wetness, percs slowly	Wetness, erodes easily, percs slowly
SeB: Sees------------	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Percs slowly, slope	Large stones, erodes easily	Erodes easily, percs slowly
Ub: Udorthents.						
Rock outcrop.						
Uc: Udorthents.						
Pits.						
Ud: Udorthents.						
Urban land.						
UpB: Upshur----------	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Deep to water	Erodes easily, percs slowly	Erodes easily, percs slowly
UrC: Upshur----------	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
UrD: Upshur----------	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
UrD3: Upshur----------	Severe: slope, slippage	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
VaD2: Vandalia	Severe: slope	Moderate: thin layer, piping, hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
VtC: Vincent	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
VwB: Vincent	Moderate: slope	Severe: hard to pack	Severe: no water	Deep to water	Erodes easily, percs slowly	Erodes easily, percs slowly
W: Water.						
WhB: Wellston	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily
WhC: Wellston	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily
WkB: Westmore	Moderate: slope, depth to rock, seepage	Moderate: hard to pack	Severe: no water	Deep to water	Percs slowly, erodes easily	Percs slowly, erodes easily
WkC2: Westmore	Severe: slope	Moderate: hard to pack	Severe: no water	Deep to water	Percs slowly, slope, erodes easily	Slope, erodes easily, percs slowly
WmC: Westmoreland	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
WmD: Westmoreland	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
WmE:						
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
WnF:						
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
Berks-----------	Severe: seepage, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, large stones, depth to rock	Large stones, slope, droughty
WrC:						
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
Urban land.						
WrD:						
Westmoreland----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope
Urban land.						
WtB:						
Woodsfield------	Moderate: seepage, slope	Severe: hard to pack	Severe: no water	Deep to water	Erodes easily, percs slowly	Erodes easily, percs slowly
WtC:						
Woodsfield------	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
ZnB:						
Zanesville------	Moderate: depth to rock, seepage	Severe: piping	Severe: no water	Percs slowly, slope	Erodes easily, wetness, rooting depth	Erodes easily, rooting depth
ZnC:						
Zanesville------	Moderate: depth to rock, seepage	Severe: piping	Severe: no water	Percs slowly, slope	Slope, erodes easily, wetness	Slope, erodes easily, rooting depth

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Zp:						
Zipp	Slight	Severe: ponding	Severe: slow refill	Ponding, percs slowly, flooding	Ponding, percs slowly	Wetness, percs slowly
Zs:						
Zipp	Slight	Severe: ponding	Severe: slow refill	Ponding, percs slowly, flooding	Ponding, percs slowly	Wetness, percs slowly

Table 18.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
AaB:												
Aaron-----------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	70-90	20-35	5-15
	9-30	Silty clay loam, silty clay, clay	CL, CH	A-7	0	0-5	90-100	90-100	85-100	80-100	45-70	22-43
	30-50	Silty clay loam, clay, channery clay	CL, CH	A-7	0	0-10	75-90	75-90	70-90	65-90	45-65	22-40
	50-60	Weathered bedrock			0	0	0	0	0	0	---	NP
AaC:												
Aaron-----------	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	70-90	20-35	5-15
	8-30	Silty clay loam, silty clay, clay	CL, CH	A-7	0	0-5	90-100	90-100	85-100	80-100	45-70	22-43
	30-48	Silty clay loam, clay, channery clay	CL, CH	A-7	0	0-10	75-90	75-90	70-90	65-90	45-65	22-40
	48-60	Weathered bedrock			0	0	0	0	0	0	---	NP
AbB:												
Aaron-----------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	70-90	20-35	5-15
	9-30	Silty clay loam, silty clay, clay	CL, CH	A-7	0	0-5	90-100	90-100	85-100	80-100	45-70	22-43
	30-52	Silty clay loam, clay, channery clay	CL, CH	A-7	0	0-10	75-90	75-90	70-90	65-90	45-65	22-40
	52-60	Weathered bedrock			0	0	0	0	0	0	---	NP
Upshur----------	0-7	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	7-37	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	37-72	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	72-80	Weathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
AbC2:												
Aaron-----------	0-7	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	70-90	20-35	5-15
	7-28	Silty clay loam, silty clay, clay	CL, CH	A-7	0	0-5	90-100	90-100	85-100	80-100	45-70	22-43
	28-48	Silty clay loam, clay channery clay	CL, CH	A-7	0	0-10	75-90	75-90	70-90	65-90	45-65	22-40
	48-60	Weathered bedrock			0	0	0	0	0	0	---	NP
Upshur----------	0-6	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	6-35	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	35-70	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	70-80	Weathered bedrock			0	0	0	0	0	0	---	NP
AgC:												
Allegheny-------	0-8	Loam	ML, CL	A-4	0	0	90-100	80-100	65-100	55-95	0-35	NP-10
	8-33	Clay loam, loam, fine sandy loam	ML, CL, SM, SC	A-4, A-6	0	0	90-100	80-100	65-95	35-80	0-35	NP-15
	33-80	Sandy loam, gravelly sandy loam, silty clay loam	SM, GC, ML, CL	A-4, A-6, A-2, A-1	0	0-5	65-100	55-100	35-95	20-75	0-35	NP-15
BaD:												
Barkcamp--------	0-11	Loam	ML, CL-ML, CL	A-4	0	0-5	90-100	80-100	70-95	51-75	20-30	2-10
	11-80	Gravelly loam, extremely flaggy sandy loam, cobbly loamy sand	GC, GM-GC, SC, SC-SM	A-2, A-1, A-4, A-3	0	5-35	30-75	25-65	20-55	5-50	0-30	NP-10

Table 18.--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	
BcB:												
Barkcamp--------	0-1	Very flaggy sandy loam	SM, GM, GM-GC, SC-SM	A-2, A-1	0	20-50	55-85	45-80	30-55	15-35	0-20	NP-6
	1-80	Very flaggy sandy loam, extremely flaggy sandy loam, extremely flaggy loamy sand	SM, GC, GM, SC	A-2, A-1, A-4	0	10-40	30-75	25-65	20-55	15-50	0-30	NP-10
BcD:												
Barkcamp--------	0-1	Very flaggy sandy loam	SM, GM, GM-GC, SC-SM	A-2, A-1	0	20-50	55-85	45-80	30-55	15-35	0-20	NP-6
	1-80	Very flaggy sandy loam, extremely flaggy sandy loam, extremely flaggy loamy sand	SM, GC, GM, SC	A-2, A-1, A-4	0	10-40	30-75	25-65	20-55	15-50	0-30	NP-10
BeC:												
Berks-----------	0-7	Channery silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	7-24	Channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	24-28	Channery loam, very channery loam, extremely channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	28-33	Weathered bedrock			0	0	0	0	0	0	0-14	NP

Table 18.--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	
BeD:												
Berks-----------	0-6	Channery silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	6-24	Channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	24-27	Channery loam, very channery loam, extremely channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	27-32	Weathered bedrock			0	0	0	0	0	0	0-14	NP
BeE:												
Berks-----------	0-6	Channery silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	6-23	Channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	23-27	Channery loam, very channery loam, channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	27-32	Weathered bedrock			0	0	0	0	0	0	0-14	NP

Table 18.--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	
BeF:												
Berks-----------	0-5	Channery silt loam, silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	5-23	Channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	23-27	Channery loam, channery silt loam, extremely channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	27-31	Weathered bedrock			0	0	0	0	0	0	0-14	NP
BgB:												
Bethesda--------	0-7	Clay loam	CL	A-6, A-7	0	0-5	85-100	80-100	70-100	55-95	35-50	12-24
	7-80	Very channery clay loam, extremely channery clay loam	GM, GC, ML, CL	A-4, A-6, A-7, A-2	0	10-30	40-80	25-65	20-65	18-60	24-50	3-23
BgD:												
Bethesda--------	0-7	Clay loam	CL	A-6, A-7	0	0-5	85-100	80-100	70-100	55-95	35-50	12-24
	7-80	Very channery clay loam, extremely channery clay loam	GM, GC, ML, CL	A-4, A-6, A-7, A-2	0	10-30	40-80	25-65	20-65	18-60	24-50	3-23
BgE:												
Bethesda--------	0-7	Clay loam	CL	A-6, A-7	0	0-5	85-100	80-100	70-100	55-95	35-50	12-24
	7-80	Very channery clay loam, very gravelly silty clay loam	GM, GC, ML, CL	A-4, A-6, A-7, A-2	0	10-30	40-80	25-65	20-65	18-60	24-50	3-23

Table 18.--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	
BhB:												
Bethesda--------	0-4	Channery loam	ML, GM, GM-GC, CL-ML	A-4, A-6	0	0-15	65-90	55-80	50-80	35-75	25-40	4-14
	4-80	Very channery clay loam, very channery silty clay loam, very channery loam	GM-GC, ML, CL, GM	A-4, A-6, A-7, A-2	0	10-30	45-80	25-65	25-65	20-60	24-50	3-23
BhD:												
Bethesda--------	0-3	Channery loam	ML, GM, GM-GC, CL-ML	A-4, A-6	0	0-15	65-90	55-80	50-80	35-75	25-40	4-14
	3-80	Very channery clay loam, very channery silty clay loam, very channery loam	GM-GC, ML, CL, GM	A-4, A-6, A-7, A-2	0	10-30	45-80	25-65	25-65	20-60	24-50	3-23
BhF:												
Bethesda--------	0-3	Channery loam	ML, GM, GM-GC, CL-ML	A-4, A-6	0	0-15	65-90	55-80	50-80	35-75	25-40	4-14
	3-80	Very channery clay loam, very channery silty clay loam, very channery loam	GM-GC, ML, CL, GM	A-4, A-6, A-7, A-2	0	10-30	45-80	25-65	25-65	20-60	24-50	3-23
BsD:												
Brookside-------	0-9	Silt loam	CL, CL-ML	A-6, A-4	0	0-5	90-100	80-100	70-100	55-90	22-40	4-20
	9-58	Silt loam, silty clay loam, channery silty clay loam	CH, CL	A-7, A-6	0	0-15	80-95	65-90	60-85	55-85	35-70	15-40
	58-80	Channery clay loam, clay, silty clay	CH, CL	A-6, A-7	0	5-25	70-90	60-75	55-75	50-70	35-65	22-44

Table 18.--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	
BtC:												
Brookside-------	0-10	Silt loam	CL, CL-ML	A-6, A-4	0	0-5	90-100	80-100	70-100	55-90	22-40	4-20
	10-60	Silty clay, silty clay loam, channery silty clay loam	CH, CL	A-7, A-6	0	0-15	80-95	65-90	60-85	55-85	35-70	15-40
	60-80	Channery clay loam, clay, silty clay loam	CH, CL	A-6, A-7	0	5-25	70-90	60-75	55-75	50-70	35-65	22-44
Vandalia--------	0-8	Silty clay loam	ML, CL	A-4, A-6, A-7	0	0-5	80-100	75-100	70-95	50-90	25-45	5-20
	8-60	Silty clay loam, channery silty clay, clay	CL, CH, ML	A-6, A-7	0	0-5	75-100	70-95	65-90	60-85	35-55	15-30
	60-80	Silty clay, clay, channery silty clay loam	CL, CH, ML, MH	A-6, A-7	0	0-5	70-100	65-100	60-100	55-100	30-55	10-30
BtD:												
Brookside-------	0-9	Silt loam	CL, CL-ML	A-6, A-4	0	0-5	90-100	80-100	70-100	55-90	22-40	4-20
	9-56	Silty clay loam, channery silty clay loam, clay	CH, CL	A-7, A-6	0	0-15	80-95	65-90	60-85	55-85	35-70	15-40
	56-80	Channery clay, clay, silty clay	CH, CL	A-6, A-7	0	5-25	70-90	60-75	55-75	50-70	35-65	22-44
Vandalia--------	0-7	Silty clay loam	ML, CL	A-4, A-6, A-7	0	0-5	80-100	75-100	70-95	50-90	25-45	5-20
	7-60	Silty clay loam, channery clay loam, clay	CL, CH, ML	A-6, A-7	0	0-5	75-100	70-95	65-90	60-85	35-55	15-30
	60-80	Clay, silty clay loam, channery clay loam	CL, CH, ML, MH	A-6, A-7	0	0-5	70-100	65-100	60-100	55-100	30-55	10-30

Table 18.--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	
BtE:												
Brookside-------	0-7	Silt loam	CL, CL-ML	A-6, A-4	0	0-5	90-100	80-100	70-100	55-90	22-40	4-20
	7-52	Silty clay, silty clay loam, clay	CH, CL	A-7, A-6	0	0-15	80-95	65-90	60-85	55-85	35-70	15-40
	52-80	Clay, silty clay, channery clay	CH, CL	A-6, A-7	0	5-25	70-90	60-75	55-75	50-70	35-65	22-44
Vandalia--------	0-6	Silty clay loam	ML, CL	A-4, A-6, A-7	0	0-5	80-100	75-100	70-95	50-90	25-45	5-20
	6-48	Silty clay loam, clay, channery clay	CL, CH, ML	A-6, A-7	0	0-5	75-100	70-95	65-90	60-85	35-55	15-30
	48-80	Silty clay, clay, channery silty clay loam	CL, CH, ML, MH	A-6, A-7	0	0-5	70-100	65-100	60-100	55-100	30-55	10-30
Ca:												
Chagrin---------	0-9	Loam	ML, CL, CL-ML	A-4	0	0	95-100	85-100	80-100	70-90	20-35	2-10
	9-34	Silt loam, loam, sandy loam	ML, SM	A-4, A-2, A-6	0	0	90-100	75-100	55-90	30-80	20-40	NP-14
	34-80	Loam, fine sandy loam, sandy loam	ML, SM, SP-SM	A-4, A-2	0	0	75-100	65-100	40-85	10-80	20-40	NP-10
ChD:												
Clarksburg------	0-7	Channery silt loam	ML, CL	A-4, A-6	0	0-15	80-100	65-95	60-80	55-75	25-35	2-11
	7-32	Loam, channery loam, channery clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0	0-10	80-100	65-100	60-95	55-85	25-45	6-20
	32-43	Silty clay loam, channery clay, channery clay loam	CL-ML, CL, SC-SM, SC	A-4, A-6, A-7	0	0-15	75-100	55-100	50-95	45-90	20-45	4-20
	43-80	Clay, channery loam, channery clay loam	CL, CH, SC-SM, GC	A-4, A-6, A-7, A-2	0	0-20	50-100	20-100	15-95	15-90	20-52	4-25

Table 18.--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	Plas- ticity index
	In				Pct	Pct					Pct	
CkC:												
Claysville------	0-14	Silty clay loam	CL	A-6, A-7	0	0	90-100	80-100	75-100	70-95	25-50	15-30
	14-46	Silty clay loam, silty clay, clay	CH, CL, MH, ML	A-7	0	0-5	75-100	70-100	65-100	60-95	45-70	20-35
	46-80	Silty clay, channery silty clay, silty clay loam	CL, CH	A-6, A-7	0	0-5	70-100	60-95	55-95	50-90	35-55	15-30
Guernsey--------	0-9	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	75-100	70-90	25-40	4-14
	9-19	Silty clay loam, silt loam	CL, CH, ML, MH	A-7, A-6	0	0-2	90-100	80-100	75-100	70-100	30-55	10-30
	19-52	Silty clay, clay, channery clay	CH, CL, ML, MH	A-7	0	0-10	75-100	65-100	60-100	55-100	45-65	15-35
	52-80	Clay, silty clay, channery silty clay loam	CH, MH, ML, CL	A-7	0	0-20	70-100	60-90	55-90	55-90	40-70	15-40
CoD:												
Coshocton-------	0-9	Loam	ML, CL-ML	A-4, A-6	0	0-5	85-100	80-100	70-95	60-90	25-40	4-12
	9-17	Silt loam, silty clay loam, channery loam	CL, CL-ML	A-6, A-4	0	0-5	85-100	80-100	70-95	60-90	25-40	6-18
	17-56	Silty clay loam, silty clay, channery clay loam	CL, CH	A-7, A-6	0	0-10	70-100	60-95	55-90	50-85	35-55	20-35
	56-63	Channery silty clay loam, silty clay, silty clay loam	CL, CH, GC, SC	A-7, A-6, A-2	0	0-20	40-100	30-95	30-85	30-80	30-55	16-35
	63-65	Weathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
CsC2:												
Coshocton-------	0-10	Silt loam	ML, CL-ML	A-4, A-6	0	0-5	85-100	80-100	70-95	60-90	25-40	4-12
	10-20	Silt loam, clay loam, channery silty clay loam	CL, CL-ML	A-6, A-4	0	0-5	85-100	80-100	70-95	60-90	25-40	6-18
	20-43	Silty clay loam, silty clay, loam	CL, CH	A-7, A-6	0	0-10	70-100	60-95	55-90	50-85	35-55	20-35
	43-54	Silty clay loam, silty clay, loam	CL, CH, GC, SC	A-7, A-6, A-2	0	0-20	40-100	30-95	30-85	30-80	30-55	16-35
	54-60	Weathered bedrock			0	0	0	0	0	0	---	NP
DkC:												
Dekalb----------	0-7	Channery loam	SM, GM, ML, CL-ML	A-2, A-4, A-1	0	0-30	50-90	45-80	40-75	20-55	10-32	NP-10
	7-26	Channery sandy loam, channery loam, very channery sandy loam	SM, GM, ML, GM-GC	A-2, A-4, A-1	0	5-40	50-85	40-80	40-75	20-55	15-32	NP-9
	26-34	Channery sandy loam, flaggy sandy loam, extremely channery sandy loam	SM, GM, SC, GC	A-2, A-4, A-1	0	10-50	45-85	25-75	20-65	15-40	15-32	NP-9
	34-39	Unweathered bedrock			0	0	0	0	0	0	---	NP
DkD:												
Dekalb----------	0-7	Channery loam	SM, GM, ML, CL-ML	A-2, A-4, A-1	0	0-30	50-90	45-80	40-75	20-55	10-32	NP-10
	7-28	Channery sandy loam, channery loam, very channery sandy loam	SM, GM, ML, GM-GC	A-2, A-4, A-1	0	5-40	50-85	40-80	40-75	20-55	15-32	NP-9
	28-35	Channery sandy loam, flaggy sandy loam, extremely channery sandy loam	SM, GM, SC, GC	A-2, A-4, A-1	0	10-50	45-85	25-75	20-65	15-40	15-32	NP-9
	35-39	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	Plas-ticity index
	In				Pct	Pct					Pct	
DkE:												
Dekalb----------	0-5	Channery loam	SM, GM, ML, CL-ML	A-2, A-4, A-1	0	0-30	50-90	45-80	40-75	20-55	10-32	NP-10
	5-28	Channery sandy loam, very channery sandy loam, extremely flaggy sandy loam	SM, GM, ML, GM-GC	A-2, A-4, A-1	0	5-40	50-85	40-80	40-75	20-55	15-32	NP-9
	28-33	Channery sandy loam, flaggy sandy loam, extremely flaggy loamy sand	SM, GM, SC, GC	A-2, A-4, A-1	0	10-50	45-85	25-75	20-65	15-40	15-32	NP-9
	33-35	Unweathered bedrock			0	0	0	0	0	0	---	NP
DmF:												
Dekalb----------	0-3	Channery loam	SM, GM, ML, CL-ML	A-2, A-4, A-1	0-6	10-30	50-90	45-80	40-75	20-55	10-32	NP-10
	3-29	Channery loam, very channery loam, very flaggy sandy loam	SM, GM, ML, GM-GC	A-2, A-4, A-1	0	5-40	50-85	40-75	40-75	20-55	15-32	NP-9
	29-37	Channery sandy loam, flaggy sandy loam, extremely flaggy sandy loam	SM, GM, SC, GC	A-2, A-4, A-1	0-1	10-50	45-85	25-75	20-65	15-40	15-32	NP-9
	37-40	Unweathered bedrock			0	0	0	0	0	0	---	NP
Dp:												
Dumps.												
Ds:												
Dumps, mine.												

Table 18.--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	
EbC:												
Elba------------	0-8	Silty clay loam	CL	A-6	0	0-10	95-100	90-100	85-100	75-95	30-40	10-15
	8-41	Silty clay loam, clay, channery silty clay loam	CH, CL	A-7	0	0-20	75-100	70-100	65-95	60-95	45-75	30-45
	41-46	Silty clay loam, clay, very channery silty clay loam	CL, CH	A-7	0	5-45	70-100	65-95	60-95	60-90	40-65	25-40
	46-66	Unweathered bedrock			0	0	0	0	0	0	---	NP
EbD:												
Elba------------	0-8	Silty clay loam	CL	A-6	0	0-10	95-100	90-100	85-100	75-95	30-40	10-15
	8-44	Silty clay loam, clay, channery silty clay loam	CH, CL	A-7	0	0-20	75-100	70-100	65-95	60-95	45-75	30-45
	44-48	Silty clay loam, clay, very channery silty clay loam	CL, CH	A-7	0	5-45	70-100	65-95	60-95	60-90	40-65	25-40
	48-66	Unweathered bedrock			0	0	0	0	0	0	---	NP
EbE:												
Elba------------	0-7	Silty clay loam	CL	A-6	0	0-10	95-100	90-100	85-100	75-95	30-40	10-15
	7-42	Silty clay loam, clay, channery silty clay loam	CH, CL	A-7	0	0-20	75-100	70-100	65-95	60-95	45-75	30-45
	42-46	Silty clay loam, clay, very channery silty clay loam	CL, CH	A-7	0	5-45	70-100	65-95	60-95	60-90	40-65	25-40
	46-58	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
EkF:												
Elba------------	0-6	Silty clay loam	CL	A-6	0	0-10	95-100	90-100	85-100	75-95	30-40	10-15
	6-40	Silty clay loam, clay, channery silty clay loam	CH, CL	A-7	0	0-20	75-100	70-100	65-95	60-95	45-75	30-45
	40-45	Silty clay loam, clay, very channery silty clay loam	CL, CH	A-7	0	5-45	70-100	65-95	60-95	60-90	40-65	25-40
	45-52	Unweathered bedrock			0	0	0	0	0	0	---	NP
Berks-----------	0-5	Channery silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	5-23	Channery loam, very channery silt loam extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	23-27	Channery loam, very channery loam, extremely channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	27-31	Weathered bedrock			0	0	0	0	0	0	0-14	NP
EnB:												
Enoch-----------	0-8	Loam	ML, CL, CL-ML	A-4, A-6	0	0-5	90-100	85-100	70-100	50-90	20-35	3-13
	8-21	Channery clay loam, very channery clay loam, extremely channery loam	GC, CL, SC, GM-GC	A-1-b, A-2, A-4, A-6	0	5-25	50-85	25-75	20-75	15-65	25-40	5-20
	21-80	Very channery loam, very channery clay loam, extremely channery silty clay loam	GC, GM, SC, CL	A-1-b, A-2, A-4, A-6	0	5-25	50-85	25-75	20-75	15-65	20-40	3-20

Table 18.--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	
EnD:												
Enoch-----------	0-8	Loam	ML, CL, CL-ML	A-4, A-6	0	0-5	90-100	85-100	70-100	50-90	20-35	3-13
	8-24	Channery clay loam, very channery clay loam, extremely channery loam	GC, CL, SC, GM-GC	A-1-b, A-2, A-4, A-6	0	5-25	50-85	25-75	20-75	15-65	25-40	5-20
	24-80	Very channery loam, very channery clay loam, extremely channery silty clay loam	GC, GM, SC, CL	A-1-b, A-2, A-4, A-6	0	5-25	50-85	25-75	20-75	15-65	20-40	3-20
EuA:												
Euclid----------	0-9	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-100	85-100	25-35	4-10
	9-53	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100	80-100	25-40	4-15
	53-80	Silty clay loam, silt loam, loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	70-95	20-35	2-13
FcB:												
Fairpoint-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	8-80	Gravelly clay loam, extremely flaggy clay loam	GC, CL, CL-ML, SC	A-4, A-6, A-7, A-2	0	15-30	55-75	25-65	20-65	15-60	25-50	4-24
FcD:												
Fairpoint-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	8-80	Gravelly clay loam, extremely flaggy clay loam	GC, CL, CL-ML, SC	A-4, A-6, A-7, A-2	0	15-30	55-75	25-65	20-65	15-60	25-50	4-24
FcE:												
Fairpoint-------	0-6	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	6-80	Gravelly clay loam, very channery clay loam	GC, CL, CL-ML, SC	A-4, A-6, A-7, A-2	0	15-30	55-75	25-65	20-65	15-60	25-50	4-24

Table 18.--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	
FtA:												
Fitchville------	0-12	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	24-40	4-16
	12-46	Silt loam, silty clay loam	CL, ML	A-6, A-4, A-7	0	0	100	100	90-100	80-100	28-50	5-23
	46-80	Silt loam, loam, silty clay loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-100	20-40	3-18
GdB:												
Gilpin----------	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	75-90	70-85	65-80	20-40	4-15
	9-26	Channery loam, channery silty clay loam, silty clay loam	GC, SC, CL, CL-ML	A-2, A-4, A-6	0	0-30	50-95	45-90	35-85	30-80	20-40	4-15
	26-33	Channery loam, very channery loam, extremely channery loam	GC, GM-GC	A-1, A-2, A-4, A-6	0	0-35	25-55	20-50	15-45	15-40	20-40	4-15
	33-41	Unweathered bedrock			0	0	0	0	0	0	---	NP
GdC:												
Gilpin----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	75-90	70-85	65-80	20-40	4-15
	8-24	Channery loam, channery silty clay loam, silty clay loam	GC, SC, CL, CL-ML	A-2, A-4, A-6	0	0-30	50-95	45-90	35-85	30-80	20-40	4-15
	24-28	Channery loam, very channery loam, extremely channery loam	GC, GM-GC	A-1, A-2, A-4, A-6	0	0-35	25-55	20-50	15-45	15-40	20-40	4-15
	28-35	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
GdD:												
Gilpin----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	75-90	70-85	65-80	20-40	4-15
	6-26	Channery loam, channery silty clay loam, silty clay loam	GC, SC, CL, CL-ML	A-2, A-4, A-6	0	0-30	50-95	45-90	35-85	30-80	20-40	4-15
	26-30	Channery loam, very channery silt loam, very channery loam	GC, GM-GC	A-1, A-2, A-4, A-6	0	0-35	25-55	20-50	15-45	15-40	20-40	4-15
	30-35	Unweathered bedrock			0	0	0	0	0	0	---	NP
GnA:												
Glenford--------	0-10	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	80-100	25-40	4-14
	10-40	Silty clay loam, silt loam	CL, CL-ML, ML	A-6, A-7, A-4	0	0	100	100	95-100	80-100	25-45	5-18
	40-57	Silt loam, silty clay loam	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	90-100	75-100	20-40	3-18
	57-80	Stratified silty clay loam to fine sandy loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-100	20-40	3-15
GnB:												
Glenford--------	0-10	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	80-100	25-40	4-14
	10-37	Silty clay loam, silt loam	CL, CL-ML, ML	A-6, A-7, A-4	0	0	100	100	95-100	80-100	25-45	5-18
	37-80	Stratified silty clay loam to fine sandy loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-100	20-40	3-15
GpA:												
Glenford--------	0-9	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	80-100	25-40	4-14
	9-49	Silty clay loam, silt loam	CL, CL-ML, ML	A-6, A-7, A-4	0	0	100	100	95-100	80-100	25-45	5-18
	49-80	Stratified silty clay loam to fine sandy loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-100	20-40	3-15

Table 18.--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	
GpA:												
Urban land.												
GrC:												
Guernsey--------	0-8	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	75-100	70-90	25-40	4-14
	8-17	Silty clay loam, silt loam	CL, CH, ML, MH	A-7, A-6	0	0-2	90-100	80-100	75-100	70-100	30-55	10-30
	17-54	Silty clay, clay, silty clay loam	CH, CL, ML, MH	A-7	0	0-10	75-100	65-100	60-100	55-100	45-65	15-35
	54-80	Clay, silty clay, channery clay	CH, MH, ML, CL	A-7	0	0-20	70-100	60-90	55-90	55-90	40-70	15-40
GrD2:												
Guernsey--------	0-9	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	75-100	70-90	25-40	4-14
	9-19	Silty clay loam, silt loam	CL, CH, ML, MH	A-7, A-6	0	0-2	90-100	80-100	75-100	70-100	30-55	10-30
	19-52	Silty clay, clay, channery clay	CH, CL, ML, MH	A-7	0	0-10	75-100	65-100	60-100	55-100	45-65	15-35
	52-80	Clay, silty clay, channery silty clay loam	CH, MH, ML, CL	A-7	0	0-20	70-100	60-90	55-90	55-90	40-70	15-40
GuC:												
Guernsey--------	0-9	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	75-100	70-90	25-40	4-14
	9-18	Silty clay loam, silt loam	CL, CH, ML, MH	A-7, A-6	0	0-2	90-100	80-100	75-100	70-100	30-55	10-30
	18-50	Silty clay, clay, silty clay loam	CH, CL, ML, MH	A-7	0	0-10	75-100	65-100	60-100	55-100	45-65	15-35
	50-80	Clay, silty clay, channery silty clay loam	CH, MH, ML, CL	A-7	0	0-20	70-100	60-90	55-90	55-90	40-70	15-40

Table 18.--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	
GuC:												
Upshur----------	0-8	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	8-38	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	38-66	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	66-80	Weathered bedrock			0	0	0	0	0	0	---	NP
GuD:												
Guernsey--------	0-8	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	80-100	75-100	70-90	25-40	4-14
	8-16	Silty clay loam, silt loam	CL, CH, ML, MH	A-7, A-6	0	0-2	90-100	80-100	75-100	70-100	30-55	10-30
	16-48	Silty clay, clay, silty clay loam	CH, CL, ML, MH	A-7	0	0-10	75-100	65-100	60-100	55-100	45-65	15-35
	48-80	Clay, silty clay, channery clay	CH, MH, ML, CL	A-7	0	0-20	70-100	60-90	55-90	55-90	40-70	15-40
Upshur----------	0-7	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	7-34	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	34-68	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	68-80	Weathered bedrock			0	0	0	0	0	0	---	NP
HaF:												
Hazleton--------	0-8	Channery loam	ML, GM, SM	A-4, A-2	0	2-6	60-85	50-80	50-70	35-55	0-14	NP
	8-25	Channery sandy loam, channery loam, loam	GM, SM, ML, SC	A-2, A-4, A-1	0-5	0-50	60-95	45-90	35-70	20-55	0-30	NP-8
	25-42	Channery loam, very channery sandy loam, extremely flaggy loam	GM, SM, SC, GC	A-2, A-1, A-4	2-10	5-60	50-80	35-75	25-65	15-50	0-30	NP-8
	42-44	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
HbE:												
Hazleton--------	0-8	Channery loam	ML, GM, SM	A-2, A-4	0	0-15	60-85	60-80	60-75	35-55	0-14	NP
	8-40	Channery loam, very channery loam, very channery sandy loam	GM, SM, ML, SC	A-2, A-4, A-1	0	0-50	60-95	45-90	35-70	20-55	0-30	NP-8
	40-54	Channery loam, very channery sandy loam, very channery loam	GM, SM, SC, GC	A-2, A-1, A-4	0-1	0-60	55-80	35-75	25-65	15-50	0-30	NP-8
	54-56	Unweathered bedrock			0	0	0	0	0	0	0-14	NP
He:												
Hartshorn-------	0-8	Silt loam	ML, CL, CL-ML	A-4	0	0-5	80-100	75-100	70-90	50-80	20-32	NP-10
	8-33	Loam, very gravelly loam, gravelly loam	SM, ML, SC-SM, CL-ML	A-4	0	0-10	70-95	55-85	45-75	35-60	20-29	NP-8
	33-74	Very gravelly loam, extremely gravelly sand, extremely gravelly loam	GM, SM, GP-GM, SP-SM	A-1, A-2	0	0-15	40-80	30-50	20-50	12-30	0-14	NP
	74-80	Weathered bedrock			0	0	0	0	0	0	---	NP
Ho:												
Holton----------	0-9	Silt loam	ML, CL-ML, CL	A-4	0	0	100	100	85-100	60-90	14-28	2-10
	9-36	Silt loam, loam, sandy loam	ML, CL, SM, SC	A-4, A-2-4	0	0	90-100	85-100	50-100	30-90	14-28	2-10
	36-80	Loam, gravelly loamy sand, loamy sand	ML, CL, SM, SC	A-4, A-6, A-2-4, A-2-6	0	0-5	80-100	75-100	45-95	20-75	14-36	2-15
KaB:												
Kanawha---------	0-10	Loam	ML, CL, CL-ML	A-4	0	0	80-100	75-100	65-100	50-90	28-35	2-10
	10-40	Loam, clay loam, gravelly loam	SC, CL, ML, SM	A-2, A-4, A-6	0	0	80-100	60-100	50-100	25-80	20-40	5-15
	40-80	Very gravelly sandy loam, gravelly loam, very gravelly loam	GM, SM, GM-GC	A-2, A-1, A-4	0	0	55-90	30-65	20-55	10-45	0-25	NP-5

Table 18.--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	Plas- ticity index
	In				Pct	Pct					Pct	
KeB:												
Keene-----------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	70-95	25-36	4-12
	9-21	Silt loam, silty clay loam	CL, CL-ML, ML	A-6, A-4	0	0	95-100	90-100	85-100	75-100	25-40	6-18
	21-43	Silty clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	95-100	75-100	70-95	65-90	30-55	10-28
	43-70	Silty clay loam, silty clay, clay	CL, CH	A-6, A-7	0	5-20	65-100	55-100	55-90	50-85	30-55	10-28
	70-80	Weathered bedrock			0	0	0	0	0	0	---	NP
KeC:												
Keene-----------	0-7	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	70-95	25-36	4-12
	7-18	Silt loam, silty clay loam	CL, CL-ML, ML	A-6, A-4	0	0	95-100	90-100	85-100	75-100	25-40	6-18
	18-42	Silty clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	95-100	75-100	70-95	65-90	30-55	10-28
	42-57	Silty clay loam, silty clay, clay	CL, CH	A-6, A-7	0	5-20	65-100	55-100	55-90	50-85	30-55	10-28
	57-65	Weathered bedrock			0	0	0	0	0	0	---	NP
Lc:												
Lindside--------	0-8	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	55-90	20-35	2-15
	8-38	Silty clay loam, silt loam, very fine sandy loam	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-95	25-40	4-18
	38-80	Silt loam, gravelly loam	CL, ML, SM, SC	A-2, A-4, A-6	0	0	60-100	55-100	45-100	30-95	20-40	4-18
Ld:												
Lindside--------	0-10	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	55-90	20-35	2-15
	10-38	Silty clay loam, silt loam, very fine sandy loam	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-95	25-40	4-18
	38-80	Silt loam silty clay loam, loam	CL, ML, SM, SC	A-2, A-4, A-6	0	0	60-100	55-100	45-100	30-95	20-40	4-18

Table 18.--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	
LoC:												
Lowell----------	0-9	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	70-90	22-32	4-10
	9-16	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	16-70	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0-5	95-100	90-100	80-100	75-95	35-65	15-45
	70-75	Unweathered bedrock			0	0	0	0	0	0	---	NP
LoD:												
Lowell----------	0-7	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	70-90	22-32	4-10
	7-14	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	14-70	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0-5	95-100	90-100	80-100	75-95	35-65	15-45
	70-80	Unweathered bedrock			0	0	0	0	0	0	---	NP
LuE:												
Lowell----------	0-7	Silt loam	ML, CL, CL-ML	A-4	0	0	100	95-100	90-100	85-100	22-32	3-10
	7-12	Silty clay, clay, silty clay loam	CL, CH, MH	A-7, A-6	0	0	100	95-100	90-100	85-100	35-65	15-32
	12-62	Clay, silty clay, channery silty clay loam	CH, MH, CL	A-7	0-10	0-10	95-100	90-100	85-100	75-100	45-75	20-40
	62-70	Unweathered bedrock			0	0	0	0	0	0	---	NP
Upshur----------	0-6	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	6-33	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	33-68	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	68-72	Weathered bedrock			0	0	0	0	0	0	---	NP
LwC:												
Lowell----------	0-9	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	70-90	22-32	4-10
	9-16	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	16-66	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0-5	95-100	90-100	80-100	75-95	35-65	15-45
	66-68	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
LwC:												
Westmoreland----	0-9	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	9-38	Silty clay loam, silt loam, channery silty clay loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	38-45	Extremely channery loam, very channery silt loam, channery clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	45-47	Weathered bedrock			0	0	0	0	0	0	0-14	NP
LwD:												
Lowell----------	0-8	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	70-90	22-32	4-10
	8-14	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	14-66	Silty clay, clay, channery silty clay loam	CH, CL	A-7, A-6	0	0-5	95-100	90-100	80-100	75-95	35-65	15-45
	66-68	Unweathered bedrock			0	0	0	0	0	0	---	NP
Westmoreland----	0-8	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	8-38	Silty clay loam, channery clay loam, silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	38-48	Very channery loam, extremely channery loam, channery silty clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	48-50	Weathered bedrock			0	0	0	0	0	0	0-14	NP

Table 18.--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	
LwE:												
Lowell----------	0-7	Silt loam	ML, CL, CL-ML	A-4	0	0	100	95-100	90-100	85-100	22-32	3-10
	7-12	Silty clay, silty clay loam	CL, CH, MH	A-7, A-6	0	0	100	95-100	90-100	85-100	35-65	15-32
	12-60	Clay, silty clay, channery silty clay loam	CH, MH, CL	A-7	0-10	0-10	95-100	90-100	85-100	75-100	45-75	20-40
	60-64	Unweathered bedrock			0	0	0	0	0	0	---	NP
Westmoreland----	0-7	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	7-38	Silty clay loam, silt loam, channery clay loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	38-54	Channery loam, very channery loam, channery silty clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	54-56	Weathered bedrock			0	0	0	0	0	0	0-14	NP
LwF:												
Lowell----------	0-9	Silt loam	ML, CL, CL-ML	A-4	0	0	100	95-100	90-100	85-100	22-32	3-10
	9-16	Silty clay loam	CL, CH, MH	A-7, A-6	0	0	100	95-100	90-100	85-100	35-65	15-32
	16-67	Clay, silty clay, channery silty clay loam	CH, MH, CL	A-7	0-10	0-10	95-100	90-100	85-100	75-100	45-75	20-40
	67-70	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	Plas-ticity index
	In				Pct	Pct					Pct	
LwF:												
Westmoreland----	0-6	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	6-33	Silty clay loam, silt loam, channery silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	33-41	Very channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	41-45	Weathered bedrock			0	0	0	0	0	0	0-14	NP
McA:												
McGary----------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	9-36	Silty clay, silty clay loam	CL, CH	A-7-6	0	0	100	100	95-100	90-100	45-60	20-34
	36-80	Silty clay loam, silt loam, fine sandy loam	CL, CH	A-6, A-7-6	0	0	100	100	95-100	90-100	38-60	15-34
Md:												
Melvin----------	0-9	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	90-100	80-100	80-95	25-35	4-10
	9-22	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	80-95	25-40	5-20
	22-80	Silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6	0	0	85-100	80-100	70-100	60-95	25-40	5-20
MeB:												
Mentor----------	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-35	3-14
	7-52	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-95	20-40	4-18
	52-80	Silt loam, silty clay loam	ML, CL, SM, SC	A-4, A-6	0	0	90-100	90-100	80-95	45-85	20-40	2-15

Table 18.--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	Plas- ticity index
	In				Pct	Pct					Pct	
MeC:												
Mentor	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-35	3-14
	7-48	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-95	20-40	4-18
	48-80	Silt loam, silty clay loam	ML, CL, SM, SC	A-4, A-6	0	0	90-100	90-100	80-95	45-85	20-40	2-15
MeD:												
Mentor	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-35	3-14
	7-48	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-95	20-40	4-18
	48-80	Silt loam, silty clay loam	ML, CL, SM, SC	A-4, A-6	0	0	90-100	90-100	80-95	45-85	20-40	2-15
MfB:												
Mentor	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-35	3-14
	7-45	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-95	20-40	4-18
	45-80	Silt loam, silty clay loam	ML, CL, SM, SC	A-4, A-6	0	0	90-100	90-100	80-95	45-85	20-40	2-15
Urban land.												
MnB:												
Morristown	0-8	Silty clay loam	CL	A-7, A-6	0	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	8-80	Very channery clay loam, very channery silty clay loam	GM-GC, GC, CL, CL-ML	A-7, A-6, A-4, A-2	0	10-25	40-75	30-65	25-65	20-60	25-50	4-24
MnD:												
Morristown	0-8	Silty clay loam	CL	A-7, A-6	0	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	8-80	Very channery clay loam, very channery silty clay loam	GM-GC, GC, CL, CL-ML	A-7, A-6, A-4, A-2	0	10-25	40-75	30-65	25-65	20-60	25-50	4-24

Table 18.--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	Plas-ticity index
	In				Pct	Pct					Pct	
MoF:												
Morristown------	0-3	Channery clay loam	CL, SC, GC	A-7, A-6	0	5-15	70-95	50-80	50-75	40-70	35-50	12-24
	3-80	Very gravelly silty clay loam, very channery clay loam	GC, CL, CL-ML, GM-GC	A-7, A-6, A-4, A-2	0	10-25	35-75	25-65	20-65	15-60	25-50	4-24
Nd:												
Newark----------	0-7	Silt loam	ML, CL, CL-ML	A-4	0	0	95-100	90-100	80-100	55-95	0-32	NP-10
	7-38	Silt loam, silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	70-100	22-42	3-20
	38-80	Silt loam, loam, gravelly loam	ML, CL, CL-ML	A-4, A-6, A-7	0	0-3	75-100	70-100	65-100	55-95	22-42	3-20
Ne:												
Newark----------	0-8	Silt loam	ML, CL, CL-ML	A-4	0	0	95-100	90-100	80-100	55-95	0-32	NP-10
	8-35	Silt loam, silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	70-100	22-42	3-20
	35-80	Silt loam, silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0	0-3	75-100	70-100	65-100	55-95	22-42	3-20
No:												
Nolin-----------	0-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	25-40	5-18
	11-41	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	85-100	75-100	25-46	5-23
	41-80	Silt loam, loam, gravelly loam	ML, CL, CL-ML, GM	A-4, A-6	0	0-10	50-100	50-100	40-95	35-95	0-30	NP-15
OmB:												
Omulga----------	0-9	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	65-90	25-35	5-15
	9-27	Silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	65-100	25-45	5-20
	27-60	Silty clay loam, silt loam, clay loam	CL, CL-ML, ML	A-6, A-4	0	0	85-100	80-100	75-95	60-90	20-40	5-20
	60-80	Silty clay loam, silt loam	CL, CL-ML, ML	A-6, A-7, A-4	0	0	85-100	80-100	75-95	70-90	20-45	5-20

Table 18.--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	
OmC:												
Omulga	0-8	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	65-90	25-35	5-15
	8-28	Silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	65-100	25-45	5-20
	28-46	Silty clay loam, silt loam, clay loam	CL, CL-ML, ML	A-6, A-4	0	0	85-100	80-100	75-95	60-90	20-40	5-20
	46-80	Silty clay loam, silt loam	CL, CL-ML, ML	A-6, A-7, A-4	0	0	85-100	80-100	75-95	70-90	20-45	5-20
Or:												
Orrville	0-8	Silt loam	ML, CL-ML, CL	A-4	0	0	100	90-100	85-100	60-80	20-35	3-10
	8-38	Silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0-2	95-100	75-100	70-95	50-90	20-40	2-16
	38-80	Stratified silt loam, sandy loam	ML, CL, SM, SC	A-4, A-2, A-1	0	0-2	95-100	65-100	40-85	15-75	15-35	NP-10
RcC:												
Richland	0-4	Channery loam	ML, CL, CL-ML, SC	A-4, A-6	0	5-15	80-95	65-80	55-80	40-70	16-35	3-20
	4-55	Clay loam, channery clay loam, channery loam	CL, SC, SM, ML	A-4, A-6, A-7	0	5-15	80-95	65-95	55-90	35-75	30-45	9-18
	55-80	Channery clay loam, very channery loam, channery loam	CL, GC, SM, GM	A-4, A-6, A-7	0	5-15	65-90	40-85	40-85	35-75	30-45	9-18
RcD:												
Richland	0-5	Channery loam	ML, CL, CL-ML, SC	A-4, A-6	0	5-15	80-95	65-80	55-80	40-70	16-35	3-20
	5-58	Loam, clay loam, channery clay loam	CL, SC, SM, ML	A-4, A-6, A-7	0	5-15	80-95	65-95	55-90	35-75	30-45	9-18
	58-80	Channery clay loam, very channery loam, silty clay loam	CL, GC, SM, GM	A-4, A-6, A-7	0	5-15	65-90	40-85	40-85	35-75	30-45	9-18

Table 18.--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	
Sa:												
Sarahsville-----	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-25
	9-42	Silty clay, clay, silty clay loam	CL, CH, MH, ML	A-7	0	0	100	100	95-100	85-100	40-70	15-40
	42-80	Silty clay loam, silty clay	CL, CH	A-7, A-6	0	0	100	100	95-100	85-100	30-60	15-35
SeB:												
Sees------------	0-9	Silty clay loam	ML, CL	A-6, A-7	0	0-15	90-100	90-100	80-100	70-90	30-45	12-25
	9-60	Silty clay, clay, silty clay loam	CH, MH, CL	A-7, A-6	0	0-15	90-100	90-100	85-100	80-95	35-70	20-40
	60-80	Silty clay, clay, silty clay loam	CH, MH, CL	A-7	0	0-30	80-100	80-100	75-100	70-95	45-75	25-45
Ub:												
Udorthents.												
Rock outcrop.												
Uc:												
Udorthents.												
Pits.												
Ud:												
Udorthents.												
Urban land.												
UpB:												
Upshur----------	0-8	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	95-100	95-100	85-100	65-90	25-40	5-15
	8-39	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	39-72	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	72-77	Weathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
UrC:												
Upshur----------	0-7	Silty clay loam	CL, ML	A-6, A-7	0	0	95-100	95-100	90-100	80-95	35-50	11-25
	7-34	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	34-66	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	66-72	Weathered bedrock			0	0	0	0	0	0	---	NP
UrD:												
Upshur----------	0-7	Silty clay loam	CL, ML	A-6, A-7	0	0	95-100	95-100	90-100	80-95	35-50	11-25
	7-32	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	32-56	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	56-60	Weathered bedrock			0	0	0	0	0	0	---	NP
UrD3:												
Upshur----------	0-5	Silty clay loam	CL, ML	A-6, A-7	0	0	95-100	95-100	90-100	80-95	35-50	11-25
	5-28	Silty clay, clay	MH, CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	28-46	Silty clay loam, silty clay, clay	CL, ML, MH, CH	A-6, A-7	0	0	80-100	65-100	60-100	55-95	35-55	11-25
	46-50	Weathered bedrock			0	0	0	0	0	0	---	NP
VaD2:												
Vandalia--------	0-7	Silty clay loam	ML, CL	A-4, A-6, A-7	0	0-5	80-100	75-100	70-95	50-90	25-45	5-20
	7-64	Silty clay loam, silty clay, clay	CL, CH, ML	A-6, A-7	0	0-5	75-100	70-95	65-90	60-85	35-55	15-30
	64-80	Silty clay, clay, channery silty clay loam	CL, CH, ML, MH	A-6, A-7	0	0-5	70-100	65-100	60-100	55-100	30-55	10-30
VtC:												
Vincent---------	0-9	Silt loam	ML, CL, CL-ML	A-6, A-4	0	0	100	100	90-100	70-90	25-35	5-15
	9-62	Silty clay, silty clay loam, clay	CH, MH, CL, ML	A-7, A-6	0	0	100	95-100	90-100	80-100	38-66	14-34
	62-80	Silty clay, silty clay loam, clay	CH, MH, CL, ML	A-7, A-6	0	0	100	95-100	85-100	75-100	38-66	14-34

Table 18.--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	Plas- ticity index
	In				Pct	Pct					Pct	
VwB:												
Vincent---------	0-10	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	95-100	85-95	35-50	14-26
	10-53	Silty clay, silty clay loam, clay	CH, MH, CL, ML	A-7, A-6	0	0	100	95-100	90-100	80-100	38-66	14-34
	53-80	Silty clay, silty clay loam, clay	CH, MH, CL, ML	A-7, A-6	0	0	100	95-100	85-100	75-100	38-66	14-34
W:												
Water.												
WhB:												
Wellston--------	0-9	Silt loam	ML	A-4	0	0	95-100	90-100	85-100	70-95	25-35	3-10
	9-37	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0-5	75-100	70-100	60-95	60-90	25-40	5-20
	37-47	Silt loam, loam, clay loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0-10	65-90	65-90	60-90	40-65	20-35	5-15
	47-72	Weathered bedrock			0	0	0	0	0	0	---	NP
WhC:												
Wellston--------	0-8	Silt loam	ML	A-4	0	0	95-100	90-100	85-100	70-95	25-35	3-10
	8-36	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0-5	75-100	70-100	60-95	60-90	25-40	5-20
	36-52	Loam, channery loam, very channery loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0-10	65-90	65-90	60-90	40-65	20-35	5-15
	52-57	Weathered bedrock			0	0	0	0	0	0	---	NP
WkB:												
Westmore--------	0-8	Silt loam	ML, CL-ML, CL	A-4	0	0	100	90-100	80-100	70-95	22-35	4-10
	8-26	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0-5	95-100	90-100	85-100	80-90	30-50	11-20
	26-64	Clay, silty clay, silty clay loam	CH, CL	A-7, A-6	0	0-15	80-100	65-95	60-90	55-90	38-70	18-40
	64-72	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
WkC2:												
Westmore--------	0-8	Silt loam	ML, CL-ML, CL	A-4	0	0	100	90-100	80-100	70-95	22-35	4-10
	8-26	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0-5	95-100	90-100	85-100	80-90	30-50	11-20
	26-64	Clay, silty clay, silty clay loamy	CH, CL	A-7, A-6	0	0-15	80-100	65-95	60-90	55-90	38-70	18-40
	64-72	Unweathered bedrock			0	0	0	0	0	0	---	NP
WmC:												
Westmoreland----	0-8	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	8-39	Channery clay loam, very channery clay loam, silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	39-44	Very channery loam, very channery silt loam, extremely channery clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	44-50	Weathered bedrock			0	0	0	0	0	0	0-14	NP
WmD:												
Westmoreland----	0-7	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	7-35	Channery clay loam, very channery clay loam, silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	35-40	Very channery loam, very channery silt loam, extremely channery clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	40-45	Weathered bedrock			0	0	0	0	0	0	0-14	NP

Table 18.--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	Plas- ticity index
	In				Pct	Pct					Pct	
WmE:												
Westmoreland----	0-6	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	6-34	Silty clay loam, silt loam, channery silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	34-42	Very channery loam, very channery silt loam, extremely channery loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	42-47	Weathered bedrock			0	0	0	0	0	0	0-14	NP
WnF:												
Westmoreland----	0-6	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	6-37	Silty clay loam, silt loam, channery silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	37-46	Very channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	46-48	Weathered bedrock			0	0	0	0	0	0	0-14	NP
Berks-----------	0-5	Channery silt loam	GM, ML, GC, SC	A-2, A-4	0	0-20	50-80	45-70	40-60	30-55	25-36	5-10
	5-23	Channery loam, very channery silt loam, extremely channery silt loam	GM, GC, SM, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	23-27	Channery loam, extremely channery silt loam, channery silt loam	GM, SM, GM-GC	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	27-31	Weathered bedrock			0	0	0	0	0	0	0-14	NP

Table 18.--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	
WrC:												
Westmoreland----	0-9	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	9-40	Silty clay loam, silt loam, channery silt loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	40-45	Very channery loam, extremely channery clay loam, channery silt loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	45-50	Weathered bedrock			0	0	0	0	0	0	0-14	NP
Urban land.												
WrD:												
Westmoreland----	0-8	Silt loam	ML, CL	A-4, A-6	0	0	85-100	80-100	75-95	60-95	0-35	NP-10
	8-36	Silt loam, channery clay loam, very channery clay loam	CL, ML, GM, GC	A-4, A-6, A-7	0	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	36-42	Very channery loam, very channery silt loam, extremely channery silty clay loam	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	42-47	Weathered bedrock			0	0	0	0	0	0	0-14	NP
Urban land.												

Table 18.--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	Plas-ticity index
	In				Pct	Pct					Pct	
WtB:												
Woodsfield------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	65-90	25-40	5-15
	9-20	Silt loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	65-90	30-50	10-25
	20-43	Silty clay loam, silty clay, clay	CH, CL, MH, ML	A-7, A-6	0	0-5	85-100	75-100	70-100	60-95	35-75	15-40
	43-61	Silty clay loam, very channery clay, channery silty clay	CH, CL, MH, ML	A-6, A-7	0	0-5	85-100	75-100	70-100	60-95	35-65	15-30
	61-65	Weathered bedrock			0	0	0	0	0	0	---	NP
WtC:												
Woodsfield------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	65-90	25-40	5-15
	8-18	Silt loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	65-90	30-50	10-25
	18-44	Silty clay loam, silty clay, clay	CH, CL, MH, ML	A-7, A-6	0	0-5	85-100	75-100	70-100	60-95	35-75	15-40
	44-56	Silty clay loam, very channery clay, channery silty clay	CH, CL, MH, ML	A-6, A-7	0	0-5	85-100	75-100	70-100	60-95	35-65	15-30
	56-62	Weathered bedrock			0	0	0	0	0	0	---	NP
ZnB:												
Zanesville------	0-11	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	11-32	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	32-58	Silt loam, silty clay loam	ML, CL, CL-ML	A-4, A-6	0	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	58-67	Unweathered bedrock			0	0	0	0	0	0	---	NP

Table 18.--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	
ZnC:												
Zanesville------	0-8	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	8-25	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	25-55	Silt loam, silty clay loam, channery silty clay loam	ML, CL, CL-ML	A-4, A-6	0	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	55-60	Unweathered bedrock			0	0	0	0	0	0	---	NP
Zp:												
Zipp------------	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-50	15-25
	8-46	Silty clay	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
	46-80	Silty clay	CL, CH	A-7	0	0	100	100	90-100	75-95	45-60	25-35
Zs:												
Zipp------------	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-50	15-25
	8-48	Silty clay	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
	48-80	Silty clay	CL, CH	A-7	0	0	100	100	90-100	75-95	45-60	25-35

Table 19.--Physical Properties of Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
AaB:												
Aaron-----------	0-9	10-27	1.20-1.40	0.60-2.00	0.19-0.23	Low	1.0-3.0	0.37	0.37	4	6	48
	9-30	35-60	1.30-1.60	0.06-0.20	0.14-0.18	High	---	0.28	0.28			
	30-50	35-60	1.35-1.65	0.06-0.20	0.10-0.14	High	---	0.28	0.28			
	50-60	---	---	0.00-0.20	---		---	---	---			
AaC:												
Aaron-----------	0-8	10-27	1.20-1.40	0.60-2.00	0.19-0.23	Low	1.0-3.0	0.37	0.37	4	6	48
	8-30	35-60	1.30-1.60	0.06-0.20	0.14-0.18	High	---	0.28	0.28			
	30-48	35-60	1.35-1.65	0.06-0.20	0.10-0.14	High	---	0.28	0.28			
	48-60	---	---	0.00-0.20	---		---	---	---			
AbB:												
Aaron-----------	0-9	10-27	1.20-1.40	0.60-2.00	0.19-0.23	Low	1.0-3.0	0.37	0.37	4	6	48
	9-30	35-60	1.30-1.60	0.06-0.20	0.14-0.18	High	---	0.28	0.28			
	30-52	35-60	1.35-1.65	0.06-0.20	0.10-0.14	High	---	0.28	0.28			
	52-60	---	---	0.00-0.20	---		---	---	---			
Upshur----------	0-7	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	7-37	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	37-72	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	72-80	---	---	---	---		---	---	---			
AbC2:												
Aaron-----------	0-7	10-27	1.20-1.40	0.60-2.00	0.19-0.23	Low	1.0-3.0	0.37	0.37	4	6	48
	7-28	35-60	1.30-1.60	0.06-0.20	0.14-0.18	High	---	0.28	0.28			
	28-48	35-60	1.35-1.65	0.06-0.20	0.10-0.14	High	---	0.28	0.28			
	48-60	---	---	0.00-0.20	---		---	---	---			
Upshur----------	0-6	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	6-35	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	35-70	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	70-80	---	---	---	---		---	---	---			
AgC:												
Allegheny-------	0-8	15-27	1.20-1.40	0.60-2.00	0.12-0.22	Low	1.0-4.0	0.32	0.32	5	5	56
	8-33	18-35	1.20-1.50	0.60-2.00	0.13-0.18	Low	---	0.28	0.28			
	33-80	10-35	1.20-1.40	0.60-2.00	0.08-0.17	Low	---	0.28	0.28			
BaD:												
Barkcamp--------	0-11	10-27	1.35-1.50	0.60-2.00	0.15-0.21	Low	0.5-2.0	0.32	0.37	5	6	48
	11-80	6-18	1.25-1.50	2.00-20.00	0.03-0.11	Low	0.1-0.5	0.20	0.64			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
BcB:												
Barkcamp--------	0-1	5-18	1.30-1.50	2.00-6.00	0.03-0.07	Low	0.0-0.5	0.24	0.64	5	8	---
	1-80	6-18	1.25-1.50	2.00-20.00	0.03-0.11	Low	0.0-0.3	0.10	0.43			
BcD:												
Barkcamp--------	0-1	5-18	1.30-1.50	2.00-6.00	0.03-0.07	Low	0.0-0.5	0.24	0.64	5	8	---
	1-80	6-18	1.25-1.50	2.00-20.00	0.03-0.11	Low	0.0-0.3	0.10	0.43			
BeC:												
Berks-----------	0-7	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	7-24	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	24-28	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	28-33	---	---	0.20-2.00	---		---	---	---			
BeD:												
Berks-----------	0-6	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	6-24	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	24-27	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	27-32	---	---	0.20-2.00	---		---	---	---			
BeE:												
Berks-----------	0-6	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	6-23	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	23-27	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	27-32	---	---	0.20-2.00	---		---	---	---			
BeF:												
Berks-----------	0-5	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	5-23	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	23-27	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	27-31	---	---	0.20-2.00	---		---	---	---			
BgB:												
Bethesda--------	0-7	27-40	1.40-1.65	0.20-0.60	0.14-0.18	Low	0.5-2.0	0.43	0.49	5	6	48
	7-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.1-0.5	0.32	0.64			
BgD:												
Bethesda--------	0-7	27-40	1.40-1.65	0.20-0.60	0.14-0.18	Low	0.5-2.0	0.43	0.49	5	6	48
	7-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.1-0.5	0.32	0.64			
BgE:												
Bethesda--------	0-7	27-40	1.40-1.65	0.20-0.60	0.14-0.18	Low	0.5-2.0	0.43	0.49	5	6	48
	7-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.1-0.5	0.32	0.64			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
BhB:												
Bethesda--------	0-4	18-27	1.40-1.55	0.60-2.00	0.10-0.16	Low	0.0-0.5	0.28	0.49	5	8	---
	4-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.0-0.3	0.32	0.64			
BhD:												
Bethesda--------	0-3	18-27	1.40-1.55	0.60-2.00	0.10-0.16	Low	0.0-0.5	0.28	0.49	5	8	---
	3-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.0-0.3	0.32	0.64			
BhF:												
Bethesda--------	0-3	18-27	1.40-1.55	0.60-2.00	0.10-0.16	Low	0.0-0.5	0.28	0.49	5	8	---
	3-80	18-35	1.60-1.90	0.20-0.60	0.04-0.10	Low	0.0-0.3	0.32	0.64			
BsD:												
Brookside-------	0-9	18-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	1.0-4.0	0.37	0.43	5	6	48
	9-58	35-55	1.45-1.70	0.20-0.60	0.07-0.14	High	0.5-1.0	0.37	0.55			
	58-80	30-60	1.45-1.75	0.20-0.60	0.05-0.12	High	0.1-0.3	0.37	0.64			
BtC:												
Brookside-------	0-10	18-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	1.0-4.0	0.37	0.43	5	6	48
	10-60	35-55	1.45-1.70	0.20-0.60	0.07-0.14	High	0.5-1.0	0.37	0.55			
	60-80	30-60	1.45-1.75	0.20-0.60	0.05-0.12	High	0.1-0.3	0.37	0.64			
Vandalia--------	0-8	20-35	1.20-1.50	0.20-2.00	0.12-0.18	Moderate	1.0-3.0	0.37	0.37	5	6	48
	8-60	35-50	1.30-1.60	0.06-0.60	0.12-0.15	High	---	0.32	0.32			
	60-80	27-50	1.30-1.60	0.06-0.60	0.08-0.12	High	---	0.32	0.32			
BtD:												
Brookside-------	0-9	18-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	1.0-4.0	0.37	0.43	5	6	48
	9-56	35-55	1.45-1.70	0.20-0.60	0.07-0.14	High	0.5-1.0	0.37	0.55			
	56-80	30-60	1.45-1.75	0.20-0.60	0.05-0.12	High	0.1-0.3	0.37	0.64			
Vandalia--------	0-7	20-35	1.20-1.50	0.20-2.00	0.12-0.18	Moderate	1.0-3.0	0.37	0.37	5	6	48
	7-60	35-50	1.30-1.60	0.06-0.60	0.12-0.15	High	---	0.32	0.32			
	60-80	27-50	1.30-1.60	0.06-0.60	0.08-0.12	High	---	0.32	0.32			
BtE:												
Brookside-------	0-7	18-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	1.0-4.0	0.37	0.43	5	6	48
	7-52	35-55	1.45-1.70	0.20-0.60	0.07-0.14	High	0.5-1.0	0.37	0.55			
	52-80	30-60	1.45-1.75	0.20-0.60	0.05-0.12	High	0.1-0.3	0.37	0.64			
Vandalia--------	0-6	20-35	1.20-1.50	0.20-2.00	0.12-0.18	Moderate	1.0-3.0	0.37	0.37	5	6	48
	6-48	35-50	1.30-1.60	0.06-0.60	0.12-0.15	High	---	0.32	0.32			
	48-80	27-50	1.30-1.60	0.06-0.60	0.08-0.12	High	---	0.32	0.32			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
Ca:												
Chagrin----------	0-9	10-27	1.20-1.40	0.60-2.00	0.20-0.24	Low	2.0-4.0	0.32	0.32	5	5	56
	9-34	18-30	1.20-1.50	0.60-2.00	0.14-0.20	Low	0.5-1.0	0.32	0.37			
	34-80	5-25	1.20-1.40	0.60-2.00	0.08-0.20	Low	0.3-1.0	0.32	0.43			
ChD:												
Clarksburg------	0-7	10-27	1.20-1.40	0.60-2.00	0.12-0.18	Low	1.0-3.0	0.28	0.37	4	6	48
	7-32	22-35	1.30-1.50	0.60-2.00	0.12-0.18	Moderate	0.0-0.5	0.28	0.28			
	32-43	22-35	1.40-1.70	0.06-0.60	0.06-0.12	Moderate	0.0-0.5	0.28	0.32			
	43-80	22-40	1.20-1.60	0.06-0.60	0.06-0.16	Moderate	0.0-0.5	0.28	0.32			
CkC:												
Claysville------	0-14	32-40	1.25-1.50	0.20-0.60	0.18-0.23	Moderate	3.0-7.0	0.28	0.32	5	4	86
	14-46	35-50	1.40-1.65	0.06-0.20	0.11-0.18	High	0.5-2.0	0.32	0.37			
	46-80	32-50	1.40-1.65	0.06-0.20	0.08-0.14	High	0.1-0.5	0.32	0.43			
Guernsey---------	0-9	13-27	1.30-1.50	0.60-2.00	0.19-0.24	Low	1.0-3.0	0.43	0.49	5	6	48
	9-19	22-38	1.35-1.55	0.20-2.00	0.15-0.21	Moderate	0.3-1.0	0.43	0.49			
	19-52	35-60	1.40-1.60	0.06-0.60	0.10-0.15	High	0.1-0.5	0.32	0.43			
	52-80	35-60	1.40-1.60	0.06-0.60	0.06-0.10	High	0.1-0.3	0.32	0.49			
CoD:												
Coshocton--------	0-9	15-23	1.30-1.50	0.60-2.00	0.18-0.23	Low	1.0-3.0	0.37	0.43	4	5	56
	9-17	18-30	1.35-1.55	0.20-2.00	0.14-0.20	Moderate	0.3-1.0	0.37	0.43			
	17-56	24-35	1.40-1.65	0.06-0.60	0.10-0.17	Moderate	0.1-0.5	0.37	0.55			
	56-63	24-36	1.45-1.70	0.06-0.60	0.08-0.12	Moderate	0.1-0.3	0.28	0.55			
	63-65	---	---	0.00-0.20	---		---	---	---			
CsC2:												
Coshocton--------	0-10	15-23	1.30-1.50	0.60-2.00	0.18-0.23	Low	1.0-3.0	0.37	0.43	4	5	56
	10-20	18-30	1.35-1.55	0.20-2.00	0.14-0.20	Moderate	0.3-1.0	0.37	0.43			
	20-43	24-35	1.40-1.65	0.06-0.60	0.10-0.17	Moderate	0.1-0.5	0.37	0.55			
	43-54	24-36	1.45-1.70	0.06-0.60	0.08-0.12	Moderate	0.1-0.3	0.28	0.55			
	54-60	---	---	0.00-0.20	---		---	---	---			
DkC:												
Dekalb-----------	0-7	10-20	1.20-1.50	6.00-20.00	0.08-0.12	Low	2.0-4.0	0.17	0.24	2	6	48
	7-26	7-18	1.20-1.50	6.00-20.00	0.06-0.12	Low	---	0.17	0.24			
	26-34	5-15	1.20-1.50	6.00-20.00	0.05-0.10	Low	---	0.17	0.24			
	34-39	---	---	2.00-6.00	---		---	---	---			
DkD:												
Dekalb-----------	0-7	10-20	1.20-1.50	6.00-20.00	0.08-0.12	Low	2.0-4.0	0.17	0.24	2	6	48
	7-28	7-18	1.20-1.50	6.00-20.00	0.06-0.12	Low	---	0.17	0.24			
	28-35	5-15	1.20-1.50	6.00-20.00	0.05-0.10	Low	---	0.17	0.24			
	35-39	---	---	2.00-6.00	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
DkE:												
Dekalb----------	0-5	10-20	1.20-1.50	6.00-20.00	0.08-0.12	Low	2.0-4.0	0.17	0.24	2	6	48
	5-28	7-18	1.20-1.50	6.00-20.00	0.06-0.12	Low	---	0.17	0.24			
	28-33	5-15	1.20-1.50	6.00-20.00	0.05-0.10	Low	---	0.17	0.24			
	33-35	---	---	2.00-6.00	---		---	---	---			
DmF:												
Dekalb----------	0-3	10-20	1.20-1.50	6.00-20.00	0.08-0.12	Low	2.0-5.0	0.17	0.24	2	8	---
	3-29	7-18	1.20-1.50	6.00-20.00	0.06-0.12	Low	0.0-0.5	0.17	0.24			
	29-37	5-15	1.20-1.50	6.00-20.00	0.05-0.10	Low	0.0-0.5	0.17	0.24			
	37-40	---	---	2.00-6.00	---		---	---	---			
Dp:												
Dumps.												
Ds:												
Dumps, mine.												
EbC:												
Elba------------	0-8	27-40	1.20-1.50	0.20-0.60	0.15-0.19	Low	1.0-3.0	0.43	0.49	3	7	38
	8-41	35-60	1.40-1.60	0.06-0.20	0.09-0.15	High	0.3-1.0	0.32	0.43			
	41-46	35-60	1.40-1.75	0.06-0.20	0.06-0.16	High	0.1-0.3	0.32	0.64			
	46-66	---	---	0.00-0.60	---		---	---	---			
EbD:												
Elba------------	0-8	27-40	1.20-1.50	0.20-0.60	0.15-0.19	Low	1.0-3.0	0.43	0.49	3	7	38
	8-44	35-60	1.40-1.60	0.06-0.20	0.09-0.15	High	0.3-1.0	0.32	0.43			
	44-48	35-60	1.40-1.75	0.06-0.20	0.06-0.16	High	0.1-0.3	0.32	0.64			
	48-66	---	---	0.00-0.60	---		---	---	---			
EbE:												
Elba------------	0-7	27-40	1.20-1.50	0.20-0.60	0.15-0.19	Low	1.0-3.0	0.43	0.49	3	7	38
	7-42	35-60	1.40-1.60	0.06-0.20	0.09-0.15	High	0.3-1.0	0.32	0.43			
	42-46	35-60	1.40-1.75	0.06-0.20	0.06-0.16	High	0.1-0.3	0.32	0.64			
	46-58	---	---	0.00-0.60	---		---	---	---			
EkF:												
Elba------------	0-6	27-40	1.20-1.50	0.20-0.60	0.15-0.19	Low	1.0-3.0	0.43	0.49	3	7	38
	6-40	35-60	1.40-1.60	0.06-0.20	0.09-0.15	High	0.3-1.0	0.32	0.43			
	40-45	35-60	1.40-1.75	0.06-0.20	0.06-0.16	High	0.1-0.3	0.32	0.64			
	45-52	---	---	0.00-0.60	---		---	---	---			
Berks-----------	0-5	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	5-23	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	23-27	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	27-31	---	---	0.20-2.00	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
EnB:												
Enoch-----------	0-8	18-27	1.40-1.60	0.60-2.00	0.14-0.18	Low	0.5-2.0	0.37	0.43	5	6	48
	8-21	27-35	1.30-1.80	0.20-0.60	0.04-0.08	Low	0.3-1.0	0.28	0.64			
	21-80	18-35	1.50-1.70	0.20-0.60	0.03-0.10	Low	0.1-0.3	0.28	0.64			
EnD:												
Enoch-----------	0-8	18-27	1.40-1.60	0.60-2.00	0.14-0.18	Low	0.5-2.0	0.37	0.43	5	6	48
	8-24	27-35	1.30-1.80	0.20-0.60	0.04-0.08	Low	0.3-1.0	0.28	0.64			
	24-80	18-35	1.50-1.70	0.20-0.60	0.03-0.10	Low	0.1-0.3	0.28	0.64			
EuA:												
Euclid----------	0-9	12-27	1.25-1.50	0.60-2.00	0.18-0.22	Low	2.0-3.0	0.37	0.37	5	5	56
	9-53	18-35	1.45-1.65	0.20-0.60	0.15-0.19	Low	0.5-1.0	0.37	0.37			
	53-80	15-32	1.45-1.60	0.20-0.60	0.14-0.18	Low	0.1-0.5	0.37	0.37			
FcB:												
Fairpoint-------	0-8	27-40	1.40-1.65	0.20-0.60	0.12-0.18	Moderate	0.5-2.0	0.43	0.49	5	7	38
	8-80	18-35	1.60-1.80	0.20-0.60	0.03-0.10	Moderate	0.1-0.5	0.32	0.64			
FcD:												
Fairpoint-------	0-8	27-40	1.40-1.65	0.20-0.60	0.12-0.18	Moderate	0.5-2.0	0.43	0.49	5	7	38
	8-80	18-35	1.60-1.80	0.20-0.60	0.03-0.10	Moderate	0.1-0.5	0.32	0.64			
FcE:												
Fairpoint-------	0-6	27-40	1.40-1.65	0.20-0.60	0.12-0.18	Moderate	0.5-2.0	0.43	0.49	5	7	38
	6-80	18-35	1.60-1.80	0.20-0.60	0.03-0.10	Moderate	0.1-0.5	0.32	0.64			
FtA:												
Fitchville------	0-12	16-27	1.30-1.45	0.60-2.00	0.17-0.21	Low	2.0-3.0	0.37	0.37	5	6	48
	12-46	20-35	1.45-1.70	0.20-0.60	0.15-0.19	Moderate	0.5-1.0	0.37	0.37			
	46-80	16-30	1.40-1.65	0.20-2.00	0.14-0.18	Low	0.1-0.5	0.37	0.37			
GdB:												
Gilpin----------	0-9	15-27	1.20-1.40	0.60-2.00	0.12-0.18	Low	0.5-4.0	0.32	0.32	3	8	---
	9-26	18-35	1.20-1.50	0.60-2.00	0.12-0.16	Low	---	0.24	0.28			
	26-33	15-35	1.20-1.50	0.60-2.00	0.08-0.12	Low	---	0.24	0.32			
	33-41	---	---	0.20-2.00	---		---	---	---			
GdC:												
Gilpin----------	0-8	15-27	1.20-1.40	0.60-2.00	0.12-0.18	Low	0.5-4.0	0.32	0.32	3	8	---
	8-24	18-35	1.20-1.50	0.60-2.00	0.12-0.16	Low	---	0.24	0.28			
	24-28	15-35	1.20-1.50	0.60-2.00	0.08-0.12	Low	---	0.24	0.32			
	28-35	---	---	0.20-2.00	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
GdD:												
Gilpin----------	0-6	15-27	1.20-1.40	0.60-2.00	0.12-0.18	Low	0.5-4.0	0.32	0.32	3	8	---
	6-26	18-35	1.20-1.50	0.60-2.00	0.12-0.16	Low	---	0.24	0.28			
	26-30	15-35	1.20-1.50	0.60-2.00	0.08-0.12	Low	---	0.24	0.32			
	30-35	---	---	0.20-2.00	---		---	---	---			
GnA:												
Glenford--------	0-10	15-27	1.30-1.45	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6	48
	10-40	18-35	1.45-1.65	0.20-2.00	0.14-0.18	Moderate	0.5-1.0	0.43	0.43			
	40-57	18-35	1.45-1.65	0.20-0.60	0.13-0.17	Low	0.3-0.5	0.43	0.43			
	57-80	15-30	1.40-1.60	0.20-2.00	0.12-0.17	Low	0.1-0.3	0.37	0.37			
GnB:												
Glenford--------	0-10	15-27	1.30-1.45	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6	48
	10-37	18-35	1.45-1.65	0.20-2.00	0.14-0.18	Moderate	0.5-1.0	0.43	0.43			
	37-80	15-30	1.40-1.60	0.20-2.00	0.12-0.17	Low	0.1-0.3	0.37	0.37			
GpA:												
Glenford--------	0-9	15-27	1.30-1.45	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6	48
	9-49	18-35	1.45-1.65	0.20-2.00	0.14-0.18	Moderate	0.5-1.0	0.43	0.43			
	49-80	15-30	1.40-1.60	0.20-2.00	0.12-0.17	Low	0.1-0.3	0.37	0.37			
Urban land.												
GrC:												
Guernsey--------	0-8	13-27	1.30-1.50	0.60-2.00	0.19-0.24	Low	1.0-3.0	0.43	0.49	5	6	48
	8-17	22-38	1.35-1.55	0.20-2.00	0.15-0.21	Moderate	0.3-1.0	0.43	0.49			
	17-54	35-60	1.40-1.60	0.06-0.60	0.10-0.15	High	0.1-0.5	0.32	0.43			
	54-80	35-60	1.40-1.60	0.06-0.60	0.06-0.10	High	0.1-0.3	0.32	0.49			
GrD2:												
Guernsey--------	0-9	13-27	1.30-1.50	0.60-2.00	0.19-0.24	Low	1.0-3.0	0.43	0.49	5	6	48
	9-19	22-38	1.35-1.55	0.20-2.00	0.15-0.21	Moderate	0.3-1.0	0.43	0.49			
	19-52	35-60	1.40-1.60	0.06-0.60	0.10-0.15	High	0.1-0.5	0.32	0.43			
	52-80	35-60	1.40-1.60	0.06-0.60	0.06-0.10	High	0.1-0.3	0.32	0.49			
GuC:												
Guernsey--------	0-9	13-27	1.30-1.50	0.60-2.00	0.19-0.24	Low	1.0-3.0	0.43	0.49	5	6	48
	9-18	22-38	1.35-1.55	0.20-2.00	0.15-0.21	Moderate	0.3-1.0	0.43	0.49			
	18-50	35-60	1.40-1.60	0.06-0.60	0.10-0.15	High	0.1-0.5	0.32	0.43			
	50-80	35-60	1.40-1.60	0.06-0.60	0.06-0.10	High	0.1-0.3	0.32	0.49			
Upshur----------	0-8	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	8-38	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	38-66	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	66-80	---	---	---	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
GuD:												
Guernsey--------	0-8	13-27	1.30-1.50	0.60-2.00	0.19-0.24	Low	1.0-3.0	0.43	0.49	5	6	48
	8-16	22-38	1.35-1.55	0.20-2.00	0.15-0.21	Moderate	0.3-1.0	0.43	0.49			
	16-48	35-60	1.40-1.60	0.06-0.60	0.10-0.15	High	0.1-0.5	0.32	0.43			
	48-80	35-60	1.40-1.60	0.06-0.60	0.06-0.10	High	0.1-0.3	0.32	0.49			
Upshur----------	0-7	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	7-34	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	34-68	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	68-80	---	---	---	---		---	---	---			
HaF:												
Hazleton--------	0-8	7-18	1.20-1.40	2.00-6.00	0.10-0.16	Low	2.0-4.0	0.15	0.17	3	6	48
	8-25	7-18	1.20-1.40	2.00-20.00	0.08-0.12	Low	0.0-0.5	0.15	0.20			
	25-42	5-15	1.20-1.40	2.00-20.00	0.06-0.12	Low	0.0-0.5	0.15	0.20			
	42-44	---	---	2.00-6.00	---		---	---	---			
HbE:												
Hazleton--------	0-8	7-18	1.20-1.40	2.00-6.00	0.10-0.14	Low	2.0-4.0	0.17	0.17	3	6	48
	8-40	7-18	1.20-1.40	2.00-20.00	0.08-0.12	Low	0.0-0.5	0.15	0.20			
	40-54	5-15	1.20-1.40	2.00-20.00	0.06-0.12	Low	0.0-0.5	0.15	0.20			
	54-56	---	---	2.00-6.00	---		---	---	---			
He:												
Hartshorn-------	0-8	18-27	1.30-1.45	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.32	0.37	3	6	48
	8-33	18-27	1.40-1.60	2.00-6.00	0.14-0.18	Low	0.5-1.0	0.24	0.43			
	33-74	4-10	1.45-1.60	2.00-20.00	0.03-0.06	Low	0.2-0.5	0.10	0.37			
	74-80	---	---	0.20-0.60	---		---	---	---			
Ho:												
Holton----------	0-9	6-18	1.35-1.55	0.60-2.00	0.20-0.24	Low	1.0-2.0	0.37	0.37	5	5	56
	9-36	6-18	1.35-1.55	0.60-2.00	0.14-0.22	Low	0.0-1.0	0.37	0.37			
	36-80	6-27	1.40-1.60	0.60-2.00	0.12-0.19	Low	0.0-0.5	0.28	0.32			
KaB:												
Kanawha---------	0-10	10-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	1.0-3.0	0.32	0.32	5	5	56
	10-40	18-35	1.30-1.50	0.60-2.00	0.14-0.18	Low	---	0.28	0.28			
	40-80	10-20	1.30-1.50	2.00-6.00	0.04-0.09	Low	---	0.24	0.32			
KeB:												
Keene-----------	0-9	12-25	1.30-1.45	0.60-2.00	0.21-0.24	Low	1.0-3.0	0.43	0.43	4	5	56
	9-21	18-33	1.30-1.55	0.20-2.00	0.18-0.22	Moderate	0.3-1.0	0.37	0.37			
	21-43	30-45	1.40-1.60	0.06-0.60	0.10-0.15	Moderate	0.1-0.5	0.37	0.43			
	43-70	27-53	1.40-1.60	0.06-0.60	0.08-0.13	Moderate	0.1-0.3	0.37	0.55			
	70-80	---	---	0.00-0.20	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
KeC:												
Keene-----------	0-7	12-25	1.30-1.45	0.60-2.00	0.21-0.24	Low	1.0-3.0	0.43	0.43	4	5	56
	7-18	18-33	1.30-1.55	0.20-2.00	0.18-0.22	Moderate	0.3-1.0	0.37	0.37			
	18-42	30-45	1.40-1.60	0.06-0.60	0.10-0.15	Moderate	0.1-0.5	0.37	0.43			
	42-57	27-53	1.40-1.60	0.06-0.60	0.08-0.13	Moderate	0.1-0.3	0.37	0.55			
	57-65	---	---	0.00-0.20	---		---	---	---			
Lc:												
Lindside--------	0-8	15-27	1.20-1.40	0.60-2.00	0.20-0.26	Low	2.0-4.0	0.32	0.32	5	---	---
	8-38	18-35	1.20-1.40	0.60-2.00	0.17-0.22	Low	0.0-0.5	0.37	0.37			
	38-80	18-35	1.20-1.40	0.60-6.00	0.12-0.18	Low	0.0-0.5	0.32	0.32			
Ld:												
Lindside--------	0-10	15-27	1.20-1.40	0.60-2.00	0.20-0.26	Low	2.0-4.0	0.32	0.32	5	---	---
	10-38	18-35	1.20-1.40	0.60-2.00	0.17-0.22	Low	0.0-0.5	0.37	0.37			
	38-80	18-35	1.20-1.40	0.60-6.00	0.12-0.18	Low	0.0-0.5	0.32	0.32			
LoC:												
Lowell----------	0-9	18-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	6	48
	9-16	27-33	1.20-1.40	0.20-2.00	0.16-0.20	Moderate	---	0.32	0.32			
	16-70	40-55	1.30-1.60	0.20-0.60	0.09-0.13	Moderate	---	0.28	0.28			
	70-75	---	---	0.00-0.06	---		---	---	---			
LoD:												
Lowell----------	0-7	18-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	6	48
	7-14	27-33	1.20-1.40	0.20-2.00	0.16-0.20	Moderate	---	0.32	0.32			
	14-70	40-55	1.30-1.60	0.20-0.60	0.09-0.13	Moderate	---	0.28	0.28			
	70-80	---	---	0.00-0.06	---		---	---	---			
LuE:												
Lowell----------	0-7	12-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	5	56
	7-12	35-60	1.30-1.60	0.20-2.00	0.13-0.19	Moderate	0.5-1.0	0.28	0.28			
	12-62	40-60	1.50-1.60	0.20-0.60	0.12-0.17	Moderate	0.0-0.5	0.28	0.28			
	62-70	---	---	0.00-0.06	---		0.0-0.5	---	---			
Upshur----------	0-6	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	6-33	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	33-68	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	68-72	---	---	---	---		---	---	---			
LwC:												
Lowell----------	0-9	18-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	6	48
	9-16	27-33	1.20-1.40	0.20-2.00	0.16-0.20	Moderate	---	0.32	0.32			
	16-66	40-55	1.30-1.60	0.20-0.60	0.09-0.13	Moderate	---	0.28	0.28			
	66-68	---	---	0.00-0.06	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
LwC:												
Westmoreland----	0-9	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	9-38	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	38-45	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	45-47	---	---	0.06-2.00	---		---	---	---			
LwD:												
Lowell----------	0-8	18-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	6	48
	8-14	27-33	1.20-1.40	0.20-2.00	0.16-0.20	Moderate	---	0.32	0.32			
	14-66	40-55	1.30-1.60	0.20-0.60	0.09-0.13	Moderate	---	0.28	0.28			
	66-68	---	---	0.00-0.06	---		---	---	---			
Westmoreland----	0-8	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	8-38	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	38-48	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	48-50	---	---	0.06-2.00	---		---	---	---			
LwE:												
Lowell----------	0-7	12-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	5	56
	7-12	35-60	1.30-1.60	0.20-2.00	0.13-0.19	Moderate	0.5-1.0	0.28	0.28			
	12-60	40-60	1.50-1.60	0.20-0.60	0.12-0.17	Moderate	0.0-0.5	0.28	0.28			
	60-64	---	---	0.00-0.06	---		0.0-0.5	---	---			
Westmoreland----	0-7	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	7-38	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	38-54	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	54-56	---	---	0.06-2.00	---		---	---	---			
LwF:												
Lowell----------	0-9	12-27	1.20-1.40	0.60-2.00	0.18-0.23	Low	1.0-4.0	0.37	0.37	3	5	56
	9-16	35-60	1.30-1.60	0.20-2.00	0.13-0.19	Moderate	0.5-1.0	0.28	0.28			
	16-67	40-60	1.50-1.60	0.20-0.60	0.12-0.17	Moderate	0.0-0.5	0.28	0.28			
	67-70	---	---	0.00-0.06	---		0.0-0.5	---	---			
Westmoreland----	0-6	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	6-33	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	33-41	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	41-45	---	---	0.06-2.00	---		---	---	---			
McA:												
McGary----------	0-9	20-27	1.30-1.60	0.60-2.00	0.18-0.24	Low	1.0-3.0	0.49	0.49	3	6	48
	9-36	40-50	1.45-1.60	0.06-0.60	0.11-0.18	High	0.0-1.0	0.32	0.32			
	36-80	35-50	1.50-1.65	0.01-0.06	0.11-0.18	Moderate	0.0-0.5	0.43	0.43			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
Md:												
Melvin----------	0-9	12-17	1.20-1.60	0.60-2.00	0.18-0.23	Low	0.5-3.0	0.43	0.43	5	5	56
	9-22	12-35	1.30-1.60	0.60-2.00	0.18-0.23	Low	0.5-2.0	0.43	0.43			
	22-80	7-35	1.40-1.70	0.60-2.00	0.16-0.23	Low	0.2-1.0	0.43	0.43			
MeB:												
Mentor----------	0-7	16-24	1.30-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	5	56
	7-52	16-35	1.40-1.60	0.60-2.00	0.18-0.20	Low	0.2-0.5	0.37	0.37			
	52-80	13-30	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.1-0.3	0.37	0.37			
MeC:												
Mentor----------	0-7	16-24	1.30-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	5	56
	7-48	16-35	1.40-1.60	0.60-2.00	0.18-0.20	Low	0.2-0.5	0.37	0.37			
	48-80	13-30	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.1-0.3	0.37	0.37			
MeD:												
Mentor----------	0-7	16-24	1.30-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	5	56
	7-48	16-35	1.40-1.60	0.60-2.00	0.18-0.20	Low	0.2-0.5	0.37	0.37			
	48-80	13-30	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.1-0.3	0.37	0.37			
MfB:												
Mentor----------	0-7	16-24	1.30-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	5	56
	7-45	16-35	1.40-1.60	0.60-2.00	0.18-0.20	Low	0.2-0.5	0.37	0.37			
	45-80	13-30	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.1-0.3	0.37	0.37			
Urban land.												
MnB:												
Morristown------	0-8	27-40	1.40-1.65	0.20-0.60	0.13-0.18	Moderate	0.5-2.0	0.43	0.49	5	4	86
	8-80	25-35	1.65-1.90	0.20-0.60	0.03-0.11	Moderate	0.1-0.5	0.32	0.64			
MnD:												
Morristown------	0-8	27-40	1.40-1.65	0.20-0.60	0.13-0.18	Moderate	0.5-2.0	0.43	0.49	5	4	86
	8-80	25-35	1.65-1.90	0.20-0.60	0.03-0.11	Moderate	0.1-0.5	0.32	0.64			
MoF:												
Morristown------	0-3	27-40	1.50-1.75	0.20-0.60	0.07-0.14	Moderate	0.0-0.5	0.32	0.64	5	8	---
	3-80	20-35	1.65-1.90	0.20-0.60	0.03-0.11	Moderate	0.0-0.3	0.32	0.64			
Nd:												
Newark----------	0-7	7-27	1.20-1.40	0.60-2.00	0.15-0.23	Low	1.0-4.0	0.43	0.43	5	5	56
	7-38	18-35	1.20-1.45	0.60-2.00	0.18-0.23	Low	---	0.43	0.43			
	38-80	12-40	1.30-1.50	0.60-2.00	0.15-0.22	Low	---	0.43	0.43			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
Ne:												
Newark	0-8	7-27	1.20-1.40	0.60-2.00	0.15-0.23	Low	1.0-4.0	0.43	0.43	5	5	56
	8-35	18-35	1.20-1.45	0.60-2.00	0.18-0.23	Low	---	0.43	0.43			
	35-80	12-40	1.30-1.50	0.60-2.00	0.15-0.22	Low	---	0.43	0.43			
No:												
Nolin	0-11	12-35	1.20-1.40	0.60-2.00	0.18-0.23	Low	2.0-4.0	0.43	0.43	5	5	56
	11-41	18-35	1.25-1.50	0.60-2.00	0.18-0.23	Low	0.3-2.0	0.43	0.43			
	41-80	10-30	1.30-1.55	0.60-6.00	0.10-0.23	Low	0.3-2.0	0.43	0.43			
OmB:												
Omulga	0-9	12-18	1.25-1.40	0.60-2.00	0.22-0.24	Low	0.5-2.0	0.43	0.43	4	5	56
	9-27	20-35	1.30-1.45	0.60-2.00	0.18-0.22	Moderate	0.3-1.0	0.43	0.43			
	27-60	18-30	1.60-1.80	0.06-0.20	0.06-0.08	Moderate	0.1-0.5	0.43	0.49			
	60-80	20-35	1.50-1.60	0.20-0.60	0.18-0.21	Moderate	0.1-0.5	0.43	0.49			
OmC:												
Omulga	0-8	12-18	1.25-1.40	0.60-2.00	0.22-0.24	Low	0.5-2.0	0.43	0.43	4	5	56
	8-28	20-35	1.30-1.45	0.60-2.00	0.18-0.22	Moderate	0.3-1.0	0.43	0.43			
	28-46	18-30	1.60-1.80	0.06-0.20	0.06-0.08	Moderate	0.1-0.5	0.43	0.49			
	46-80	20-35	1.50-1.60	0.20-0.60	0.18-0.21	Moderate	0.1-0.5	0.43	0.49			
Or:												
Orrville	0-8	12-27	1.25-1.45	0.60-2.00	0.18-0.22	Low	2.0-4.0	0.37	0.37	5	6	48
	8-38	18-30	1.30-1.50	0.60-2.00	0.15-0.19	Low	0.5-1.0	0.37	0.43			
	38-80	10-25	1.20-1.40	0.60-6.00	0.08-0.15	Low	0.1-0.3	0.37	0.49			
RcC:												
Richland	0-4	15-27	1.30-1.40	0.60-2.00	0.14-0.18	Low	1.0-3.0	0.28	0.49	5	8	---
	4-55	18-35	1.40-1.60	0.60-2.00	0.10-0.16	Moderate	0.3-1.0	0.28	0.43			
	55-80	18-35	1.40-1.60	0.60-2.00	0.07-0.11	Moderate	0.1-0.3	0.28	0.55			
RcD:												
Richland	0-5	15-27	1.30-1.40	0.60-2.00	0.14-0.18	Low	1.0-3.0	0.28	0.49	5	8	---
	5-58	18-35	1.40-1.60	0.60-2.00	0.10-0.16	Moderate	0.3-1.0	0.28	0.43			
	58-80	18-35	1.40-1.60	0.60-2.00	0.07-0.11	Moderate	0.1-0.3	0.28	0.55			
Sa:												
Sarahsville	0-9	27-40	1.30-1.50	0.20-0.60	0.19-0.23	Moderate	2.0-4.0	0.43	0.43	5	7	38
	9-42	35-60	1.45-1.65	0.00-0.06	0.10-0.15	High	0.5-1.0	0.32	0.32			
	42-80	35-50	1.45-1.65	0.00-0.06	0.12-0.16	High	0.1-0.3	0.32	0.32			
SeB:												
Sees	0-9	20-35	1.20-1.40	0.20-2.00	0.17-0.22	Low	2.0-5.0	0.37	0.37	5	7	38
	9-60	35-50	1.40-1.60	0.06-0.20	0.11-0.20	Moderate	---	0.28	0.28			
	60-80	40-60	1.50-1.60	0.06-0.20	0.10-0.15	Moderate	---	0.28	0.28			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in		Pct					
Ub:												
Udorthents.												
Rock outcrop.												
Uc:												
Udorthents.												
Pits.												
Ud:												
Udorthents.												
Urban land.												
UpB:												
Upshur----------	0-8	15-27	1.20-1.40	0.60-2.00	0.12-0.16	Moderate	1.0-4.0	0.43	0.43	5	6	48
	8-39	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	39-72	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	72-77	---	---	---	---		---	---	---			
UrC:												
Upshur----------	0-7	27-35	1.20-1.50	0.20-0.60	0.12-0.16	Moderate	0.5-3.0	0.37	0.37	5	7	38
	7-34	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	34-66	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	66-72	---	---	---	---		---	---	---			
UrD:												
Upshur----------	0-7	27-35	1.20-1.50	0.20-0.60	0.12-0.16	Moderate	0.5-3.0	0.37	0.37	5	7	38
	7-32	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	32-56	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	56-60	---	---	---	---		---	---	---			
UrD3:												
Upshur----------	0-5	27-35	1.20-1.50	0.20-0.60	0.12-0.16	Moderate	0.5-3.0	0.37	0.37	5	7	38
	5-28	40-55	1.30-1.60	0.06-0.20	0.10-0.14	High	---	0.32	0.32			
	28-46	27-45	1.30-1.60	0.06-0.20	0.08-0.12	Moderate	---	0.32	0.32			
	46-50	---	---	---	---		---	---	---			
VaD2:												
Vandalia--------	0-7	20-35	1.20-1.50	0.20-2.00	0.12-0.18	Moderate	1.0-3.0	0.37	0.37	5	6	48
	7-64	35-50	1.30-1.60	0.06-0.60	0.12-0.15	High	---	0.32	0.32			
	64-80	27-50	1.30-1.60	0.06-0.60	0.08-0.12	High	---	0.32	0.32			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
VtC:												
Vincent---------	0-9	20-27	1.20-1.50	0.60-2.00	0.22-0.24	Low	1.0-3.0	0.43	0.43	5	6	48
	9-62	35-55	1.35-1.65	0.06-0.20	0.10-0.18	High	0.3-1.0	0.32	0.32			
	62-80	35-55	1.40-1.70	0.06-0.20	0.08-0.18	High	0.1-0.3	0.32	0.32			
VwB:												
Vincent---------	0-10	27-40	1.25-1.55	0.20-0.60	0.21-0.23	Moderate	1.0-3.0	0.43	0.43	5	7	38
	10-53	35-55	1.35-1.65	0.06-0.20	0.10-0.18	High	0.3-1.0	0.32	0.32			
	53-80	35-55	1.40-1.70	0.06-0.20	0.08-0.18	High	0.1-0.3	0.32	0.32			
W:												
Water.												
WhB:												
Wellston--------	0-9	13-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	1.0-3.0	0.37	0.37	4	6	48
	9-37	18-35	1.30-1.65	0.60-2.00	0.17-0.21	Low	0.3-1.0	0.37	0.43			
	37-47	15-30	1.30-1.60	0.60-2.00	0.12-0.17	Low	0.1-0.5	0.37	0.55			
	47-72	---	---	0.00-0.20	---		---	---	---			
WhC:												
Wellston--------	0-8	13-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	1.0-3.0	0.37	0.37	4	6	48
	8-36	18-35	1.30-1.65	0.60-2.00	0.17-0.21	Low	0.3-1.0	0.37	0.43			
	36-52	15-30	1.30-1.60	0.60-2.00	0.12-0.17	Low	0.1-0.5	0.37	0.55			
	52-57	---	---	0.00-0.20	---		---	---	---			
WkB:												
Westmore--------	0-8	15-27	1.35-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	6	48
	8-26	25-35	1.40-1.60	0.60-2.00	0.17-0.21	Moderate	0.3-1.0	0.37	0.37			
	26-64	35-60	1.40-1.70	0.06-0.60	0.10-0.14	High	0.1-0.3	0.37	0.55			
	64-72	---	---	0.20-2.00	---		---	---	---			
WkC2:												
Westmore--------	0-8	15-27	1.35-1.50	0.60-2.00	0.20-0.24	Low	1.0-3.0	0.37	0.37	5	6	48
	8-26	25-35	1.40-1.60	0.60-2.00	0.17-0.21	Moderate	0.3-1.0	0.37	0.37			
	26-64	35-60	1.40-1.70	0.06-0.60	0.10-0.14	High	0.1-0.3	0.37	0.55			
	64-72	---	---	0.20-2.00	---		---	---	---			
WmC:												
Westmoreland----	0-8	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	8-39	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	39-44	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	44-50	---	---	0.06-2.00	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
WmD:												
Westmoreland----	0-7	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	7-35	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	35-40	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	40-45	---	---	0.06-2.00	---		---	---	---			
WmE:												
Westmoreland----	0-6	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	6-34	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	34-42	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	42-47	---	---	0.06-2.00	---		---	---	---			
WnF:												
Westmoreland----	0-6	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	6-37	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	37-46	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	46-48	---	---	0.06-2.00	---		---	---	---			
Berks-----------	0-5	5-23	1.20-1.50	0.60-6.00	0.08-0.12	Low	2.0-4.0	0.17	0.32	3	6	48
	5-23	5-32	1.20-1.60	0.60-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	23-27	5-20	1.20-1.60	2.00-6.00	0.04-0.10	Low	0.0-0.5	0.17	0.24			
	27-31	---	---	0.20-2.00	---		---	---	---			
WrC:												
Westmoreland----	0-9	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	9-40	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	40-45	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	45-50	---	---	0.06-2.00	---		---	---	---			
Urban land.												
WrD:												
Westmoreland----	0-8	15-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-4.0	0.37	0.37	3	5	56
	8-36	20-35	1.20-1.50	0.60-2.00	0.12-0.18	Low	0.0-0.5	0.28	0.32			
	36-42	18-35	1.20-1.50	0.60-2.00	0.06-0.10	Low	0.0-0.5	0.17	0.20			
	42-47	---	---	0.06-2.00	---		---	---	---			
Urban land.												
WtB:												
Woodsfield------	0-9	15-27	1.35-1.50	0.60-2.00	0.17-0.21	Low	1.0-3.0	0.43	0.43	4	6	48
	9-20	22-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.3-1.0	0.32	0.32			
	20-43	35-60	1.40-1.65	0.06-0.20	0.12-0.16	High	0.1-0.5	0.32	0.37			
	43-61	35-60	1.40-1.70	0.06-0.20	0.07-0.14	Moderate	0.1-0.3	0.32	0.37			
	61-65	---	---	0.00-0.20	---		---	---	---			

Table 19.--Physical Properties of Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
WtC:												
Woodsfield------	0-8	15-27	1.35-1.50	0.60-2.00	0.17-0.21	Low	1.0-3.0	0.43	0.43	4	6	48
	8-18	22-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.3-1.0	0.32	0.32			
	18-44	35-60	1.40-1.65	0.06-0.20	0.12-0.16	High	0.1-0.5	0.32	0.37			
	44-56	35-60	1.40-1.70	0.06-0.20	0.07-0.14	Moderate	0.1-0.3	0.32	0.37			
	56-62	---	---	0.00-0.20	---		---	---	---			
ZnB:												
Zanesville------	0-11	12-27	1.35-1.40	0.60-2.00	0.19-0.23	Low	1.0-2.0	0.43	0.43	4	5	56
	11-32	18-35	1.35-1.45	0.60-2.00	0.17-0.22	Low	---	0.37	0.37			
	32-58	18-33	1.50-1.75	0.06-0.60	0.08-0.12	Low	---	0.37	0.43			
	58-67	---	---	0.00-0.20	---		---	---	---			
ZnC:												
Zanesville------	0-8	12-27	1.35-1.40	0.60-2.00	0.19-0.23	Low	1.0-2.0	0.43	0.43	4	5	56
	8-25	18-35	1.35-1.45	0.60-2.00	0.17-0.22	Low	---	0.37	0.37			
	25-55	18-33	1.50-1.75	0.06-0.60	0.08-0.12	Low	---	0.37	0.43			
	55-60	---	---	0.00-0.20	---		---	---	---			
Zp:												
Zipp------------	0-8	27-40	1.40-1.60	0.20-0.60	0.20-0.22	Moderate	1.0-3.0	0.28	0.28	5	7	38
	8-46	40-55	1.45-1.65	0.06-0.20	0.11-0.13	High	0.5-1.0	0.28	0.28			
	46-80	40-55	1.50-1.70	0.00-0.20	0.08-0.10	High	0.2-1.0	0.28	0.28			
Zs:												
Zipp------------	0-8	27-40	1.40-1.60	0.20-0.60	0.20-0.22	Moderate	1.0-3.0	0.28	0.28	5	7	38
	8-48	40-55	1.45-1.65	0.06-0.20	0.11-0.13	High	0.5-1.0	0.28	0.28			
	48-80	40-55	1.50-1.70	0.00-0.20	0.08-0.10	High	0.2-1.0	0.28	0.28			

Table 20.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not available or were not estimated)

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
AaB:					
Aaron-----------	0-9	10-27	---	4.5-7.8	---
	9-30	35-60	---	5.1-7.8	---
	30-50	35-60	---	5.1-7.8	---
	50-60	---	---	---	---
AaC:					
Aaron-----------	0-8	10-27	---	4.5-7.8	---
	8-30	35-60	---	5.1-7.8	---
	30-48	35-60	---	5.1-7.8	---
	48-60	---	---	---	---
AbB:					
Aaron-----------	0-9	10-27	---	4.5-7.8	---
	9-30	35-60	---	5.1-7.8	---
	30-52	35-60	---	5.1-7.8	---
	52-60	---	---	---	---
Upshur----------	0-7	15-27	---	4.5-6.5	---
	7-37	40-55	---	4.5-8.4	---
	37-72	27-45	---	5.1-8.4	---
	72-80	---	---	---	---
AbC2:					
Aaron-----------	0-7	10-27	---	4.5-7.8	---
	7-28	35-60	---	5.1-7.8	---
	28-48	35-60	---	5.1-7.8	---
	48-60	---	---	---	---
Upshur----------	0-6	15-27	---	4.5-6.5	---
	6-35	40-55	---	4.5-8.4	---
	35-70	27-45	---	5.1-8.4	---
	70-80	---	---	---	---
AgC:					
Allegheny-------	0-8	15-27	---	3.6-5.5	---
	8-33	18-35	---	3.6-5.5	---
	33-80	10-35	---	3.6-5.5	---
BaD:					
Barkcamp--------	0-11	10-27	6.0-20.0	5.1-6.5	---
	11-80	6-18	5.0-12.0	2.0-3.6	---
BcB:					
Barkcamp--------	0-1	5-18	4.0-12.0	2.0-3.6	---
	1-80	6-18	5.0-12.0	2.0-3.6	---
BcD:					
Barkcamp--------	0-1	5-18	4.0-12.0	2.0-3.6	---
	1-80	6-18	5.0-12.0	2.0-3.6	---
BeC:					
Berks-----------	0-7	5-23	5.0-15.0	3.6-6.5	---
	7-24	5-32	5.0-10.0	3.6-6.5	---
	24-28	5-20	---	3.6-6.5	---
	28-33	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
BeD:					
Berks-----------	0-6	5-23	5.0-15.0	3.6-6.5	---
	6-24	5-32	5.0-10.0	3.6-6.5	---
	24-27	5-20	---	3.6-6.5	---
	27-32	---	---	---	---
BeE:					
Berks-----------	0-6	5-23	5.0-15.0	3.6-6.5	---
	6-23	5-32	5.0-10.0	3.6-6.5	---
	23-27	5-20	---	3.6-6.5	---
	27-32	---	---	---	---
BeF:					
Berks-----------	0-5	5-23	5.0-15.0	3.6-6.5	---
	5-23	5-32	5.0-10.0	3.6-6.5	---
	23-27	5-20	---	3.6-6.5	---
	27-31	---	---	---	---
BgB:					
Bethesda--------	0-7	27-40	10.0-24.0	4.5-6.0	---
	7-80	18-35	7.0-21.0	3.6-5.5	---
BgD:					
Bethesda--------	0-7	27-40	10.0-24.0	4.5-6.0	---
	7-80	18-35	7.0-21.0	3.6-5.5	---
BgE:					
Bethesda--------	0-7	27-40	10.0-24.0	4.5-6.0	---
	7-80	18-35	7.0-21.0	3.6-5.5	---
BhB:					
Bethesda--------	0-4	18-27	7.0-16.0	3.6-5.5	---
	4-80	18-35	7.0-20.0	3.6-5.5	---
BhD:					
Bethesda--------	0-3	18-27	7.0-16.0	3.6-5.5	---
	3-80	18-35	7.0-20.0	3.6-5.5	---
BhF:					
Bethesda--------	0-3	18-27	7.0-16.0	3.6-5.5	---
	3-80	18-35	7.0-20.0	3.6-5.5	---
BsD:					
Brookside-------	0-9	18-27	10.0-22.0	5.1-7.8	---
	9-58	35-55	20.0-35.0	5.1-7.8	0-20
	58-80	30-60	15.0-30.0	5.6-8.4	10-40
BtC:					
Brookside-------	0-10	18-27	10.0-22.0	5.1-7.8	---
	10-60	35-55	20.0-35.0	5.1-7.8	0-20
	60-80	30-60	15.0-30.0	5.6-8.4	10-40
Vandalia--------	0-8	20-35	---	4.5-6.0	---
	8-60	35-50	---	4.5-6.0	---
	60-80	27-50	---	5.1-7.3	---
BtD:					
Brookside-------	0-9	18-27	10.0-22.0	5.1-7.8	---
	9-56	35-55	20.0-35.0	5.1-7.8	0-20
	56-80	30-60	15.0-30.0	5.6-8.4	10-40

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
BtD:					
Vandalia--------	0-7	20-35	---	4.5-6.0	---
	7-60	35-50	---	4.5-6.0	---
	60-80	27-50	---	5.1-7.3	---
BtE:					
Brookside-------	0-7	18-27	10.0-22.0	5.1-7.8	---
	7-52	35-55	20.0-35.0	5.1-7.8	0-20
	52-80	30-60	15.0-30.0	5.6-8.4	10-40
Vandalia--------	0-6	20-35	---	4.5-6.0	---
	6-48	35-50	---	4.5-6.0	---
	48-80	27-50	---	5.1-7.3	---
Ca:					
Chagrin---------	0-9	10-27	10.0-24.0	5.6-7.3	---
	9-34	18-30	10.0-20.0	5.6-7.3	---
	34-80	5-25	2.0-12.0	5.6-7.3	---
ChD:					
Clarksburg------	0-7	10-27	12.0-20.0	5.1-6.5	---
	7-32	22-35	12.0-25.0	5.1-6.5	---
	32-43	22-35	12.0-25.0	5.1-6.5	---
	43-80	22-40	15.0-28.0	5.1-6.5	---
CkC:					
Claysville------	0-14	32-40	25.0-35.0	6.1-7.3	---
	14-46	35-50	25.0-45.0	6.1-7.8	---
	46-80	32-50	22.0-40.0	6.6-8.4	0-10
Guernsey--------	0-9	13-27	12.0-25.0	4.5-7.3	---
	9-19	22-38	14.0-25.0	4.5-6.0	---
	19-52	35-60	24.0-40.0	4.5-7.8	---
	52-80	35-60	24.0-50.0	5.1-8.4	0-15
CoD:					
Coshocton-------	0-9	15-23	10.0-18.0	3.6-7.3	---
	9-17	18-30	10.0-20.0	3.6-5.5	---
	17-56	24-35	12.0-22.0	3.6-5.5	---
	56-63	24-36	10.0-22.0	4.5-6.0	---
	63-65	---	---	---	---
CsC2:					
Coshocton-------	0-10	15-23	10.0-18.0	3.6-7.3	---
	10-20	18-30	10.0-20.0	3.6-5.5	---
	20-43	24-35	12.0-22.0	3.6-5.5	---
	43-54	24-36	10.0-22.0	4.5-6.0	---
	54-60	---	---	---	---
DkC:					
Dekalb----------	0-7	10-20	---	3.6-6.5	---
	7-26	7-18	---	3.6-5.5	---
	26-34	5-15	---	3.6-5.5	---
	34-39	---	---	---	---
DkD:					
Dekalb----------	0-7	10-20	---	3.6-6.5	---
	7-28	7-18	---	3.6-5.5	---
	28-35	5-15	---	3.6-5.5	---
	35-39	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
DkE:					
Dekalb----------	0-5	10-20	---	3.6-6.5	---
	5-28	7-18	---	3.6-5.5	---
	28-33	5-15	---	3.6-5.5	---
	33-35	---	---	---	---
DmF:					
Dekalb----------	0-3	10-20	10.0-18.0	3.6-4.4	---
	3-29	7-18	5.0-10.0	3.6-5.5	---
	29-37	5-15	5.0-10.0	3.6-5.5	---
	37-40	---	---	---	---
Dp:					
Dumps.					
Ds:					
Dumps, mine.					
EbC:					
Elba------------	0-8	27-40	15.0-26.0	5.6-7.3	---
	8-41	35-60	17.0-30.0	5.6-8.4	5-15
	41-46	35-60	17.0-30.0	7.4-8.4	10-50
	46-66	---	---	---	---
EbD:					
Elba------------	0-8	27-40	15.0-26.0	5.6-7.3	---
	8-44	35-60	17.0-30.0	5.6-8.4	5-15
	44-48	35-60	17.0-30.0	7.4-8.4	10-50
	48-66	---	---	---	---
EbE:					
Elba------------	0-7	27-40	15.0-26.0	5.6-7.3	---
	7-42	35-60	17.0-30.0	5.6-8.4	5-15
	42-46	35-60	17.0-30.0	7.4-8.4	10-50
	46-58	---	---	---	---
EkF:					
Elba------------	0-6	27-40	15.0-26.0	5.6-7.3	---
	6-40	35-60	17.0-30.0	5.6-8.4	5-15
	40-45	35-60	17.0-30.0	7.4-8.4	10-50
	45-52	---	---	---	---
Berks-----------	0-5	5-23	5.0-15.0	3.6-6.5	---
	5-23	5-32	5.0-10.0	3.6-6.5	---
	23-27	5-20	---	3.6-6.5	---
	27-31	---	---	---	---
EnB:					
Enoch-----------	0-8	18-27	10.0-20.0	4.5-7.3	---
	8-21	27-35	14.0-22.0	2.0-3.6	---
	21-80	18-35	10.0-25.0	2.0-3.6	---
EnD:					
Enoch-----------	0-8	18-27	10.0-20.0	4.5-7.3	---
	8-24	27-35	14.0-22.0	2.0-3.6	---
	24-80	18-35	10.0-25.0	2.0-3.6	---
EuA:					
Euclid----------	0-9	12-27	10.0-20.0	4.5-7.3	---
	9-53	18-35	9.0-18.0	4.5-6.0	---
	53-80	15-32	7.0-16.0	5.6-7.8	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
FcB:					
Fairpoint-------	0-8	27-40	10.0-24.0	5.6-7.3	---
	8-80	18-35	7.0-21.0	5.6-7.3	---
FcD:					
Fairpoint-------	0-8	27-40	10.0-24.0	5.6-7.3	---
	8-80	18-35	7.0-21.0	5.6-7.3	---
FcE:					
Fairpoint-------	0-6	27-40	10.0-24.0	5.6-7.3	---
	6-80	18-35	7.0-21.0	5.6-7.3	---
FtA:					
Fitchville------	0-12	16-27	14.0-22.0	4.5-7.3	---
	12-46	20-35	10.0-25.0	4.5-7.3	---
	46-80	16-30	---	5.6-7.8	0-5
GdB:					
Gilpin----------	0-9	15-27	---	3.6-5.5	---
	9-26	18-35	---	3.6-5.5	---
	26-33	15-35	---	3.6-5.5	---
	33-41	---	---	---	---
GdC:					
Gilpin----------	0-8	15-27	---	3.6-5.5	---
	8-24	18-35	---	3.6-5.5	---
	24-28	15-35	---	3.6-5.5	---
	28-35	---	---	---	---
GdD:					
Gilpin----------	0-6	15-27	---	3.6-5.5	---
	6-26	18-35	---	3.6-5.5	---
	26-30	15-35	---	3.6-5.5	---
	30-35	---	---	---	---
GnA:					
Glenford--------	0-10	15-27	10.0-18.0	4.5-7.3	---
	10-40	18-35	10.0-20.0	4.5-6.0	---
	40-57	18-35	10.0-20.0	5.6-7.3	---
	57-80	15-30	6.0-18.0	5.6-7.8	0-5
GnB:					
Glenford--------	0-10	15-27	10.0-18.0	4.5-7.3	---
	10-37	18-35	10.0-20.0	4.5-6.0	---
	37-80	15-30	6.0-18.0	5.6-7.8	0-5
GpA:					
Glenford--------	0-9	15-27	10.0-18.0	4.5-7.3	---
	9-49	18-35	10.0-20.0	4.5-6.0	---
	49-80	15-30	6.0-18.0	5.6-7.8	0-5
Urban land.					
GrC:					
Guernsey--------	0-8	13-27	12.0-25.0	4.5-7.3	---
	8-17	22-38	14.0-25.0	4.5-6.0	---
	17-54	35-60	24.0-40.0	4.5-7.8	---
	54-80	35-60	24.0-50.0	5.1-8.4	0-15

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
GrD2:					
Guernsey--------	0-9	13-27	12.0-25.0	4.5-7.3	---
	9-19	22-38	14.0-25.0	4.5-6.0	---
	19-52	35-60	24.0-40.0	4.5-7.8	---
	52-80	35-60	24.0-50.0	5.1-8.4	0-15
GuC:					
Guernsey--------	0-9	13-27	12.0-25.0	4.5-7.3	---
	9-18	22-38	14.0-25.0	4.5-6.0	---
	18-50	35-60	24.0-40.0	4.5-7.8	---
	50-80	35-60	24.0-50.0	5.1-8.4	0-15
Upshur----------	0-8	15-27	---	4.5-6.5	---
	8-38	40-55	---	4.5-8.4	---
	38-66	27-45	---	5.1-8.4	---
	66-80	---	---	---	---
GuD:					
Guernsey--------	0-8	13-27	12.0-25.0	4.5-7.3	---
	8-16	22-38	14.0-25.0	4.5-6.0	---
	16-48	35-60	24.0-40.0	4.5-7.8	---
	48-80	35-60	24.0-50.0	5.1-8.4	0-15
Upshur----------	0-7	15-27	---	4.5-6.5	---
	7-34	40-55	---	4.5-8.4	---
	34-68	27-45	---	5.1-8.4	---
	68-80	---	---	---	---
HaF:					
Hazleton--------	0-8	7-18	15.0-30.0	3.6-5.5	---
	8-25	7-18	5.0-15.0	3.6-5.5	---
	25-42	5-15	3.0-8.0	3.6-5.5	---
	42-44	---	---	---	---
HbE:					
Hazleton--------	0-8	7-18	15.0-30.0	3.6-5.5	---
	8-40	7-18	5.0-15.0	3.6-5.5	---
	40-54	5-15	5.0-15.0	3.6-5.5	---
	54-56	---	---	---	---
He:					
Hartshorn-------	0-8	18-27	9.0-22.0	5.6-7.3	---
	8-33	18-27	7.0-16.0	5.1-7.3	---
	33-74	4-10	2.0-6.0	5.6-7.3	---
	74-80	---	---	---	---
Ho:					
Holton----------	0-9	6-18	5.0-12.0	5.6-7.3	---
	9-36	6-18	3.0-9.0	5.1-7.3	---
	36-80	6-27	3.0-9.0	6.1-7.3	---
KaB:					
Kanawha---------	0-10	10-20	---	5.1-6.0	---
	10-40	18-35	---	5.1-7.3	---
	40-80	10-20	---	5.6-7.3	---
KeB:					
Keene-----------	0-9	12-25	10.0-18.0	4.5-7.3	---
	9-21	18-33	12.0-20.0	4.5-5.5	---
	21-43	30-45	15.0-30.0	4.5-5.5	---
	43-70	27-53	12.0-35.0	4.5-6.5	---
	70-80	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
KeC:					
Keene-----------	0-7	12-25	10.0-18.0	4.5-7.3	---
	7-18	18-33	12.0-20.0	4.5-5.5	---
	18-42	30-45	15.0-30.0	4.5-5.5	---
	42-57	27-53	12.0-35.0	4.5-6.5	---
	57-65	---	---	---	---
Lc:					
Lindside--------	0-8	15-27	15.0-30.0	5.1-7.8	---
	8-38	18-35	15.0-25.0	5.1-7.8	---
	38-80	18-35	8.0-25.0	5.6-7.8	---
Ld:					
Lindside--------	0-10	15-27	15.0-30.0	5.1-7.8	---
	10-38	18-35	15.0-25.0	5.1-7.8	---
	38-80	18-35	8.0-25.0	5.6-7.8	---
LoC:					
Lowell----------	0-9	18-27	---	4.5-6.5	---
	9-16	27-33	---	4.5-6.5	---
	16-70	40-55	---	5.1-7.8	---
	70-75	---	---	---	---
LoD:					
Lowell----------	0-7	18-27	---	4.5-6.5	---
	7-14	27-33	---	4.5-6.5	---
	14-70	40-55	---	5.1-7.8	---
	70-80	---	---	---	---
LuE:					
Lowell----------	0-7	12-27	5.0-15.0	4.5-6.5	---
	7-12	35-60	15.0-30.0	4.5-6.5	---
	12-62	40-60	16.0-40.0	5.1-7.8	---
	62-70	---	---	---	---
Upshur----------	0-6	15-27	---	4.5-6.5	---
	6-33	40-55	---	4.5-8.4	---
	33-68	27-45	---	5.1-8.4	---
	68-72	---	---	---	---
LwC:					
Lowell----------	0-9	18-27	---	4.5-6.5	---
	9-16	27-33	---	4.5-6.5	---
	16-66	40-55	---	5.1-7.8	---
	66-68	---	---	---	---
Westmoreland----	0-9	15-30	15.0-25.0	4.5-6.0	---
	9-38	20-35	10.0-20.0	4.5-6.0	---
	38-45	18-35	10.0-20.0	5.1-6.0	---
	45-47	---	---	---	---
LwD:					
Lowell----------	0-8	18-27	---	4.5-6.5	---
	8-14	27-33	---	4.5-6.5	---
	14-66	40-55	---	5.1-7.8	---
	66-68	---	---	---	---
Westmoreland----	0-8	15-30	15.0-25.0	4.5-6.0	---
	8-38	20-35	10.0-20.0	4.5-6.0	---
	38-48	18-35	10.0-20.0	5.1-6.0	---
	48-50	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
LwE:					
Lowell----------	0-7	12-27	5.0-15.0	4.5-6.5	---
	7-12	35-60	15.0-30.0	4.5-6.5	---
	12-60	40-60	16.0-40.0	5.1-7.8	---
	60-64	---	---	---	---
Westmoreland----	0-7	15-30	15.0-25.0	4.5-6.0	---
	7-38	20-35	10.0-20.0	4.5-6.0	---
	38-54	18-35	10.0-20.0	5.1-6.0	---
	54-56	---	---	---	---
LwF:					
Lowell----------	0-9	12-27	5.0-15.0	4.5-6.5	---
	9-16	35-60	15.0-30.0	4.5-6.5	---
	16-67	40-60	16.0-40.0	5.1-7.8	---
	67-70	---	---	---	---
Westmoreland----	0-6	15-30	15.0-25.0	4.5-6.0	---
	6-33	20-35	10.0-20.0	4.5-6.0	---
	33-41	18-35	10.0-20.0	5.1-6.0	---
	41-45	---	---	---	---
McA:					
McGary----------	0-9	20-27	5.0-14.0	5.6-7.3	---
	9-36	40-50	10.0-24.0	4.5-7.8	0-15
	36-80	35-50	10.0-18.0	7.4-8.4	15-40
Md:					
Melvin----------	0-9	12-17	5.0-10.0	5.6-7.8	---
	9-22	12-35	5.0-20.0	5.6-7.8	---
	22-80	7-35	5.0-20.0	5.6-7.8	---
MeB:					
Mentor----------	0-7	16-24	8.0-20.0	4.5-6.0	---
	7-52	16-35	8.0-20.0	4.5-6.5	---
	52-80	13-30	5.0-18.0	5.1-7.8	0-5
MeC:					
Mentor----------	0-7	16-24	8.0-20.0	4.5-6.0	---
	7-48	16-35	8.0-20.0	4.5-6.5	---
	48-80	13-30	5.0-18.0	5.1-7.8	0-5
MeD:					
Mentor----------	0-7	16-24	8.0-20.0	4.5-6.0	---
	7-48	16-35	8.0-20.0	4.5-6.5	---
	48-80	13-30	5.0-18.0	5.1-7.8	0-5
MfB:					
Mentor----------	0-7	16-24	8.0-20.0	4.5-6.0	---
	7-45	16-35	8.0-20.0	4.5-6.5	---
	45-80	13-30	5.0-18.0	5.1-7.8	0-5
Urban land.					
MnB:					
Morristown------	0-8	27-40	10.0-25.0	6.1-8.4	0-20
	8-80	25-35	8.0-21.0	7.4-8.4	0-20
MnD:					
Morristown------	0-8	27-40	10.0-25.0	6.1-8.4	0-20
	8-80	25-35	8.0-21.0	7.4-8.4	0-20

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
MoF:					
Morristown------	0-3	27-40	10.0-25.0	6.1-8.4	0-20
	3-80	20-35	8.0-15.0	7.4-8.4	0-20
Nd:					
Newark----------	0-7	7-27	---	5.6-7.8	---
	7-38	18-35	---	5.6-7.8	---
	38-80	12-40	---	5.6-7.8	---
Ne:					
Newark----------	0-8	7-27	---	5.6-7.8	---
	8-35	18-35	---	5.6-7.8	---
	35-80	12-40	---	5.6-7.8	---
No:					
Nolin-----------	0-11	12-35	6.0-20.0	5.6-8.4	---
	11-41	18-35	6.0-20.0	5.6-8.4	---
	41-80	10-30	6.0-18.0	5.1-8.4	---
OmB:					
Omulga----------	0-9	12-18	10.0-20.0	4.5-7.3	---
	9-27	20-35	10.0-18.0	3.6-5.5	---
	27-60	18-30	8.0-16.0	3.6-5.5	---
	60-80	20-35	11.0-18.0	4.5-6.0	---
OmC:					
Omulga----------	0-8	12-18	10.0-20.0	4.5-7.3	---
	8-28	20-35	10.0-18.0	3.6-5.5	---
	28-46	18-30	8.0-16.0	3.6-5.5	---
	46-80	20-35	11.0-18.0	4.5-6.0	---
Or:					
Orrville--------	0-8	12-27	10.0-20.0	5.1-7.3	---
	8-38	18-30	10.0-16.0	5.1-6.5	---
	38-80	10-25	5.0-12.0	5.1-7.3	---
RcC:					
Richland--------	0-4	15-27	10.0-20.0	5.1-7.3	---
	4-55	18-35	9.0-18.0	5.1-7.3	---
	55-80	18-35	9.0-18.0	5.6-7.3	---
RcD:					
Richland--------	0-5	15-27	10.0-20.0	5.1-7.3	---
	5-58	18-35	9.0-18.0	5.1-7.3	---
	58-80	18-35	9.0-18.0	5.6-7.3	---
Sa:					
Sarahsville-----	0-9	27-40	17.0-28.0	5.1-7.3	---
	9-42	35-60	17.0-34.0	5.1-7.3	---
	42-80	35-50	14.0-30.0	5.1-7.8	---
SeB:					
Sees------------	0-9	20-35	---	5.6-8.4	---
	9-60	35-50	---	5.6-8.4	---
	60-80	40-60	---	5.6-8.4	---
Ub:					
Udorthents.					
Rock outcrop.					

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
Uc:					
Udorthents.					
Pits.					
Ud:					
Udorthents.					
Urban land.					
UpB:					
Upshur----------	0-8	15-27	---	4.5-6.5	---
	8-39	40-55	---	4.5-8.4	---
	39-72	27-45	---	5.1-8.4	---
	72-77	---	---	---	---
UrC:					
Upshur----------	0-7	27-35	---	4.5-6.5	---
	7-34	40-55	---	4.5-8.4	---
	34-66	27-45	---	5.1-8.4	---
	66-72	---	---	---	---
UrD:					
Upshur----------	0-7	27-35	---	4.5-6.5	---
	7-32	40-55	---	4.5-8.4	---
	32-56	27-45	---	5.1-8.4	---
	56-60	---	---	---	---
UrD3:					
Upshur----------	0-5	27-35	---	4.5-6.5	---
	5-28	40-55	---	4.5-8.4	---
	28-46	27-45	---	5.1-8.4	---
	46-50	---	---	---	---
VaD2:					
Vandalia--------	0-7	20-35	---	4.5-6.0	---
	7-64	35-50	---	4.5-6.0	---
	64-80	27-50	---	5.1-7.3	---
VtC:					
Vincent---------	0-9	20-27	12.0-20.0	5.1-7.3	---
	9-62	35-55	20.0-35.0	4.5-7.3	---
	62-80	35-55	14.0-33.0	5.6-7.8	0-10
VwB:					
Vincent---------	0-10	27-40	13.0-30.0	5.1-7.3	---
	10-53	35-55	20.0-35.0	4.5-7.3	---
	53-80	35-55	14.0-33.0	5.6-7.8	0-10
W:					
Water.					
WhB:					
Wellston--------	0-9	13-27	8.0-16.0	5.1-6.5	---
	9-37	18-35	12.0-20.0	4.5-6.0	---
	37-47	15-30	12.0-22.0	4.5-6.0	---
	47-72	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
WhC:					
Wellston--------	0-8	13-27	8.0-16.0	5.1-6.5	---
	8-36	18-35	12.0-20.0	4.5-6.0	---
	36-52	15-30	12.0-22.0	4.5-6.0	---
	52-57	---	---	---	---
WkB:					
Westmore--------	0-8	15-27	10.0-20.0	5.1-7.3	---
	8-26	25-35	12.0-22.0	4.5-6.0	---
	26-64	35-60	20.0-30.0	5.1-7.8	0-5
	64-72	---	---	---	---
WkC2:					
Westmore--------	0-8	15-27	10.0-20.0	5.1-7.3	---
	8-26	25-35	12.0-22.0	4.5-6.0	---
	26-64	35-60	20.0-30.0	5.1-7.8	0-5
	64-72	---	---	---	---
WmC:					
Westmoreland----	0-8	15-30	15.0-25.0	4.5-6.0	---
	8-39	20-35	10.0-20.0	4.5-6.0	---
	39-44	18-35	10.0-20.0	5.1-6.0	---
	44-50	---	---	---	---
WmD:					
Westmoreland----	0-7	15-30	15.0-25.0	4.5-6.0	---
	7-35	20-35	10.0-20.0	4.5-6.0	---
	35-40	18-35	10.0-20.0	5.1-6.0	---
	40-45	---	---	---	---
WmE:					
Westmoreland----	0-6	15-30	15.0-25.0	4.5-6.0	---
	6-34	20-35	10.0-20.0	4.5-6.0	---
	34-42	18-35	10.0-20.0	5.1-6.0	---
	42-47	---	---	---	---
WnF:					
Westmoreland----	0-6	15-30	15.0-25.0	4.5-6.0	---
	6-37	20-35	10.0-20.0	4.5-6.0	---
	37-46	18-35	10.0-20.0	5.1-6.0	---
	46-48	---	---	---	---
Berks-----------	0-5	5-23	5.0-15.0	3.6-6.5	---
	5-23	5-32	5.0-10.0	3.6-6.5	---
	23-27	5-20	---	3.6-6.5	---
	27-31	---	---	---	---
WrC:					
Westmoreland----	0-9	15-30	15.0-25.0	4.5-6.0	---
	9-40	20-35	10.0-20.0	4.5-6.0	---
	40-45	18-35	10.0-20.0	5.1-6.0	---
	45-50	---	---	---	---
Urban land.					
WrD:					
Westmoreland----	0-8	15-30	15.0-25.0	4.5-6.0	---
	8-36	20-35	10.0-20.0	4.5-6.0	---
	36-42	18-35	10.0-20.0	5.1-6.0	---
	42-47	---	---	---	---
Urban land.					

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate
	In	Pct	meq/100g	pH	Pct
WtB:					
Woodsfield------	0-9	15-27	10.0-20.0	4.5-7.3	---
	9-20	22-35	12.0-22.0	4.5-6.5	---
	20-43	35-60	30.0-40.0	5.1-7.8	---
	43-61	35-60	20.0-30.0	5.6-7.8	0-5
	61-65	---	---	---	---
WtC:					
Woodsfield------	0-8	15-27	10.0-20.0	4.5-7.3	---
	8-18	22-35	12.0-22.0	4.5-6.5	---
	18-44	35-60	30.0-40.0	5.1-7.8	---
	44-56	35-60	20.0-30.0	5.6-7.8	0-5
	56-62	---	---	---	---
ZnB:					
Zanesville------	0-11	12-27	---	4.5-6.0	---
	11-32	18-35	---	4.5-6.0	---
	32-58	18-33	---	4.5-6.0	---
	58-67	---	---	---	---
ZnC:					
Zanesville------	0-8	12-27	---	4.5-6.0	---
	8-25	18-35	---	4.5-6.0	---
	25-55	18-33	---	4.5-6.0	---
	55-60	---	---	---	---
Zp:					
Zipp------------	0-8	27-40	12.0-30.0	5.6-7.3	---
	8-46	40-55	16.0-35.0	5.6-7.3	---
	46-80	40-55	16.0-35.0	6.6-7.8	0-15
Zs:					
Zipp------------	0-8	27-40	12.0-30.0	5.6-7.3	---
	8-48	40-55	16.0-35.0	5.6-7.3	---
	48-80	40-55	16.0-35.0	6.6-7.8	0-15

Table 21.--Water Features

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

Map symbol and soil name	Hydro-logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
AaB:									
Aaron-----------	C	None	---	---	1.5-3.0	Perched	Nov-Mar	---	---
AaC:									
Aaron-----------	C	None	---	---	1.5-3.0	Perched	Nov-Mar	---	---
AbB:									
Aaron-----------	C	None	---	---	1.5-3.0	Perched	Nov-Mar	---	---
Upshur----------	D	None	---	---	>6.0	---	---	---	---
AbC2:									
Aaron-----------	C	None	---	---	1.5-3.0	Perched	Nov-Mar	---	---
Upshur----------	D	None	---	---	>6.0	---	---	---	---
AgC:									
Allegheny-------	B	None	---	---	>6.0	---	---	---	---
BaD:									
Barkcamp--------	B	None	---	---	>6.0	---	---	---	---
BcB:									
Barkcamp--------	B	None	---	---	>6.0	---	---	---	---
BcD:									
Barkcamp--------	B	None	---	---	>6.0	---	---	---	---
BeC:									
Berks-----------	C	None	---	---	>6.0	---	---	---	---
BeD:									
Berks-----------	C	None	---	---	>6.0	---	---	---	---
BeE:									
Berks-----------	C	None	---	---	>6.0	---	---	---	---
BeF:									
Berks-----------	C	None	---	---	>6.0	---	---	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
BgB:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BgD:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BgE:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BhB:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BhD:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BhF:									
Bethesda--------	C	None	---	---	>6.0	---	---	---	---
BsD:									
Brookside-------	C	None	---	---	2.5-4.0	Perched	Mar-Jun	---	---
BtC:									
Brookside-------	C	None	---	---	2.5-4.0	Perched	Mar-Jun	---	---
Vandalia--------	D	None	---	---	4.0-6.0	Perched	Feb-Apr	---	---
BtD:									
Brookside-------	C	None	---	---	2.5-4.0	Perched	Mar-Jun	---	---
Vandalia--------	D	None	---	---	4.0-6.0	Perched	Feb-Apr	---	---
BtE:									
Brookside-------	C	None	---	---	2.5-4.0	Perched	Mar-Jun	---	---
Vandalia--------	D	None	---	---	4.0-6.0	Perched	Feb-Apr	---	---
Ca:									
Chagrin---------	B	Occasional	Brief	Nov-May	4.0-6.0	Apparent	Feb-Mar	---	---
ChD:									
Clarksburg------	C	None	---	---	1.5-3.0	Perched	Nov-Mar	---	---
CkC:									
Claysville------	C	None	---	---	1.0-2.0	Perched	Nov-Jun	---	---
Guernsey--------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
CoD:									
Coshocton	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
CsC2:									
Coshocton	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
DkC:									
Dekalb	A	None	---	---	>6.0	---	---	---	---
DkD:									
Dekalb	A	None	---	---	>6.0	---	---	---	---
DkE:									
Dekalb	A	None	---	---	>6.0	---	---	---	---
DmF:									
Dekalb	A	None	---	---	>6.0	---	---	---	---
Dp:									
Dumps.									
Ds:									
Dumps, mine.									
EbC:									
Elba	C	None	---	---	>6.0	---	---	---	---
EbD:									
Elba	C	None	---	---	>6.0	---	---	---	---
EbE:									
Elba	C	None	---	---	>6.0	---	---	---	---
EkF:									
Elba	C	None	---	---	>6.0	---	---	---	---
Berks	C	None	---	---	>6.0	---	---	---	---
EnB:									
Enoch	C	None	---	---	>6.0	---	---	---	---
EnD:									
Enoch	C	None	---	---	>6.0	---	---	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
EuA:									
Euclid----------	C	Rare	Brief	---	1.0-2.5	Apparent	Nov-Jun	---	---
FcB:									
Fairpoint-------	C	None	---	---	>6.0	---	---	---	---
FcD:									
Fairpoint-------	C	None	---	---	>6.0	---	---	---	---
FcE:									
Fairpoint-------	C	None	---	---	>6.0	---	---	---	---
FtA:									
Fitchville------	C	None	---	---	1.0-2.5	Perched	Nov-May	---	---
GdB:									
Gilpin----------	C	None	---	---	>6.0	---	---	---	---
GdC:									
Gilpin----------	C	None	---	---	>6.0	---	---	---	---
GdD:									
Gilpin----------	C	None	---	---	>6.0	---	---	---	---
GnA:									
Glenford--------	C	None	---	---	2.0-3.5	Perched	Nov-May	---	---
GnB:									
Glenford--------	C	None	---	---	2.0-3.5	Perched	Nov-May	---	---
GpA:									
Glenford--------	C	None	---	---	2.0-3.5	Perched	Nov-May	---	---
Urban land.									
GrC:									
Guernsey--------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
GrD2:									
Guernsey--------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
GuC:									
Guernsey--------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
Upshur----------	D	None	---	---	>6.0	---	---	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
GuD:									
Guernsey--------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
Upshur----------	D	None	---	---	>6.0	---	---	---	---
HaF:									
Hazleton--------	B	None	---	---	>6.0	---	---	---	---
HbE:									
Hazleton--------	B	None	---	---	>6.0	---	---	---	---
He:									
Hartshorn-------	B	Occasional	Brief	Jan-Apr	>6.0	---	---	---	---
Ho:									
Holton----------	C	Occasional	Very brief	Dec-Jun	0.5-1.5	Apparent	Dec-Apr	---	---
KaB:									
Kanawha---------	B	None	---	---	>6.0	---	---	---	---
KeB:									
Keene-----------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
KeC:									
Keene-----------	C	None	---	---	1.5-3.0	Perched	Jan-Apr	---	---
Lc:									
Lindside--------	C	Occasional	Brief	Dec-Apr	1.5-3.0	Apparent	Dec-Apr	---	---
Ld:									
Lindside--------	C	Frequent	Brief	Dec-Apr	1.5-3.0	Apparent	Dec-Apr	---	---
LoC:									
Lowell----------	C	None	---	---	2.5-5.0	Perched	Jan-Mar	---	---
LoD:									
Lowell----------	C	None	---	---	2.5-5.0	Perched	Jan-Mar	---	---
LuE:									
Lowell----------	C	None	---	---	>6.0	---	---	---	---
Upshur----------	D	None	---	---	>6.0	---	---	---	---
LwC:									
Lowell----------	C	None	---	---	2.5-5.0	Perched	Jan-Mar	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
LwC:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
LwD:									
Lowell----------	C	None	---	---	2.5-5.0	Perched	Jan-Mar	---	---
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
LwE:									
Lowell----------	C	None	---	---	>6.0	---	---	---	---
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
LwF:									
Lowell----------	C	None	---	---	>6.0	---	---	---	---
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
McA:									
McGary----------	C	None	---	---	0.5-1.5	Perched	Dec-Apr	---	---
Md:									
Melvin----------	D	Frequent	Very long	Sept-Jun	+2.0-0.5	Apparent	Sept-Jun	Long	2.0
MeB:									
Mentor----------	B	None	---	---	4.0-6.0	Apparent	Feb-Mar	---	---
MeC:									
Mentor----------	B	None	---	---	4.0-6.0	Apparent	Feb-Mar	---	---
MeD:									
Mentor----------	B	None	---	---	4.0-6.0	Apparent	Feb-Mar	---	---
MfB:									
Mentor----------	B	None	---	---	4.0-6.0	Apparent	Feb-Mar	---	---
Urban land.									
MnB:									
Morristown------	C	None	---	---	>6.0	---	---	---	---
MnD:									
Morristown------	C	None	---	---	>6.0	---	---	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
MoF:									
Morristown	C	None	---	---	>6.0	---	---	---	---
Nd:									
Newark	C	Occasional	Brief	Jan-Apr	0.5-1.5	Apparent	Dec-May	---	---
Ne:									
Newark	C	Frequent	Brief	Jan-Apr	0.5-1.5	Apparent	Dec-May	---	---
No:									
Nolin	B	Frequent	Brief	Feb-May	3.0-6.0	Apparent	Feb-Mar	---	---
OmB:									
Omulga	C	None	---	---	2.0-3.5	Perched	Jan-Apr	---	---
OmC:									
Omulga	C	None	---	---	2.0-3.5	Perched	Jan-Apr	---	---
Or:									
Orrville	C	Occasional	Brief	Nov-May	1.0-2.5	Apparent	Nov-Jun	---	---
RcC:									
Richland	B	None	---	---	3.0-6.0	Apparent	Nov-May	---	---
RcD:									
Richland	B	None	---	---	3.0-6.0	Apparent	Nov-May	---	---
Sa:									
Sarahsville	D	Frequent	Brief	Dec-May	1.0-2.5	Apparent	Dec-May	---	---
SeB:									
Sees	C	None	---	---	1.5-2.0	Perched	Jan-Apr	---	---
Ub:									
Udorthents.									
Rock outcrop.									
Uc:									
Udorthents.									
Pits.									
Ud:									
Udorthents.									

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	High water table and ponding: Kind of water table	High water table and ponding: Months	High water table and ponding: Ponding duration	High water table and ponding: Maximum ponding depth
					Ft				Ft
Ud:									
Urban land.									
UpB:									
Upshur----------	D	None	---	---	>6.0	---	---	---	---
UrC:									
Upshur----------	D	None	---	---	>6.0	---	---	---	---
UrD:									
Upshur----------	D	None	---	---	>6.0	---	---	---	---
UrD3:									
Upshur----------	D	None	---	---	>6.0	---	---	---	---
VaD2:									
Vandalia--------	D	None	---	---	4.0-6.0	Perched	Feb-Apr	---	---
VtC:									
Vincent---------	C	None	---	---	4.0-6.0	Perched	Jan-Apr	---	---
VwB:									
Vincent---------	C	None	---	---	4.0-6.0	Perched	Jan-Apr	---	---
W:									
Water.									
WhB:									
Wellston--------	B	None	---	---	>6.0	---	---	---	---
WhC:									
Wellston--------	B	None	---	---	>6.0	---	---	---	---
WkB:									
Westmore--------	C	None	---	---	>6.0	---	---	---	---
WkC2:									
Westmore--------	C	None	---	---	>6.0	---	---	---	---
WmC:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
WmD:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
WmE:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
WnF:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
Berks-----------	C	None	---	---	>6.0	---	---	---	---
WrC:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
Urban land.									
WrD:									
Westmoreland----	B	None	---	---	>6.0	---	---	---	---
Urban land.									
WtB:									
Woodsfield------	C	None	---	---	>6.0	---	---	---	---
WtC:									
Woodsfield------	C	None	---	---	>6.0	---	---	---	---
ZnB:									
Zanesville------	C	None	---	---	2.0-3.0	Perched	Dec-Apr	---	---
ZnC:									
Zanesville------	C	None	---	---	2.0-3.0	Perched	Dec-Apr	---	---
Zp:									
Zipp------------	D	Frequent	Long	Dec-May	0.5-1.0	Apparent	Dec-May	---	---
Zs:									
Zipp------------	D	Frequent	Very long	Sept-Jun	+2.0-0.5	Apparent	Jan-Dec	Long	2.0

Table 22.--Soil Features

("Hardness" and "potential frost action" and terms such as "high" and "moderate" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not available)

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
AaB:					
Aaron-----------	40-60	Soft	High	High	Moderate
AaC:					
Aaron-----------	40-60	Soft	High	High	Moderate
AbB:					
Aaron-----------	40-60	Soft	High	High	Moderate
Upshur----------	40-80	Soft	Moderate	High	Moderate
AbC2:					
Aaron-----------	40-60	Soft	High	High	Moderate
Upshur----------	40-80	Soft	Moderate	High	Moderate
AgC:					
Allegheny-------	>60	---	Moderate	Low	High
BaD:					
Barkcamp--------	>60	---	Moderate	High	High
BcB:					
Barkcamp--------	>60	---	Moderate	High	High
BcD:					
Barkcamp--------	>60	---	Moderate	High	High
BeC:					
Berks-----------	20-40	Soft	Low	Low	High
BeD:					
Berks-----------	20-40	Soft	Low	Low	High
BeE:					
Berks-----------	20-40	Soft	Low	Low	High
BeF:					
Berks-----------	20-40	Soft	Low	Low	High
BgB:					
Bethesda--------	>60	---	Moderate	Moderate	High
BgD:					
Bethesda--------	>60	---	Moderate	Moderate	High
BgE:					
Bethesda--------	>60	---	Moderate	Moderate	High
BhB:					
Bethesda--------	>60	---	Moderate	Moderate	High
BhD:					
Bethesda--------	>60	---	Moderate	Moderate	High
BhF:					
Bethesda--------	>60	---	Moderate	Moderate	High

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock Depth	Bedrock Hardness	Potential frost action	Risk of corrosion Uncoated steel	Risk of corrosion Concrete
	In				
BsD:					
Brookside-------	>60	---	Moderate	Moderate	Moderate
BtC:					
Brookside-------	>60	---	Moderate	Moderate	Moderate
Vandalia--------	>60	---	Moderate	High	Moderate
BtD:					
Brookside-------	>60	---	Moderate	Moderate	Moderate
Vandalia--------	>60	---	Moderate	High	Moderate
BtE:					
Brookside-------	>60	---	Moderate	Moderate	Moderate
Vandalia--------	>60	---	Moderate	High	Moderate
Ca:					
Chagrin---------	>60	---	Moderate	Low	Moderate
ChD:					
Clarksburg------	>60	---	Moderate	Moderate	Moderate
CkC:					
Claysville------	>60	---	High	High	Low
Guernsey--------	>50	Soft	High	High	Moderate
CoD:					
Coshocton-------	40-80	Soft	High	High	High
CsC2:					
Coshocton-------	40-80	Soft	High	High	High
DkC:					
Dekalb----------	20-40	Hard	Low	Low	High
DkD:					
Dekalb----------	20-40	Hard	Low	Low	High
DkE:					
Dekalb----------	20-40	Hard	Low	Low	High
DmF:					
Dekalb----------	20-40	Hard	Low	Low	High
Dp:					
Dumps.					
Ds:					
Dumps, mine.					
EbC:					
Elba------------	40-72	Soft	Moderate	High	Low
EbD:					
Elba------------	40-72	Soft	Moderate	High	Low
EbE:					
Elba------------	40-72	Soft	Moderate	High	Low

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
EkF:					
Elba	40-72	Soft	Moderate	High	Low
Berks	20-40	Soft	Low	Low	High
EnB:					
Enoch	>60	---	Moderate	High	High
EnD:					
Enoch	>60	---	Moderate	High	High
EuA:					
Euclid	>60	---	High	High	High
FcB:					
Fairpoint	>60	---	Moderate	High	Moderate
FcD:					
Fairpoint	>60	---	Moderate	High	Moderate
FcE:					
Fairpoint	>60	---	Moderate	High	Moderate
FtA:					
Fitchville	>60	---	High	High	Moderate
GdB:					
Gilpin	20-40	Soft	Moderate	Low	High
GdC:					
Gilpin	20-40	Soft	Moderate	Low	High
GdD:					
Gilpin	20-40	Soft	Moderate	Low	High
GnA:					
Glenford	>60	---	High	Moderate	Moderate
GnB:					
Glenford	>60	---	High	Moderate	Moderate
GpA:					
Glenford	>60	---	High	Moderate	Moderate
Urban land.					
GrC:					
Guernsey	>50	Soft	High	High	Moderate
GrD2:					
Guernsey	>50	Soft	High	High	Moderate
GuC:					
Guernsey	>50	Soft	High	High	Moderate
Upshur	>40	Soft	Moderate	High	Moderate
GuD:					
Guernsey	>50	Soft	High	High	Moderate
Upshur	40-80	Soft	Moderate	High	Moderate

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
HaF:					
Hazleton--------	40-72	Hard	Moderate	Low	High
HbE:					
Hazleton--------	40-72	Hard	Moderate	Low	High
He:					
Hartshorn-------	>60	Hard	Moderate	Low	Moderate
Ho:					
Holton----------	>60	Soft	High	High	Moderate
KaB:					
Kanawha---------	>72	---	Moderate	Low	Moderate
KeB:					
Keene-----------	40-80	Soft	High	High	High
KeC:					
Keene-----------	40-80	Soft	High	High	High
Lc:					
Lindside--------	>60	---	High	Moderate	Low
Ld:					
Lindside--------	>60	---	High	Moderate	Low
LoC:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
LoD:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
LuE:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
Upshur----------	40-80	Soft	Moderate	High	Moderate
LwC:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
Westmoreland----	40-72	Hard	Moderate	Low	High
LwD:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
Westmoreland----	40-72	Hard	Moderate	Low	High
LwE:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
Westmoreland----	40-72	Hard	Moderate	Low	High
LwF:					
Lowell----------	40-72	Soft	Moderate	High	Moderate
Westmoreland----	40-72	Hard	Moderate	Low	High
McA:					
McGary----------	>60	---	High	High	Low

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
Md:					
Melvin----------	>60	---	Low	High	Low
MeB:					
Mentor----------	>60	---	High	Moderate	High
MeC:					
Mentor----------	>60	---	High	Moderate	High
MeD:					
Mentor----------	>60	---	High	Moderate	High
MfB:					
Mentor----------	>60	---	High	Moderate	High
Urban land.					
MnB:					
Morristown------	>60	---	Moderate	Moderate	Low
MnD:					
Morristown------	>60	---	Moderate	Moderate	Low
MoF:					
Morristown------	>60	---	Moderate	Moderate	Low
Nd:					
Newark----------	>60	---	High	High	Low
Ne:					
Newark----------	>60	---	High	High	Low
No:					
Nolin-----------	>60	---	High	Low	Moderate
OmB:					
Omulga----------	>60	---	High	Moderate	High
OmC:					
Omulga----------	>60	---	High	Moderate	High
Or:					
Orrville--------	>60	---	High	High	Moderate
RcC:					
Richland--------	>60	---	Moderate	Moderate	Moderate
RcD:					
Richland--------	>60	---	Moderate	Moderate	Moderate
Sa:					
Sarahsville-----	>60	---	High	High	Moderate
SeB:					
Sees------------	>60	Hard	Moderate	Moderate	Low
Ub:					
Udorthents.					
Rock outcrop.					

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
Uc:					
Udorthents.					
Pits.					
Ud:					
Udorthents.					
Urban land.					
UpB:					
Upshur----------	40-80	Soft	Moderate	High	Moderate
UrC:					
Upshur----------	40-80	Soft	Moderate	High	Moderate
UrD:					
Upshur----------	40-80	Soft	Moderate	High	Moderate
UrD3:					
Upshur----------	40-80	Soft	Moderate	High	Moderate
VaD2:					
Vandalia--------	>60	---	Moderate	High	Moderate
VtC:					
Vincent---------	>60	---	Moderate	High	Moderate
VwB:					
Vincent---------	>60	---	Moderate	High	Moderate
W:					
Water.					
WhB:					
Wellston--------	40-72	Soft	High	Moderate	High
WhC:					
Wellston--------	40-72	Soft	High	Moderate	High
WkB:					
Westmore--------	48-72	Hard	High	High	Moderate
WkC2:					
Westmore--------	48-72	Hard	High	High	Moderate
WmC:					
Westmoreland----	40-72	Hard	Moderate	Low	High
WmD:					
Westmoreland----	40-72	Hard	Moderate	Low	High
WmE:					
Westmoreland----	40-72	Hard	Moderate	Low	High
WnF:					
Westmoreland----	40-72	Hard	Moderate	Low	High
Berks-----------	20-40	Soft	Low	Low	High

Table 22.--Soil Features--Continued

Map symbol and soil name	Bedrock Depth	Bedrock Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In				
WrC:					
Westmoreland----	40-72	Hard	Moderate	Low	High
Urban land.					
WrD:					
Westmoreland----	40-72	Hard	Moderate	Low	High
Urban land.					
WtB:					
Woodsfield------	40-72	Soft	Moderate	High	Moderate
WtC:					
Woodsfield------	40-72	Soft	Moderate	High	Moderate
ZnB:					
Zanesville------	40-80	Hard	High	Moderate	High
ZnC:					
Zanesville------	40-80	Hard	High	Moderate	High
Zp:					
Zipp------------	>60	---	Moderate	High	Low
Zs:					
Zipp------------	>60	---	Moderate	High	Low

Table 23.--Classification of the Soils

(Classification is based on soil taxonomy at the time the fieldwork was completed and does not include recent amendments to "Soil Taxonomy." For more detailed information, contact the local office of the Natural Resources Conservation Service)

Soil name	Family or higher taxonomic class
Aaron	Aquic Hapludalfs, fine, mixed, mesic
Allegheny	Typic Hapludults, fine-loamy, mixed, mesic
Barkcamp	Typic Udorthents, loamy-skeletal, siliceous, acid, mesic
Berks	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Bethesda	Typic Udorthents, loamy-skeletal, mixed, acid, mesic
Brookside	Typic Hapludalfs, fine, mixed, mesic
Chagrin	Dystric Fluventic Eutrochrepts, fine-loamy, mixed, mesic
Clarksburg	Typic Fragiudalfs, fine-loamy, mixed, mesic
Claysville	Aquic Hapludolls, fine, mixed, mesic
Coshocton	Aquultic Hapludalfs, fine-loamy, mixed, mesic
Dekalb	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Elba	Typic Hapludalfs, fine, mixed, mesic
Enoch	Typic Udorthents, loamy-skeletal, siliceous, acid, mesic
Euclid	Aeric Haplaquepts, fine-silty, mixed, nonacid, mesic
Fairpoint	Typic Udorthents, loamy-skeletal, mixed, nonacid, mesic
Fitchville	Aeric Ochraqualfs, fine-silty, mixed, mesic
Gilpin	Typic Hapludults, fine-loamy, mixed, mesic
Glenford	Aquic Hapludalfs, fine-silty, mixed, mesic
Guernsey	Aquic Hapludalfs, fine, mixed, mesic
Hartshorn	Dystric Fluventic Eutrochrepts, fine-loamy over sandy or sandy-skeletal, mixed, mesic
Hazleton	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Holton	Aeric Haplaquepts, coarse-loamy, mixed, nonacid, mesic
Kanawha	Typic Hapludalfs, fine-loamy, mixed, mesic
Keene	Aquic Hapludalfs, fine-silty, mixed, mesic
Lindside	Fluvaquentic Eutrochrepts, fine-silty, mixed, mesic
Lowell	Typic Hapludalfs, fine, mixed, mesic
McGary	Aeric Ochraqualfs, fine, mixed, mesic
Melvin	Typic Fluvaquents, fine-silty, mixed, nonacid, mesic
Mentor	Typic Hapludalfs, fine-silty, mixed, mesic
Morristown	Typic Udorthents, loamy-skeletal, mixed (calcareous), mesic
Newark	Aeric Fluvaquents, fine-silty, mixed, nonacid, mesic
Nolin	Dystric Fluventic Eutrochrepts, fine-silty, mixed, mesic
Omulga	Typic Fragiudalfs, fine-silty, mixed, mesic
Orrville	Aeric Fluvaquents, fine-loamy, mixed, nonacid, mesic
Richland	Typic Hapludalfs, fine-loamy, mixed, mesic
Sarahsville	Aeric Haplaquepts, fine, mixed, nonacid, mesic
Sees	Aquollic Hapludalfs, fine, mixed, mesic
Upshur	Typic Hapludalfs, fine, mixed, mesic
Vandalia	Typic Hapludalfs, fine, mixed, mesic
Vincent	Typic Hapludalfs, fine, mixed, mesic
Wellston	Ultic Hapludalfs, fine-silty, mixed, mesic
Westmore	Typic Hapludalfs, fine-silty, mixed, mesic
Westmoreland	Ultic Hapludalfs, fine-loamy, mixed, mesic
Woodsfield	Typic Hapludalfs, fine, mixed, mesic
Zanesville	Typic Fragiudalfs, fine-silty, mixed, mesic
Zipp	Typic Haplaquepts, fine, mixed, nonacid, mesic

Interpretive Groups

Interpretive Groups

(Dashes indicate that the soil was not assigned to the interpretive group)

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
AaB	2E	Yes		
Aaron			A-6	4C
AaC	3E	No		
Aaron			A-6	4C
AbB	2E	Yes		
Aaron			A-6	4C
Upshur			A-1	3C
AbC2	3E	No		
Aaron			A-6	4C
Upshur			A-1	3C
AgC	3E	No		
Allegheny			A-1	4A
BaD	6S	No		
Barkcamp			G-1	---
BcB	8S	No		
Barkcamp			H-1	---
BcD	8S	No		
Barkcamp			H-1	---
BeC	3E	No		
Berks			F-1	4F
BeD	4E	No		
Berks			F-1	4R/3R
BeE	6E	No		
Berks			F-2	4R/3R
BeF	7E	No		
Berks			H-1	4R/3R
BgB	3S	No		
Bethesda			B-4	---
BgD	4S	No		
Bethesda			B-4	---
BgE	6E	No		
Bethesda			E-2	---
BhB	6S	No		
Bethesda			E-3	4F
BhD	6S	No		
Bethesda			E-3	4R
BhF	7E	No		
Bethesda			H-1	4R

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
BsD	4E	No		
Brookside			A-2	5R/4R
BtC	3E	No		
Brookside			F-5	5A
Vandalia			A-1	4C
BtD	4E	No		
Brookside			F-6	5R/4R
Vandalia			A-2	4R
BtE	6E	No		
Brookside			F-6	5R/4R
Vandalia			A-3	4R
Ca	2W	Yes		
Chagrin			A-5	5A
ChD	4E	No		
Clarksburg			F-3	4R
CkC	3W	No		
Claysville			C-2	4C
Guernsey			C-2	4A
CoD	4E	No		
Coshocton			A-2	4R/3R
CsC2	3E	No		
Coshocton			A-6	4A
DkC	3E	No		
Dekalb			F-1	3F
DkD	4E	No		
Dekalb			F-1	4R/3R
DkE	6E	No		
Dekalb			F-2	4R/3R
DmF	7S	No		
Dekalb			A-4	4R/3R
Dp. Dumps.				
Ds. Dumps, mine.				
EbC	3E	No		
Elba			F-5	3C
EbD	4E	No		
Elba			F-5	3R
EbE	6E	No		
Elba			F-6	3R

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
EkF	7E	No		
Elba			H-1	3R
Berks			H-1	4R/3R
EnB	6S	No		
Enoch			G-1	---
EnD	6S	No		
Enoch			G-1	---
EuA	2W	Yes*		
Euclid			C-3	5A
FcB	3S	No		
Fairpoint			B-4	---
FcD	4S	No		
Fairpoint			B-4	---
FcE	6E	No		
Fairpoint			B-2	---
FtA	2W	Yes*		
Fitchville			C-1	5A
GdB	2E	Yes		
Gilpin			F-1	4A
GdC	3E	No		
Gilpin			F-1	4A
GdD	4E	No		
Gilpin			F-1	4R
GnA	1	Yes		
Glenford			A-6	5A
GnB	2E	Yes		
Glenford			A-6	5A
GpA.				
Glenford.				
Urban land.				
GrC	3E	No		
Guernsey			A-6	4A
GrD2	4E	No		
Guernsey			A-2	4R
GuC	3E	No		
Guernsey			A-6	4A
Upshur			A-6	3C

See footnotes at end of table.

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
GuD	4E	No		
Guernsey			A-2	4R
Upshur			A-2	4R/3R
HaF	7S	No		
Hazleton			H-1	4R/3R
HbE	6E	No		
Hazleton			B-2	4R/3R
He	2S	Yes		
Hartshorn			B-3	5A
Ho	3W	Yes*		
Holton			C-3	5A
KaB	2E	Yes		
Kanawha			A-5	4A
KeB	2E	Yes		
Keene			A-6	4A
KeC	3E	No		
Keene			A-6	4A
Lc	2W	Yes		
Lindside			A-5	5A
Ld	2W	Yes**		
Lindside			A-5	5A
LoC	3E	No		
Lowell			A-1	4C
LoD	4E	No		
Lowell			A-2	5R
LuE	6E	No		
Lowell			A-3	5R
Upshur			A-3	4R/3R
LwC	3E	No		
Lowell			A-1	4C
Westmoreland			A-1	4A
LwD	4E	No		
Lowell			A-2	5R
Westmoreland			A-2	4R
LwE	6E	No		
Lowell			A-3	5R
Westmoreland			A-3	4R

See footnotes at end of table.

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
LwF	7E	No		
Lowell			H-1	5R
Westmoreland			H-1	4R
McA	3W	Yes*		
McGary			C-2	4W
Md	5W	No		
Melvin			---	6W
MeB	2E	Yes		
Mentor			A-6	5A
MeC	3E	No		
Mentor			A-6	5A
MeD	6E	No		
Mentor			A-2	5R
MfB.				
Mentor.				
Urban land.				
MnB	3S	No		
Morristown			B-4	---
MnD	4S	No		
Morristown			B-4	---
MoF	7E	No		
Morristown			H-1	---
Nd	2W	Yes*		
Newark			C-3	5W
Ne	2W	Yes***		
Newark			C-3	5W
No	2W	Yes**		
Nolin			A-5	5A
OmB	2E	Yes		
Omulga			F-3	4D
OmC	3E	No		
Omulga			F-3	4D
Or	2W	Yes*		
Orrville			C-3	5A
RcC	3E	No		
Richland			A-1	5A
RcD	4E	No		
Richland			A-2	5R/4R

See footnotes at end of table.

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
Sa	4W	No		
Sarahsville			C-2	5W
SeB	2W	Yes		
Sees			A-6	4C
Ub:				
Udorthents.				
Rock outcrop.				
Uc:				
Udorthents.				
Pits.				
Ud:				
Udorthents.				
Urban land.				
UpB	3E	Yes		
Upshur			F-5	3C
UrC	4E	No		
Upshur			F-5	3C
UrD	6E	No		
Upshur			F-5	4R/3R
UrD3	7E	No		
Upshur			F-5	4R/3R
VaD2	4E	No		
Vandalia			F-5	4R
VtC	3E	No		
Vincent			A-1	4C
VwB	2E	Yes		
Vincent			A-1	4C
WhB	2E	Yes		
Wellston			A-6	4A
WhC	3E	No		
Wellston			A-6	4A
WkB	2E	Yes		
Westmore			A-6	4A
WkC2	3E	No		
Westmore			A-6	4A
WmC	3E	No		
Westmoreland			A-1	4A
WmD	4E	No		
Westmoreland			A-2	4R

See footnotes at end of table.

Interpretive Groups--Continued

Soil name and map symbol	Land capability	Prime farmland	Pasture and hayland suitability group	Woodland ordination symbol (north/south aspect)
WmE	6E	No		
Westmoreland			A-3	4R
WnF	7E	No		
Westmoreland			H-1	4R
Berks			H-1	4R/3R
WrC, WrD.				
Westmoreland.				
Urban land.				
WtB	2E	Yes		
Woodsfield			A-1	4C
WtC	3E	No		
Woodsfield			A-1	4C
ZnB	2E	Yes		
Zanesville			F-3	4D
ZnC	3E	No		
Zanesville			F-3	4D
Zp	4W	Yes***		
Zipp			C-3	5W
Zs	5W	No		
Zipp			---	5W

* Where drained.
** Where protected from flooding or not frequently flooded during the growing season.
*** Where drained and either protected from flooding or not frequently flooded during the growing season.

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