United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

In cooperation with Illinois
Agricultural Experiment
Station

Soil Survey of Jefferson County, Illinois

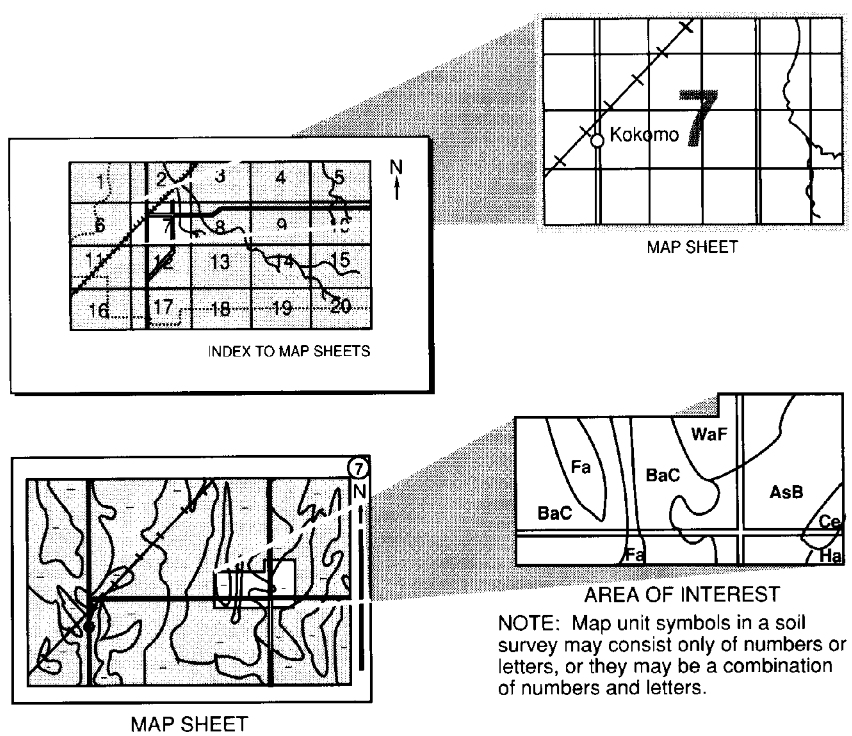
How To Use This Soil Survey

This publication consists of a manuscript and a set of soil maps. The information provided 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.



National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the Jefferson County Soil and Water Conservation District. Financial assistance was provided by the Jefferson County Board and the Illinois Department of Agriculture.

Major fieldwork for this soil survey was completed in 2005. Soil names and descriptions were approved in 2005. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2005. The tables reflect the data in effect as of October 2009. The most current official data are available on the Internet (http://soils.usda.gov).

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

Nondiscrimination Statement

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

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Issued 2010

Foreword

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

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

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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

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

William J. Gradle
State Conservationist
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Soil Survey of
Jefferson County, Illinois

By Dwayne R. Williams, Bryan C. Fitch, and Samuel J. Indorante,
Natural Resources Conservation Service

Fieldwork for the updated survey by Dwayne R. Williams,
Samuel J. Indorante, W. Matt McCauley, and Bryan C. Fitch,
Natural Resources Conservation Service

Previous soil survey by David E. Preloger, Natural Resources Conservation Service; fieldwork by Bryan C. Fitch, Natural Resources Conservation Service, and Rick L. Miller, Jefferson County

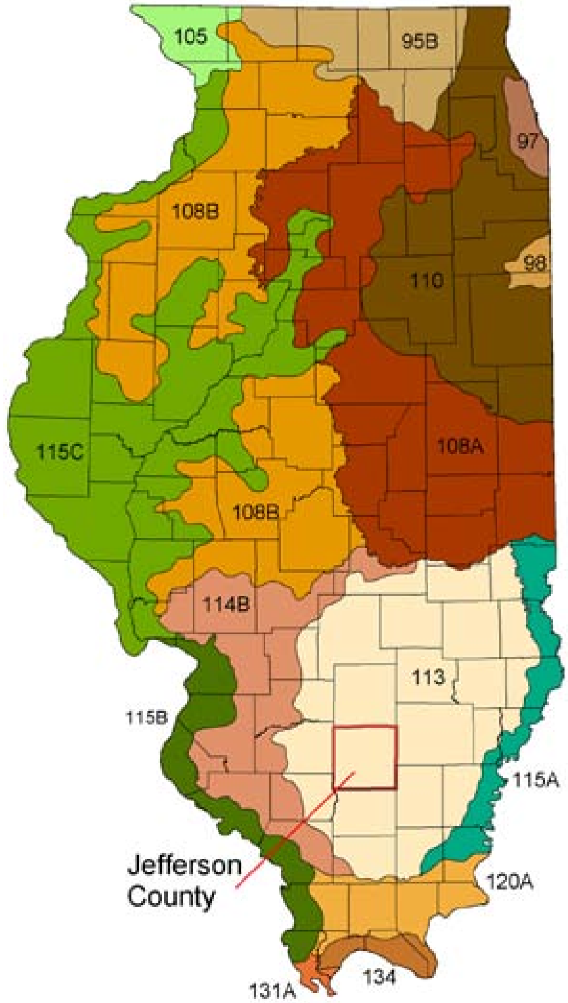
Classification and correlation of the soils by Gary R. Struben, John C. Doll, Dwayne R. Williams, Samuel J. Indorante, Jon D. Bathgate, W. Matt McCauley, and Bryan C. Fitch, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Jefferson County Soil and Water Conservation District and the Illinois Agricultural Experiment Station

Jefferson County is in southern Illinois (fig. 1). It is in Major Land Resource Area (MLRA) 113, Central Claypan Areas (USDA/NRCS, 2006).

The survey area is bounded on the east by Hamilton and Wayne Counties, on the south by Franklin County, on the west by Washington and Perry Counties, and on the north by Marion County. Jefferson County consists of small towns, forests, barrens, wetlands, pasture, and cropland. It has a total area of 584 square miles (1,512 km^2), of which 571 square miles (1,479 km^2) is land and 13 square miles (33 km^2) (2.19 percent) is water (U.S. Department of Commerce, 2002).

Jefferson County is served by two interstate highways, one U.S. highway, four State highways, and a number of hard-surfaced county roads. In 2002, there were approximately 1,168 farms in Jefferson County (USDA, National Agricultural Statistics Service, 2002). The average farm size was 222 acres. Most farm owners or operators supplement their income by working off the farm. Along with agriculture, a number of small businesses and industries provide employment in the county. The top four crop commodities, by acres, are soybeans, corn, hay, and wheat (USDA, National Agricultural Statistics Service, 2002). The top three livestock commodities, by number, are hogs, cattle, and sheep (USDA, National Agricultural Statistics Service, 2002). The amount of forestland in the county is approximately 71,000 acres (Schmidt and others,



LEGEND
95B—Southern Wisconsin and Northern Illinois Drift Plain
97—Southwestern Michigan Fruit and Truck Crop Belt
98—Southern Michigan and Northern Indiana Drift Plain
105—Northern Mississippi Valley Loess Hills
108A and 108B—Illinois and Iowa Deep Loess and Drift
110—Northern Illinois and Indiana Heavy Till Plain
113—Central Claypan Areas
114B—Southern Illinois and Indiana Thin Loess and Till Plain, Western Part
115A, 115B, and 115C—Central Mississippi Valley Wooded Slopes
120A—Kentucky and Indiana Sandstone and Shale Hills and Valleys, Southern Part
131A—Southern Mississippi River Alluvium
134—Southern Mississippi Valley Loess

Figure 1.—Location of Jefferson County and the major land resource areas (MLRAs) in Illinois.

2000). Wayne Fitzgerrell State Recreational Area and Rend Lake State Waterfowl Management Area, both managed by the Illinois Department of Natural Resources, occupy approximately 5,000 acres in the southern part of the county. The U.S. Army Corps of Engineers also manages land adjacent to Rend Lake. Recreational activities available on public land include picnicking, camping, boating, fishing, and hunting.

This survey updates the information published for Jefferson County in 2003 (Preloger, 2003). It provides more descriptive and interpretive information and has larger maps, which show the soils in greater detail.

General Nature of the County

This section provides general information about the survey area. It describes history and development; ecology, physiography, relief, and drainage; and climate.

History and Development

Jefferson County, named for Thomas Jefferson, was organized on March 26, 1819. It became the 26th county in Illinois and was formed from parts of Edwards and White Counties. The original county extended as far north as the northern line of Clinton County. Andrew Moore and his family were the first European settlers in the area. They arrived in 1810. Mr. Moore built a log cabin in what is now Moores Prairie Township. Mt. Vernon, named for George Washington's home, became the permanent county seat.

The first store in Jefferson County was operated by Daniel Crenshaw in Moores Prairie. Spring Garden claims the first township high school in Jefferson County.

In 1938, oil was discovered in Jefferson County. The first coal mine in the county, which opened in 1901, was northeast of Mt. Vernon.

The baseline along the northern border of Jefferson County crosses the Third Principal Meridian at the northwest corner of the county.

Ecology, Physiography, Relief, and Drainage

In accordance with the USDA Forest Service national hierarchical framework of ecological units, most of Jefferson County lies in the Southern Till Plain Division, Mount Vernon Hill Country subsection of the Central Till Plains Oak-Hickory section of the Eastern Broadleaf Forest (Continental) Province. A small area along the northeastern boundary with Wayne County lies in the Wabash Border division, Lower Wabash Alluvial Plain subsection of the Central Till Plains Oak-Hickory section of the Eastern Broadleaf Forest (Continental) province (USDA, Forest Service, 1995).

Jefferson County is part of a loess-covered till plain that is dissected by shallow, low-gradient rivers and streams. Most of the county was forested, but a few prairies occur throughout the area. The survey area was glaciated by the Illinoian glacier approximately 150,000 years ago. The county consists of upland loess-covered claypan soils and bench landscapes along the Big Muddy River and its tributaries.

The highest point in the county, about 630 feet above sea level, occurs on a hilltop in the northern part of the county (fig. 2). The lowest point, less than 410 feet above sea level, is at the spot where the Big Muddy River flows into Rend Lake.

Most of Jefferson County is in the watershed of the Big Muddy River, and drainage flows into the Mississippi River. Drainage in a small part of eastern Jefferson County flows into the Ohio River (Preloger, 2003).

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Mt. Vernon in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 31.8 degrees F and the average daily

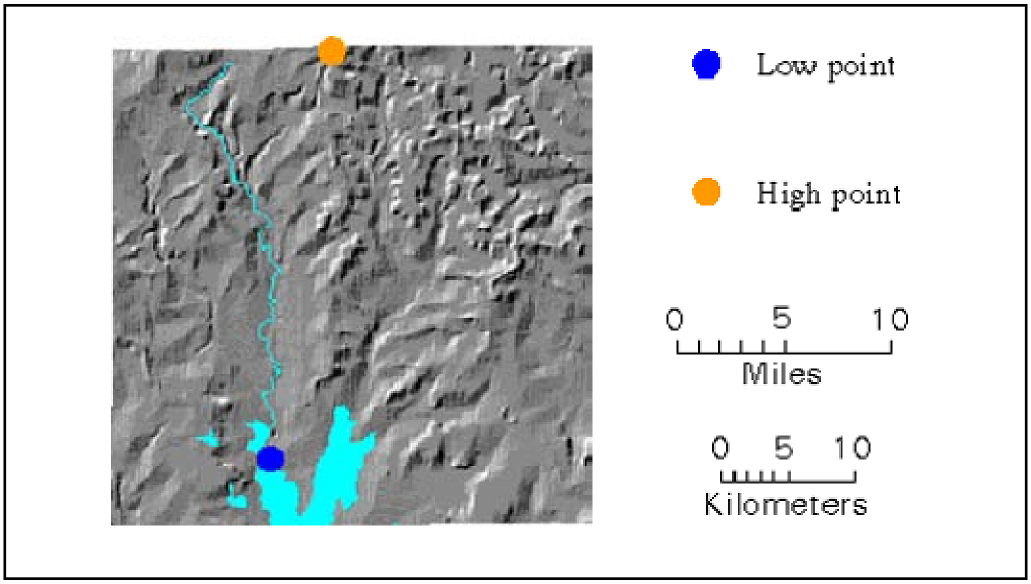


Figure 2.—A generalized relief map of Jefferson County showing the location of the highest and lowest points in the county.

minimum temperature is 22.7 degrees. In summer, the average temperature is 75.2 degrees and the average daily maximum temperature is 86.2 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 42.12 inches. Of this total, 25.51 inches, or about 61 percent, usually falls in April through October. The growing season for most crops falls within this period.

The average seasonal snowfall is 17.6 inches. On an average, 16 days per year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

How This Survey Was Made

This survey was made to update and digitize the 2003 soil survey of Jefferson County (Preloger, 2003). Jefferson County is a subset of Major Land Resource Area (MLRA) 113 (fig. 1). MLRAs are geographically associated land resource units that share a common land use, elevation, topography, climate, water, soils, and vegetation (USDA/NRCS, 2006). Map unit design is based on the occurrence of each soil throughout an MLRA. In some cases a soil may be referred to that does not occur in Jefferson County but that has been mapped within the MLRA.

The information in this survey includes a description of the soils and miscellaneous areas and their location and a discussion of their properties and the subsequent effects on suitability, limitations, and management for specified uses. During the 2003 soil survey and as part of this update, 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 soil parent materials. Soil scientists also studied and described soil profiles. A soil profile is a sequence of natural layers, or horizons, in the soil. The profile extends from the soil 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. Soil scientists prepared new soil profile descriptions and studied profile descriptions from previous fieldwork.

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

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

Soil scientists recorded the characteristics of the soil profiles that they observed. The maximum depth of observation was about 80 inches (6.7 feet). The soil scientists noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, soil 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 and interpret 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 survey area generally are collected for laboratory analyses and for engineering tests. Field observations and measurements also are made on selected soils. Soil scientists interpret the data from these analyses and tests, as well as the field-observed characteristics and the soil properties, to estimate the expected behavior of the soils under different uses. Information from other soil surveys and soil studies also is used to develop soil interpretations.

Soils vary across the landscape and with time. Predictions about soil behavior are based not only on how soils occur on the landscape but also on such variables as climate, biological activity, and local land use. Some soil conditions are very stable and predictable over long periods of time. Examples are clay content in the subsoil and cation-exchange capacity. Some soil conditions change rapidly over the course of a year but are still predictable. Examples are monthly soil moisture status within certain depths in the soil profile and monthly depth and duration of ponding in a detailed soil map unit.

Interpretations for some of the soils are field tested through observation of the soils in different uses and under different levels of management. National and regional soil interpretations are modified as necessary to fit local conditions, and some new interpretations are developed to meet local needs. Map unit descriptions, interpretations, and tables for this soil survey were generated using the National Soil Information System (NASIS), version 5.4.

Aerial photographs were taken in 1993. Soil scientists also used U.S. Geological Survey topographic maps (enlarged to a scale of 1:12,000) and orthophotographs to relate land and image features. Selected areas of the county were reinvestigated so that local soil-landscape models could be updated and refined. Soil boundaries from the soil maps published in 2003 were drawn on the orthophotographs. Adjustments of soil boundary lines were made to coincide with the U.S. Geological Survey topographic map contour lines, Digital Elevation Models (DEMs), and tonal patterns on aerial photographs.

The descriptions, names, and delineations of the soils in this survey area may not fully agree with those of the soils in adjacent survey areas. Differences are the result of an improved knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Detailed Soil Map Units

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

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

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

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

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

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given 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, Bluford silt loam, 2 to 5 percent slopes, eroded, is a phase of the Bluford series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Hickory-Kell silt loams, 18 to 35 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 lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

2A—Cisne silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Flats on uplands
Position on the landform: Summits

Map Unit Composition

Cisne and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that are deeper to a claypan
- Soils that contain less clay

Dissimilar soils:
- The somewhat poorly drained Hoyleton soils in the slightly higher landform positions

Properties and Qualities of the Cisne Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 15 to 23 inches to an abrupt textural change
Available water capacity: About 10.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: At the surface, January through June
Ponding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

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

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Summits

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that are more sloping
- Soils that are deeper to a claypan

Dissimilar soils:
- The moderately well drained Ava soils on side slopes and nose slopes of interfluves
- The poorly drained Cisne soils on flats

Properties and Qualities of the Hoyleton Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

3B2—Hoyleton silt loam, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that are less sloping

Dissimilar soils:
- The somewhat poorly drained Belknap soils in narrow drainageways

Properties and Qualities of the Hoyleton Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

4B2—Richview silt loam, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Richview and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 5 percent
- Soils that have a lighter colored surface layer
- Soils that have a seasonal high water table at a depth of more than 4 feet

Dissimilar soils:
- The somewhat poorly drained Creal soils on toeslopes
- The somewhat poorly drained Belknap soils along small drainageways

Properties and Qualities of the Richview Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 2 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Low
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

4C2—Richview silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Richview and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of less than 5 percent
- Soils that have a lighter colored surface layer
- Soils that have a seasonal high water table at a depth of more than 4 feet

Dissimilar soils:
- The moderately well drained Ava soils in positions similar to those of the Richview soil
- The somewhat poorly drained Belknap soils along narrow drainageways

Properties and Qualities of the Richview Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.0 percent
Shrink-swell potential: Moderate

Depth and months of highest apparent seasonal high water table: 2 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

5C2—Blair silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Blair and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have more sand and clay in the subsoil

Dissimilar soils:
- The somewhat poorly drained Belknap soils along drainageways
- The moderately well drained Ava and Plumfield soils, which have a fragipan; on backslopes

Properties and Qualities of the Blair Soil

Parent material: Loess and accretion gley over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

5C3—Blair silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Blair and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a thicker mantle of loess
- Soils that have more clay and/or more sand in the subsoil
- Soils that have slopes of less than 5 percent
- Moderately eroded soils that have a surface layer of silt loam

Dissimilar soils:
- The moderately well drained Ava and Plumfield soils, which have a fragipan
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Blair Soil

Parent material: Loess and accretion gley over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

7C2—Atlas silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Atlas and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have more sand in the subsoil

Dissimilar soils:
- The somewhat poorly drained Belknap soils along drainageways
- The moderately well drained Ava and Plumfield soils, which have a fragipan

Properties and Qualities of the Atlas Soil

Parent material: Thin loess over a paleosol that formed in till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 0.5 foot, January through May
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

7D2—Atlas silt loam, 10 to 18 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Atlas and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have more sand in the subsoil

Dissimilar soils:
- The somewhat poorly drained Belknap soils along drainageways
- The moderately well drained Ava and Plumfield soils, which have a fragipan

Properties and Qualities of the Atlas Soil

Parent material: Thin loess over a paleosol that formed in till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 0.5 foot, January through May
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

8D2—Hickory silt loam, 10 to 18 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Hickory and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 18 percent
- Severely eroded soils that have a surface layer of clay loam

Dissimilar soils:
- The somewhat poorly drained Blair soils on head slopes
- The well drained Kell soils on the lower part of backslopes
- The somewhat poorly drained Belknap and moderately well drained Sharon soils along narrow drainageways
- The moderately well drained Ava soils on the upper part of slopes

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.5 percent
Shrink-swell potential: Moderate
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Surface runoff class: Medium
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

8D3—Hickory clay loam, 10 to 18 percent slopes, severely eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Hickory and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 18 percent
- Less eroded soils that have a surface layer of silt loam

Dissimilar soils:
- The somewhat poorly drained Blair soils on head slopes
- The well drained Kell soils on the lower backslopes
- The somewhat poorly drained Belknap and moderately well drained Sharon soils along drainageways
- The moderately well drained Ava soils on the upper part of slopes

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent

Shrink-swell potential: Moderate
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Surface runoff class: Medium
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

8F—Hickory silt loam, 18 to 35 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of less than 18 percent
- Severely eroded soils that have a surface layer of clay loam
- Small areas of soils that have outcrops of sandstone or shale

Dissimilar soils:
- The moderately well drained Ava soils on the upper part of slopes
- The somewhat poorly drained Belknap and moderately well drained Sharon soils along drainageways and on flood plains

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

8G—Hickory silt loam, 35 to 60 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less sloping
- Severely eroded soils that have a surface layer of clay loam
- Small areas of soils that have outcrops of sandstone or shale

Dissimilar soils:
- The moderately well drained Sharon soils along flood plains

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 7e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

10C—Plumfield silty clay loam, 5 to 10 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Plumfield and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle in the subsoil
- Soils that have slopes of less than 5 percent
- Soils that have a thicker mantle of loess

Dissimilar soils:
- The somewhat poorly drained Bluford soils at the head of drainageways and on side slopes
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Plumfield Soil

Parent material: Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 5 to 20 inches to a fragipan
Available water capacity: About 5.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0 to 1 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

10D—Plumfield silty clay loam, 10 to 18 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes

Map Unit Composition

Plumfield and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle in the subsoil
- Soils that have slopes of less than 10 percent
- Soils that have a thicker mantle of loess

Dissimilar soils:
- The somewhat poorly drained Bluford soils at the head of drainageways and on side slopes
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Plumfield Soil

Parent material: Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow

Depth to restrictive feature: 5 to 20 inches to a fragipan
Available water capacity: About 5.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0 to 1 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

12A—Wynoose silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Flats on uplands
Position on the landform: Summits

Map Unit Composition

Wynoose and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that are deeper to a claypan
- Soils that contain less clay

Dissimilar soils:
- The somewhat poorly drained Bluford soils on side slopes and nose slopes of interfluves

Properties and Qualities of the Wynoose Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 13 to 23 inches to an abrupt textural change
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: At the surface, January through June
Ponding (average depth during the wettest periods or after heavy rainfall): 0.2 foot
Flooding: None
Potential for frost action: High

Hazard of corrosion: High for steel and concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

13A—Bluford silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Summits

Map Unit Composition

Bluford and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that contain less clay
- Soils that are deeper to a claypan

Dissimilar soils:
- The moderately well drained Ava soils on the narrow, more sloping interfluves
- The poorly drained Wynoose soils on flats

Properties and Qualities of the Bluford Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 0.5 foot, January through May
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

13B2—Bluford silt loam, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Bluford and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that contain less clay in the subsoil
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The moderately well drained Ava soils on nose slopes and side slopes
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Bluford Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 0.5 foot, January through May
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

14B—Ava silt loam, 2 to 5 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Summits

Map Unit Composition

Ava and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are redder and less brittle

- Soils that are moderately eroded
- Soils that are more sloping

Dissimilar soils:
- The somewhat poorly drained Bluford soils at the head of drainageways and on concave side slopes

Properties and Qualities of the Ava Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 25 to 40 inches to a fragipan
Available water capacity: About 8.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

14B2—Ava silt loam, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Summits, shoulders

Map Unit Composition

Ava and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The somewhat poorly drained Bluford soils at the head of drainageways and on concave side slopes

Properties and Qualities of the Ava Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow or slow
Depth to restrictive feature: 25 to 40 inches to a fragipan
Available water capacity: About 7.4 inches to a depth of 60 inches

Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

14C2—Ava silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Ava and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that are less sloping
- Soils that formed in loess over material weathered from bedrock

Dissimilar soils:
- The somewhat poorly drained Blair soils on head slopes
- The moderately well drained Plumfield soils on backslopes

Properties and Qualities of the Ava Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow or slow
Depth to restrictive feature: 25 to 40 inches to a fragipan
Available water capacity: About 7.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

109A—Racoon silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Fans on uplands
Position on the landform: Footslopes

Map Unit Composition

Racoon and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more clay in the subsoil
- Soils in which the top of the claypan is at a depth of less than 24 inches

Dissimilar soils:
- The somewhat poorly drained Creal soils in the slightly higher positions

Properties and Qualities of the Racoon Soil

Parent material: Mixture of loess and local silty colluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January through June
Depth and months of deepest ponding: 0.2 foot, January through June
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

287A—Chauncey silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Flats on uplands
Position on the landform: Footslopes

Map Unit Composition

Chauncey and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that are shallower to a claypan

Dissimilar soils:
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Chauncey Soil

Parent material: Loess
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 24 to 36 inches to an abrupt textural change
Available water capacity: About 10.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2 to 4 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: At the surface, January through June
Depth and months of deepest ponding: 0.2 foot, January through June
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

301B—Grantsburg silt loam, 2 to 5 percent slopes

Setting

Landform and landscape: Loess hills on uplands
Position on the landform: Summits, shoulders

Map Unit Composition

Grantsburg and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle in the subsoil
- Soils that are moderately eroded
- Soils that have bedrock at a depth as shallow as 4 feet
- Soils that formed in loess over very thin drift over bedrock

Dissimilar soils:
- Soils that have a seasonal high water table at a depth of less than 1.5 feet; in the less sloping areas at the head of drainageways

Properties and Qualities of the Grantsburg Soil

Parent material: Peoria and Roxana Loess over residuum
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow or slow
Depth to restrictive feature: 24 to 40 inches to a fragipan
Available water capacity: About 8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

301C3—Grantsburg silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Landform and landscape: Loess hills on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Grantsburg and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are less brittle
- Soils that have slopes of more than 10 percent
- Moderately eroded soils that have a surface layer of silt loam
- Soils that formed in loess over very thin drift over bedrock

Dissimilar soils:
- The somewhat poorly drained Belknap and moderately well drained Sharon soils along small drainageways

Properties and Qualities of the Grantsburg Soil

Parent material: Peoria and Roxana Loess over residuum
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 24 to 40 inches to a fragipan

Available water capacity: About 7.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

337A—Creal silt loam, 0 to 2 percent slopes

Setting

Landform and landscape: Fans on uplands
Position on the landform: Footslopes

Map Unit Composition

Creal and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils in which the top of the claypan is at a depth of less than 24 inches
- Soils that have slopes of more than 2 percent

Dissimilar soils:
- The somewhat poorly drained Belknap soils in the lower positions along drainageways
- The poorly drained Racoon soils in depressions

Properties and Qualities of the Creal Soil

Parent material: Mixture of loess and local silty colluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Ponding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Low

Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

340D3—Zanesville silty clay loam, 10 to 18 percent slopes, severely eroded

Setting

Landform and landscape: Hillslopes on uplands
Position on the landform: Backslopes

Map Unit Composition

Zanesville and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Moderately eroded soils that have a surface layer of silt loam
- Soils that do not have a fragipan
- Soils that are brittle within a depth of 20 inches
- Soils that have slopes of more than 18 percent
- Soils that formed in loess over very thin drift over bedrock

Dissimilar soils:
- The moderately well drained Sharon and somewhat poorly drained Belknap soils along drainageways and on flood plains

Properties and Qualities of the Zanesville Soil

Parent material: Loess over residuum
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Very slow or slow
Depth to restrictive feature: 19 to 32 inches to a fragipan; 40 to 80 inches to lithic or paralithic bedrock
Available water capacity: About 7.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Depth and months of highest perched seasonal high water table: 1.5 feet, January through April
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

376A—Cisne silt loam, bench, 0 to 2 percent slopes

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits

Map Unit Composition

Cisne and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that are deeper to a claypan
- Soils that have less clay in the subsoil

Dissimilar soils:
- The somewhat poorly drained Hoyleton, bench, soils in the higher positions on the landform

Properties and Qualities of the Cisne Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 15 to 23 inches to an abrupt textural change
Available water capacity: About 10.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: At the surface, January through June
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

377A—Hoyleton silt loam, bench, 0 to 2 percent slopes

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have slopes of more than 2 percent
- Soils that are moderately eroded

Dissimilar soils:
- The moderately well drained Rend soils on side slopes and nose slopes
- The poorly drained Cisne soils on the broader summits on structural benches

Properties and Qualities of the Hoyleton Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

377B2—Hoyleton silt loam, bench, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have slopes of more than 5 percent
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have less clay in the subsoil

Dissimilar soils:
- The moderately well drained Rend soils on side slopes and nose slopes
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Hoyleton Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

421G—Kell silt loam, 35 to 60 percent slopes

Setting

Landform and landscape: Hillslopes on uplands
Position on the landform: Backslopes

Map Unit Composition

Kell and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of less than 35 percent
- Soils that are deeper to bedrock
- Soils that have 20 to 40 inches of loess at the surface

Dissimilar soils:
- The moderately well drained Sharon and somewhat poorly drained Belknap soils along drainageways and on flood plains
- The well drained Hickory soils on the upper part of backslopes

Properties and Qualities of the Kell Soil

Parent material: Drift over residuum
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderate
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Available water capacity: About 5.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate

Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 7e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

518B—Rend silt loam, 2 to 5 percent slopes

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits

Map Unit Composition

Rend and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are more brittle in the subsoil
- Soils that are moderately eroded
- Soils that have slopes of less than 2 percent

Dissimilar soils:
- The somewhat poorly drained Bluford, bench, soils at the head of drainageways and on concave side slopes

Properties and Qualities of the Rend Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 2 feet, January through April
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

518B2—Rend silt loam, 2 to 5 percent slopes, eroded

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits, shoulders

Map Unit Composition

Rend and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have slopes of more than 5 percent
- Soils that have a seasonal high water table within a depth of 2 feet

Dissimilar soils:
- The somewhat poorly drained Bluford, bench, soils at the head of drainageways and on concave side slopes

Properties and Qualities of the Rend Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 2 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

518C2—Rend silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Shoulders, backslopes

Map Unit Composition

Rend and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are more brittle in the subsoil
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have slopes of less than 5 percent

Dissimilar soils:
- The somewhat poorly drained Bluford, bench, soils at the head of drainageways and on concave side slopes
- The somewhat poorly drained Belknap soils along drainageways

Properties and Qualities of the Rend Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 2 feet, January through April
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

533—Urban land

This map unit consists of areas covered by surfaces or structures that so obscure or alter the soils that identification of the soil series is not possible. Urban land consists mostly of buildings, shopping centers, industrial plants, other commercial sites, streets, and parking lots.

Map Unit Composition

Urban land: 85 percent
Dissimilar components: 15 percent

Components of Minor Extent

Dissimilar components:
- Small areas of the loamy Orthents, which are soils that have been compacted and disturbed as a result of urban development
- Very small areas of soils that have undergone little disturbance

Interpretive Groups

Land capability classification: None assigned
Prime farmland category: Not prime farmland
Hydric soil status: Not applicable

536—Dumps, mine

This map unit consists of upland areas that are modified by mining and reclamation operations. These areas are used to store refuse or by-products from mining operations, including coal gob and slurry, mine spoil, and alkaline materials used for mine reclamation. Included in mapping are areas adjacent to abandoned buildings associated with coal mining and processing.

Map Unit Composition

Dumps and similar components: 90 percent
Dissimilar components: 10 percent

Components of Minor Extent

Similar components:
- Small amounts of coal, sandstone, shale, and pyrite mixed in with the gob or mine spoil

Dissimilar components:
- Small areas of the loamy Orthents, which are soils that have been disturbed and altered as a result of mining operations
- Small areas of water

Interpretive Groups

Land capability classification: None assigned
Prime farmland category: Not prime farmland
Hydric soil status: Not applicable

583B—Pike silt loam, 2 to 5 percent slopes

Setting

Landform and landscape: Moraines on uplands
Position on the landform: Backslopes, shoulders

Map Unit Composition

Pike and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Moderately eroded soils that have a surface layer of silty clay loam
- Soils that have slopes of more than 5 percent
- Soils that are more brittle in the subsoil

Dissimilar soils:
- The somewhat poorly drained Creal soils at the head of drainageways and on concave foot slopes

Properties and Qualities of the Pike Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: High
Hazard of corrosion: Low for steel and moderate for concrete
Surface runoff class: Low
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

583C2—Pike silt loam, 5 to 10 percent slopes, eroded

Setting

Landform and landscape: Uplands on moraines
Position on the landform: Backslopes, shoulders

Map Unit Composition

Pike and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Severely eroded soils that have a surface layer of silty clay loam
- Soils that have slopes of more than 10 percent
- Soils that are more brittle in the subsoil

Dissimilar soils:
- The somewhat poorly drained Creal soils at the head of drainageways and on concave foot slopes
- The moderately well drained Ava soils in the lower positions

Properties and Qualities of the Pike Soil

Parent material: Peoria and Roxana Loess over drift
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: Moderate
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High

Hazard of corrosion: Low for steel and moderate for concrete
Surface runoff class: Medium
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

639A—Wynoose silt loam, bench, 0 to 2 percent slopes

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits

Map Unit Composition

Wynoose and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils in which the top of the claypan is at a depth of more than 24 inches
- Soils that contain less clay

Dissimilar soils:
- The somewhat poorly drained Bluford, bench, soils on side slopes and nose slopes

Properties and Qualities of the Wynoose Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 13 to 23 inches to an abrupt textural change
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: At the surface, January through June
Ponding (average depth during the wettest periods or after heavy rainfall): 0.2 foot
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

640A—Bluford silt loam, bench, 0 to 2 percent slopes

Setting

Landform and landscape: Structural benches on uplands
Position on the landform: Summits

Map Unit Composition

Bluford and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that are deeper to the top of the subsoil
- Soils that contain less clay

Dissimilar soils:
- The moderately well drained Rend soils on nose slopes and side slopes
- The poorly drained Wynoose soils on the broader summits on structural benches

Properties and Qualities of the Bluford Soil

Parent material: Peoria and Roxana Loess over outwash or basin fill
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 2 percent
Shrink-swell potential: High
Ponding: None
Depth and months of highest perched seasonal high water table: 0.5 foot, January through May
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

802B—Orthents, loamy, undulating

Setting

Landform and landscape: Fill, leveled land
Position on the landform: Shoulders, backslopes, summits

Map Unit Composition

Orthents and similar soils: 90 percent
Dissimilar components: 10 percent

Components of Minor Extent

Similar soils:
- Soils that are more sloping
- Small areas of natural soils that have been only minimally disturbed

Dissimilar components:
- Small areas in which the surface is covered by buildings, roads, railroads, parking lots, or storage facilities
- Areas that have a significant amount of rock fragments, cinders, bricks, or other debris

Properties and Qualities of the Orthents

Parent material: Earthy fill
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

802F—Orthents, loamy, hilly and very hilly

Setting

Landform and landscape: Roadbeds, cutbanks, fill
Position on the landform: Backslopes

Map Unit Composition

Orthents and similar soils: 85 percent
Dissimilar components: 15 percent

Components of Minor Extent

Similar soils:
- Small areas of soils that are less sloping
- Soils that have been only minimally disturbed

Dissimilar components:
- Small areas in which the surface is covered by bridges, roads, or railroads
- Areas that have a significant amount of rock fragments, cinders, bricks, or other debris

Properties and Qualities of the Orthents

Parent material: Mine spoil or earthy fill
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately slow

Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 7e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

823B—Schuline silt loam, 1 to 5 percent slopes

Setting

Landform and landscape: Hillslopes on reclaimed land
Position on the landform: Shoulders, summits

Map Unit Composition

Schuline and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a seasonal high water table at a depth of less than 6 feet
- Soils that are more sloping
- Soils that contain more sand

Dissimilar soils:
- Soils in small depressions that are subject to ponding and that formed as a result of differential settling
- Soils that have an average of about 23 percent gravel and channers in the upper 1 meter of the profile

Properties and Qualities of the Schuline Soil

Parent material: Mine spoil or earthy fill
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: Medium
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

866—Dumps, slurry

This map unit occurs as nearly level areas of loamy refuse material that has settled out from slurry derived from coal preparation plants. The slurry is pumped into a pond or into a box cut. Pumping continues until mining activities have ceased or until the pond or box cut has been filled. In most areas the material then undergoes oxidation for several years and becomes strongly acid to extremely acid.

Map Unit Composition

Dumps and similar components: 90 percent
Dissimilar components: 10 percent

Components of Minor Extent

Similar components:
- A few areas of coarse gob refuse

Dissimilar components:
- Small levees constructed to contain the slurry
- Small areas of water

Interpretive Groups

Land capability classification: None assigned
Prime farmland category: Not prime farmland
Hydric soil status: Not applicable

871D—Lenzburg gravelly silty clay loam, 7 to 20 percent slopes, stony

Setting

Landform and landscape: Hills on reclaimed land
Position on the landform: Backslopes, shoulders

Map Unit Composition

Lenzburg and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Small areas of moderately well drained soils
- Soils that have slopes of less than 7 percent
- Soils that are not calcareous

Dissimilar soils:
- Soils in small depressions that are subject to ponding and that formed as a result of differential settling

Properties and Qualities of the Lenzburg Soil

Parent material: Mine spoil
Drainage class: Well drained

Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.5 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Very low

Interpretive Groups

Land capability classification: 6s
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

871G—Lenzburg gravelly silty clay loam, 20 to 60 percent slopes, stony

Setting

Landform and landscape: Hills on surface mines
Position on the landform: Backslopes

Map Unit Composition

Lenzburg and similar soils: 90 percent
Dissimilar components: 10 percent

Components of Minor Extent

Similar soils:
- Soils that have fewer rock fragments
- Soils that have more rock fragments
- Soils that are less sloping
- Soils that are not calcareous

Dissimilar components:
- Small areas of natural soils
- Haulage roads and small ponds
- Small areas that have acid-producing pyritic material in the surface layer

Properties and Qualities of the Lenzburg Soil

Parent material: Mine spoil
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.5 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Very low

Interpretive Groups

Land capability classification: 7s
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

908F—Hickory-Kell silt loams, 18 to 35 percent slopes

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 50 percent
Kell and similar soils: 40 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of less than 18 percent
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The somewhat poorly drained Belknap and moderately well drained Sharon soils on flood plains
- Small areas of soils that have outcrops of sandstone or shale

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Kell Soil

Parent material: Drift over residuum
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderate
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Available water capacity: About 5.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 4 percent
Shrink-swell potential: Moderate
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Surface runoff class: High

Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—6e; Kell—6e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Kell—not hydric

927D3—Blair-Atlas silty clay loams, 10 to 18 percent slopes, severely eroded

Setting

Landform and landscape: Till plains on uplands
Position on the landform: Backslopes

Map Unit Composition

Blair and similar soils: 50 percent
Atlas and similar soils: 40 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are moderately eroded
- Soils that have slopes of less than 10 percent
- Soils that contain more sand

Dissimilar soils:
- The moderately well drained Plumfield soils, which are more brittle than the major soils; in landform positions similar to those of the major soils
- The somewhat poorly drained Belknap and moderately well drained Sharon soils on flood plains

Properties and Qualities of the Blair Soil

Parent material: Loess and accretion gley over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Atlas Soil

Parent material: Thin loess over a paleosol that formed in till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Very slow

Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.8 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 1 foot, January through May
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very high
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Blair—6e; Atlas—6e
Prime farmland category: Not prime farmland
Hydric soil status: Blair—not hydric; Atlas—not hydric

1108A—Bonnie silt loam, undrained, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Bonnie and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more clay in the subsoil
- Soils that have a darker surface layer

Dissimilar soils:
- Soils in areas that are drained
- Soils that are not subject to ponding

Properties and Qualities of the Bonnie Soil

Parent material: Alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: At the surface, January through June
Depth and months of deepest ponding: 1 foot, January through June
Frequency and most likely period of flooding: Frequent, January through June
Potential for frost action: High
Hazard of corrosion: High for steel and concrete

Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 5w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

3072A—Sharon silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Sharon and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that are subject to occasional flooding
- Soils that contain more sand

Dissimilar soils:
- The somewhat poorly drained Belknap soils in shallow depressions

Properties and Qualities of the Sharon Soil

Parent material: Silty alluvium
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 3 feet, January through April
Ponding: None
Frequency and most likely period of flooding: Frequent, January through May
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

3108A—Bonnie silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Bonnie and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that are less acid in the soil profile
- Soils that contain more sand
- Soils that are subject to occasional flooding

Dissimilar soils:
- The somewhat poorly drained Belknap soils in the slightly higher positions on the flood plain

Properties and Qualities of the Bonnie Soil

Parent material: Alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: At the surface, January through June
Depth and months of deepest ponding: 0.5 foot, January through June
Frequency and most likely period of flooding: Frequent, January through June
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

3226A—Wirt silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Wirt and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand and more silt

Dissimilar soils:
- The somewhat poorly drained Belknap soils in slight depressions

Properties and Qualities of the Wirt Soil

Parent material: Alluvium
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Low
Frequency and most likely period of flooding: Frequent, January through May
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

3336A—Wilbur silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Wilbur and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand and more silt

Dissimilar soils:
- The somewhat poorly drained Belknap soils in slight depressions

Properties and Qualities of the Wilbur Soil

Parent material: Silty alluvium
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 13 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent

Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 1.5 feet, January through April
Frequency and most likely period of flooding: Frequent, January through May
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

3382A—Belknap silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Belknap and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that contain more sand
- Soils that are subject to occasional flooding
- Soils that are less acid

Dissimilar soils:
- The moderately well drained Sharon soils in the slightly higher positions on the flood plain
- The poorly drained Bonnie and Piopolis soils on toeslopes of flood plains

Properties and Qualities of the Belknap Soil

Parent material: Silty alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow or moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 0.5 foot, January through May
Ponding: None
Frequency and most likely period of flooding: Frequent, January through June
Potential for frost action: High

Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

3415A—Orion silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Orion and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that do not have buried dark horizons; on flood plains
- Soils that contain less sand

Dissimilar soils:
- The moderately well drained Sharon soils on natural levees
- The poorly drained Bonnie soils on toeslopes of flood plains

Properties and Qualities of the Orion Soil

Parent material: Alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 1 foot, January through May
Ponding: None
Frequency and most likely period of flooding: Frequent, January through June
Potential for frost action: Moderate
Hazard of corrosion: High for steel and low for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w

Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

3422A—Cape silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform and landscape: Flood plains on alluvial plains

Map Unit Composition

Cape and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a higher content of clay
- Soils that contain more sand
- Soils that are subject to occasional flooding
- Soils that are less acid

Dissimilar soils:
- Soils that have a seasonal high water table at a depth of more than 1 foot
- Soils that have sandy deposits; in areas that have been recently flooded and scoured

Properties and Qualities of the Cape Soil

Parent material: Clayey alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1 to 3 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January through June
Depth and months of deepest ponding: 0.5 foot, January through June
Frequency and most likely period of flooding: Frequent, January through June
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: High
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

MW—Miscellaneous water

This map unit consists of water bodies that are not available for recreational or wildlife uses. The water bodies are mainly associated with water supply systems or waste disposal systems.

W—Water

This map unit consists of natural water bodies and impoundments generally used for livestock water supplies, as wetland wildlife habitat, or for recreational purposes.

Use and Management of the Soils

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

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited* or *slight, moderate,* and *severe*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

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

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed for each soil, 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 obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

The soils in Jefferson County have good potential for continued crop production, especially if the latest crop production technology is applied. This soil survey can be used as a guide for applying the latest crop production technology.

The demand for food and fiber has increased in recent years. As a result, some land of marginal quality has been used for crops. Much of this land is more susceptible to erosion than the more productive land. In addition, the number of residential tracts has increased throughout the county. These tracts commonly are in areas of prime farmland. If these trends continue, they could result in a significant decline in the quality and quantity of the land used for food and fiber.

Limitations Affecting Cropland and Pastureland

The management concerns affecting the use of the detailed soil map units in the survey area for crops and pasture are shown in table 5.

Cropland

The main concerns affecting the management of cropland in Jefferson County include crusting, flooding, ponding, water erosion, and wetness. Equipment limitations, high pH, limited available water capacity, limited rooting depth, low pH, and restricted permeability are additional concerns.

Crusting occurs when flowing water or raindrops break down soil structural units, moving clay downward and leaving a concentration of sand and silt particles on the surface. Crusts can reduce the rate of water infiltration, increase the runoff rate, inhibit seedling emergence and proper growth, and reduce oxygen diffusion to seedlings.

Practices that minimize surface crusting protect the surface from the impact of raindrops and flowing water. Incorporating green manure crops, manure, or crop residue into the soil and using a system of conservation tillage help to prevent crusting by improving tilth.

Flooding occurs in unprotected areas along major rivers and their tributaries. Levees or diversions reduce the extent of crop damage caused by floodwater. Surface drainage ditches can remove floodwater if suitable outlets are available. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning. Selecting crop varieties adapted to a shorter growing season and wetter conditions can also reduce the extent of damage caused by flooding.

Ponding is a hazard in areas where the seasonal high water table is above the surface. Land grading helps to control ponding. Surface ditches and surface inlet tile also help to remove excess water if suitable outlets are available. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning.

Water erosion can occur if the surface soil is not protected against the impact of raindrops. Erosion reduces the stability of soil aggregates, which reduces the rate of water infiltration and increases the rate of surface runoff. Soils with long or steep slopes are more susceptible than other soils to water erosion. Erosion, primarily sheet and rill erosion, removes the surface soil, which commonly has the highest amount of biological activity and the highest content of organic matter. The productivity of the soil is reduced as the content of organic matter and the level of natural fertility are lowered. Poor tilth and crusting can occur when the subsoil, which generally has a higher content of clay than the surface soil, is incorporated through tillage into the plow layer. Excessive runoff can impact the quality of surface water through sedimentation and contamination by pesticides.

Erosion can be controlled by a conservation tillage system that leaves crop residue on the surface after planting or by a cropping system that rotates grasses and legumes in the cropping sequence. On soils with long, uniform slopes, contour farming and/or terraces in combination with a conservation tillage system can help to control erosion.

Wetness is a limitation when the seasonal high water table is at or near the surface. Subsurface tile drains can lower the seasonal high water table if suitable outlets are available. In soils that have a high content of clay and restricted permeability, subsurface drainage may not be practical. In these soils, surface ditches can reduce the wetness. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning.

Additional management concerns are as follows:

Equipment limitations occur in areas that have slopes of more than 18 percent or where the soil has rock fragments in the surface layer. These limitations can cause rapid wear of equipment and can present problems with fertilization, harvest, and seedbed preparation. Equipment limitations cannot be easily overcome.

High pH can affect the availability of many plant nutrients and influences the effectiveness of herbicides. More frequent applications of a small amount of fertilizer are needed to correct nutrient imbalances. Crops may respond well to additions of phosphate fertilizer in areas where the soils are limited by a high pH. The applications of herbicides should be adjusted as the level of alkalinity increases. Incorporating green manure crops, manure, or crop residue into the soil, applying a system of conservation tillage, and using conservation cropping systems also help to overcome this limitation.

Limited available water capacity can occur in soils that have a high content of sand, a low content of clay, and a low content of organic matter. Reducing the evaporation and runoff rates and increasing the rate of water infiltration can conserve soil moisture. Measures that conserve soil moisture include applying conservation tillage and conservation cropping systems, establishing field windbreaks, and leaving crop residue on the surface.

Limited rooting depth is a concern in areas where the soil has a fragipan or a layer of sand and gravel within a depth of 40 inches. These characteristics can limit the total amount of moisture available to plants. This limitation cannot be easily overcome. Planting cover crops and using a system of conservation tillage that leaves crop residue on the surface after planting increase the rate of water infiltration, reduce the runoff rate, and conserve moisture. Also, planting drought-tolerant crop species helps to make the most efficient use of the limited supply of moisture in the soil.

Low pH can create toxicity or decreased availability of nutrients, either of which can affect the health and vigor of the plants. Applications of lime can help to overcome this limitation. The form of lime and the timing, amount, and method of application should be based on the results of soil testing and on the type of crop to be grown.

Restricted permeability can increase the susceptibility of the soil to erosion and limit the effectiveness of drainage systems. The hazard of erosion can be reduced by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Spacing the tile at narrow intervals improves the ability of the drainage system to lower the seasonal high water table.

Following are explanations of the criteria used to determine the limitations listed in the table.

Crusting.—The average content of organic matter in the surface layer is less than or equal to 2.5 percent, and the content of clay is between 20 and 35 percent.

Equipment limitation.—The slope is more than 18 percent, or the content of rock fragments in the surface layer is 15 percent or more.

Flooding.—The soil is subject to occasional or frequent flooding.

High pH.—The upper limit of pH within a depth of 40 inches is more than 8.3.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 9 inches or less.

Limited rooting depth.—A layer that restricts the penetration of plant roots is within a depth of 40 inches.

Low pH.—The lower limit of pH is less than or equal to 5.5 in one or more layers within a depth of 40 inches.

Ponding.—Water is above the surface. The upper limit of the ponding depth is more than 0 inches.

Restricted permeability.—Permeability is less than 0.2 inch per hour between the surface and a depth of 40 inches.

Water erosion.—The Kw factor multiplied by the slope is more than 0.8, and the slope is 3 percent or more.

Wetness.—The seasonal high water table is within a depth of 1.5 feet at some time during the growing season during normal years.

Erosion factors (e.g., Kw factor) are described under the heading “Physical Properties.”

Pastureland

The main concerns in managing pastureland in Jefferson County are low pH, water erosion, and wetness. Additional management concerns include equipment limitations, flooding, high pH, limited available water capacity, limited rooting depth, ponding, and restricted trafficability.

Low pH can reduce the solubility and availability of nutrients for plant growth. Selecting adapted forage and hay varieties and applying lime according to the results of soil tests can help to overcome this limitation.

Water erosion can occur in overgrazed areas or during pasture establishment and renovation if the surface soil is not protected against the impact of raindrops. It results in poor tilth, which reduces the rate of water infiltration and increases the runoff rate. Soils with long or steep slopes also are susceptible to water erosion. Erosion can be controlled by deferred grazing, which prevents overgrazing and thus also helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour, using a no-till system of seeding when a seedbed is prepared or the pasture is renovated, and selecting adapted forage and hay varieties also help to control erosion.

Wetness occurs when the seasonal high water table is at or near the surface. Subsurface tile drains can lower the seasonal high water table if suitable outlets are available. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning. Selecting forage and hay varieties adapted to wet conditions can improve forage production. Restricting use during wet periods helps to keep the pasture in good condition.

Additional management concerns are as follows:

Equipment limitations can cause rapid wear of equipment and can present problems with fertilization, harvest, pasture renovation, and seedbed preparation. Equipment limitations cannot be easily overcome.

Flooding occurs in unprotected areas along the major rivers and their tributaries. Surface drainage ditches can help to remove floodwater if suitable outlets are available. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning. Selecting forage and hay varieties adapted to a shorter growing season and wetter conditions also reduces the extent of flood damage. Restricted use during wet periods helps to keep the pasture in good condition.

High pH affects the availability of many nutrients for plant growth. More frequent applications of a small amount of fertilizer are needed to correct nutrient imbalances. Selecting adapted forage and hay varieties helps to overcome this limitation.

Limited available water capacity can occur in soils that have a high content of sand, a low content of clay, and a low content of organic matter. Reducing the evaporation and runoff rates and increasing the rate of water infiltration can conserve soil moisture. Specific measures that conserve soil moisture include applying conservation tillage and conservation cropping systems, establishing field windbreaks, and leaving crop residue on the surface.

Limited rooting depth is a concern in areas where the soil has a fragipan or a layer of sand and gravel within a depth of 40 inches. These characteristics can limit the total amount of moisture available to plants. This limitation cannot be easily overcome. Planting cover crops and using a system of conservation tillage that leaves crop residue on the surface after planting increase the rate of water infiltration, reduce the runoff rate, and conserve moisture. Also, planting drought-tolerant crop species helps to make the most efficient use of the limited supply of moisture in the soil.

Ponding occurs when the seasonal high water table is above the surface. Land grading helps to control ponding. Surface ditches and surface inlet tile also help to remove excess water if suitable outlets are available. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning. Selecting forage and hay varieties adapted to wet conditions can improve forage production. Restricting use during wet periods helps to keep the pasture in good condition.

Restricted trafficability is a concern in areas where the soils are subject to wetness and have a loamy, clayey, or organic surface layer. Trafficability refers to the ability of the soil to support both livestock and machinery. The proper location of livestock facilities (watering, feeding, and shelter) helps to minimize surface compaction or the formation of ruts and helps to prevent damage to pasture crops.

Following are explanations of the criteria used to determine the limitations listed in the table.

Equipment limitation.—The slope is more than 18 percent.

Flooding.—The soil is subject to occasional or frequent flooding.

High pH.—The upper limit of pH within a depth of 40 inches is more than 8.3.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Limited rooting depth.—A layer that restricts the penetration of plant roots is within a depth of 40 inches.

Low pH.—The lower limit of pH within a depth of 40 inches is less than or equal to 5.5.

Ponding.—Water is above the surface. The upper limit of the ponding depth is more than 0 inches.

Restricted trafficability.—The soil is somewhat poorly drained, poorly drained, or very poorly drained and has a loamy, clayey, or organic surface layer.

Water erosion.—The Kw factor multiplied by the slope is more than 1, and the slope is 3 percent or more.

Wetness.—The seasonal high water table is within a depth of 1.5 feet.

Erosion factors (e.g., Kw factor) are described under the heading “Physical Properties.”

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 (Olson and Lang, 2000; Olson and others, 2000).

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.

Yields for grass-legume pasture also are shown in table 6. Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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

Crops other than those shown in table 6 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 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 forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961).

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in table 6.

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, forestland, 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.

A recent trend in land use in Illinois has been the conversion of some prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that generally are less productive than prime farmland.

The map units in the survey area that are considered prime farmland are listed in table 7. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. Some of the soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Hydric Soils

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil

Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. The 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 map units in table 8 meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and Vasilas, 2006).

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The map units in table 9, 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.

The criteria for hydric soils are represented by codes in the tables (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   - B. are poorly drained or very poorly drained and have either:
     - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
     - 2) a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
     - 3) a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Forestland Management and Productivity

The tables described in this section give interpretive ratings for various aspects of forestland management and provide information regarding the potential productivity of the soils for forestland.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet (http://soils.usda.gov/technical/).

Table 10a

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

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

Table 10b

Ratings in the column *suitability for mechanized site preparation* are based on soil erodibility, soil texture, soil depth, drainage, water table duration, flooding, and the amount of cobbles, stones, or boulders on the surface. The soils are described as well suited, poorly suited, or unsuited to this management activity.

For *limitations affecting prescribed burning,* the ratings are based on slope, soil texture, drainage class, and rooting depth. The limitations are described as slight, moderate, or severe. Soils rated *slight* have few limitations that affect the reestablishment of vegetation. On soils rated *moderate,* post-burning practices are needed to achieve the desired results. Soils rated *severe* require post-burning practices designed for erosion control.

Table 10c

Ratings in the column *hazard of erosion on roads and trails* are based on soil erodibility, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Table 11

Information about the potential productivity of the soils in Jefferson County for forestland is provided in table 11. The most common tree species are white oak, northern red oak, eastern cottonwood, and pin oak. Site indices are listed for soils where the species are commonly grown. The site indices in this soil survey are from the University of Illinois (Olson and others, 2000).

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index.* 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.

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

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, yards, fruit trees, gardens, and cropland from wind and snow; help to keep snow on fields; and provide food and cover for wildlife. 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.

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 12 shows the height that locally grown trees and shrubs are expected to reach in 20 years on soils in the survey area. 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.

Recreational Development

In tables 13a and 13b, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in these tables can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Jefferson County provides a variety of habitat for wildlife, including forests, pastureland, extensive bottom-land areas, bluffs, and wetlands. The wildlife species in the survey area also are varied. They include populations of white-tailed deer, red-tailed hawks, bald eagles, wild turkey, snakes, gray squirrels, rabbits, bobwhite quail, and furbearers and many other nongame birds, mammals, amphibians, and reptiles. Wetland areas and streams support waterfowl, wading birds, shore birds, mink, muskrat, and a few river otters. Local conservation officials can assist in the selection of plants and the planning of wildlife habitat areas.

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 14, 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, sorghum, and soybeans.

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, orchardgrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, ragweed, beggarweed, broomsedge, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry.

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, cattail, 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, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, 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 data in the tables described under the heading “Soil Properties.”

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

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 15a and 15b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 16a and 16b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 17a and 17b give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 17a, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 17b, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of reclamation material, roadfill, and topsoil are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of these materials. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Tables 18a and 18b give 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; aquifer-fed excavated ponds; grassed waterways and surface drains; terraces and diversions; and tile drains and underground outlets. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Table 18a

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Table 18b

Grassed waterways and surface drains 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 affect the construction of grassed waterways. A hazard of wind erosion, a 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.

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 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.

Tile drains and underground outlets are used in some areas to remove excess subsurface and surface water from the soil. The ratings in the table apply to undisturbed soils that commonly have a seasonal high water table within a depth of about 3.5 feet. Current land use is not considered in the ratings. Depth to bedrock, a dense layer, or a cemented pan, the content of large stones, and the content of clay influence the ease of digging, filling, and compacting. A seasonal high water table, ponding, and flooding may restrict the period when excavations can be made. The slope influences the use of machinery. Soil texture and depth to the water table influence the resistance to sloughing. Subsidence of organic layers influences grade and stability of tile drains. Limitations affecting areas where the tile line passes through soils in which the water table is generally below a depth of 3.5 feet are provided in the table that includes the column “shallow excavations,” which is described under the heading “Building Site Development.”

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 19 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

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

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

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

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

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

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

The estimates of particle-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 generally omitted in the table.

Physical Properties

Table 20 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (Ksat) refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 20, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factors are shown in table 20 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” (http://soils.usda.gov/technical/).

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 21 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Cation-exchange capacity is the total amount of 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. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of exchangeable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 21, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca +

Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

Table 22 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Water table refers to a saturated zone in the soil. Table 22 indicates the depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone for the specified *months* in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

The table also shows the *kind of water table*, that is, apparent or perched. 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.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 22 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* of flooding are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 23 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, fragipans, cemented layers, dense layers, and frozen layers. The table indicates the *hardness* of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999). 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 24 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is 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 *udalfs*, 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 class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic 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 or in the MLRA 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, 1999) and in “Keys to Soil Taxonomy” (Soil Survey Staff, 2003). 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.

Atlas Series

Taxonomic classification: Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs

Typical Pedon

Atlas silty clay loam, in an area of Blair-Atlas silty clay loams, 10 to 18 percent slopes, severely eroded, in a cultivated field at an elevation of about 495 feet above mean sea level; approximately 2,110 feet west and 825 feet north of the southeast corner of sec. 5, T. 3 S., R. 1 E.; Jefferson County, Illinois; USGS Woodlawn, Illinois, topographic quadrangle; lat. 38 degrees 17 minutes 21 seconds N. and long. 89 degrees 07 minutes 16 seconds W.; UTM Zone 16, Easting 314492, Northing 4240016; NAD 83:

Ap—0 to 4 inches; 20 percent yellowish brown (10YR 5/4) and 80 percent dark yellowish brown (10YR 4/4) silty clay loam, very pale brown (10YR 7/4) dry; weak fine granular structure; friable; common very fine and fine roots throughout; few fine spherical extremely weakly cemented iron-manganese accumulations; strongly acid; clear smooth boundary.

Ap/Btg—4 to 8 inches; 70 percent yellowish brown (10YR 5/4) and 30 percent gray (10YR 5/1) silty clay loam; moderate medium angular blocky structure; firm; common very fine and fine roots between peds; few medium distinct strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; few fine spherical extremely weakly cemented iron-manganese accumulations; strongly acid; abrupt smooth boundary.

Btg1—8 to 20 inches; dark gray (10YR 4/1) silty clay; strong fine and medium prismatic structure parting to strong fine and medium angular blocky; very firm; few very fine roots between peds; many faint very dark gray (10YR 3/1) clay films on faces of peds and in pores; few medium prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; few fine spherical extremely weakly cemented iron-manganese accumulations; few fine spherical barite crystals; strongly acid; abrupt smooth boundary.

Btg2—20 to 37 inches; light gray (10YR 7/2) clay loam; moderate medium prismatic structure; firm; few very fine roots between peds; common distinct grayish brown (10YR 5/2) clay films on faces of peds and in pores; many medium distinct very pale brown (10YR 7/4) masses of oxidized iron in the matrix; few prominent black (7.5YR 2.5/1) manganese coatings on faces of peds and in pores; few prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; few fine spherical extremely weakly cemented iron-manganese accumulations; few fine spherical barite crystals; moderately acid; clear smooth boundary.

Btg3—37 to 43 inches; light gray (10YR 7/1) clay loam; moderate medium prismatic structure; firm; few very fine roots between peds; common distinct grayish brown (10YR 5/2) clay films on faces of peds and in pores; many coarse prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few medium prominent strong brown (7.5YR 5/6) masses of oxidized iron in root channels and/or pores; few prominent black (7.5YR 2.5/1) manganese coatings on faces of peds and in pores; common fine spherical extremely weakly cemented iron-manganese accumulations; few fine spherical barite crystals; slightly acid; clear smooth boundary.

Btg4—43 to 60 inches; 50 percent light brownish gray (10YR 6/2) and 50 percent yellowish brown (10YR 5/6) silty clay loam; moderate medium prismatic structure; firm; few very fine roots between peds; few distinct dark grayish brown (10YR 4/2) clay films in root channels and/or pores; few faint grayish brown (10YR 5/2) clay films on faces of peds and in pores; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; common fine and medium spherical extremely weakly cemented iron-manganese accumulations; few fine spherical barite crystals; neutral.

Range in Characteristics

Thickness of the loess: 0 to 20 inches
Depth to the paleosol: 5 to 30 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam
Reaction—very strongly acid to neutral

Ap/Btg horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—1 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, or N
Value—4 to 7
Chroma—0 to 2; ranges to 6 in the lower part
Texture—silty clay, silty clay loam, clay loam, or clay
Content of rock fragments—0 to 10 percent
Reaction—very strongly acid to slightly alkaline

Ava Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Ava silt loam, on a convex slope of 3 percent in a pasture at an elevation of about 440 feet above mean sea level; about 925 feet south and 1,575 feet west of the northeast corner of sec. 17, T. 1 N., R. 10 E.; Edwards County, Illinois; USGS West Salem, Illinois, topographic quadrangle; lat. 38 degrees 31 minutes 24 seconds N. and long. 88 degrees 07 minutes 05 seconds W.; UTM Zone 16, Easting 402959, Northing 4263623; NAD 83:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

E—6 to 10 inches; brown (10YR 4/3) silt loam; weak medium platy structure; friable; few fine roots; strongly acid; clear smooth boundary.

BE—10 to 14 inches; yellowish brown (10YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.

Bt—14 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; strong fine and medium subangular blocky structure; firm; few fine roots; very few distinct brown (7.5YR 5/4) clay films and light yellowish brown (10YR 6/4) silt coatings on faces of peds; very strongly acid; clear smooth boundary.

Bt/E—24 to 27 inches; yellowish brown (10YR 5/4) silty clay loam (Bt) and light yellowish brown (10YR 6/4) silt (E), light gray (10YR 7/2) dry; the E material occurs as common distinct silt coatings on faces of peds and as fillings in spaces between peds; moderate fine and medium subangular blocky structure; firm; few fine roots; common medium distinct brown (7.5YR 4/4) masses of oxidized iron; very few fine black (10YR 2/1) iron-manganese concretions; very strongly acid; clear smooth boundary.

B´t—27 to 34 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct brown (10YR 4/3) clay films and few distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions and few fine faint yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; very strongly acid; gradual smooth boundary.

2Btx1—34 to 44 inches; grayish brown (10YR 5/2) silty clay loam; moderate very coarse prismatic structure parting to weak coarse subangular blocky; very firm; brittle; cracks between polygons filled with light gray (10YR 7/1) silt loam; common coarse prominent yellowish brown (10YR 5/8) masses of oxidized iron in the matrix; common coarse dark red (2.5YR 3/6) and brown (7.5YR 4/4) weakly cemented iron-manganese nodules and few fine black (10YR 2/1) iron-manganese concretions; about 12 percent sand; very strongly acid; gradual smooth boundary.

2Btx2—44 to 50 inches; brown (10YR 5/3) loam; weak very coarse prismatic structure parting to weak coarse subangular blocky; very firm; brittle; few vertical streaks and cracks between polygons filled with light gray (10YR 7/1) silt; common coarse distinct dark yellowish brown (10YR 4/4) masses of oxidized iron and common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; few black (10YR 2/1) iron-manganese concretions; about 30 percent sand; very strongly acid; gradual smooth boundary.

3Btb—50 to 80 inches; brown (10YR 5/3) loam; weak coarse prismatic structure; firm; common faint brown (10YR 4/3) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; strongly acid.

Range in Characteristics

Depth to the second sequum (Bt/E or B´t horizon): 20 to 30 inches
Depth to the fragipan: 25 to 40 inches
Thickness of the Peoria Loess: 30 to 55 inches
Particle-size control section: Averages 24 to 35 percent clay
Other characteristics: The E horizon has been mixed with the surface layer in some pedons in eroded areas.

Ap horizon:
Hue—10YR
Value—4 or 5 (6 or 7 dry)
Chroma—2 or 3

Texture—silt loam; silty clay loam in some pedons in eroded areas
Reaction—very strongly acid or strongly acid, except in areas that have been limed

E or EB horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Reaction—very strongly acid or strongly acid, except in areas that have been limed

Bt and B´t horizons:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Reaction—strongly acid or very strongly acid

Bt/E horizon (Bt part):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Reaction—strongly acid or very strongly acid

Bt/E horizon (E part):
Hue—10YR
Value—5 to 8
Chroma—1 to 4
Texture—silt loam or silt
Reaction—strongly acid or very strongly acid

Btx or 2Btx horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam, silty clay loam, or loam
Content of rock fragments—0 to 4 percent
Reaction—strongly acid or very strongly acid

2Btb or 3Btb horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—loam, silt loam, clay loam, or silty clay loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid or very strongly acid

Belknap Series

Taxonomic classification: Coarse-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Belknap silt loam, on a flood plain in a cultivated field at an elevation of about 430 feet above mean sea level; approximately 350 feet north of the center of the road on the west side of the stream; 1,000 feet east and 1,000 feet north of the center of sec. 33, T. 2 N., R. 12 W.; Wabash County, Illinois; USGS Saint Francisville, Illinois-Indiana, topographic quadrangle; lat. 38 degrees 33 minutes 52 seconds N. and long. 87 degrees 44 minutes 50.5 seconds W.; UTM Zone 16, Easting 434889, Northing 4268709; NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; friable; strongly acid; abrupt smooth boundary.

A—7 to 13 inches; dark grayish brown (10YR 4/2) silt loam; weak thin platy structure parting to weak fine granular; friable; slightly compact as a plowpan; few medium faint brown (10YR 5/3) and few fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; strongly acid; gradual smooth boundary.

Bg—13 to 27 inches; dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), and brown (10YR 5/3) silt loam; weak medium granular structure with a tendency toward subangular blocky; friable; few medium faint light brownish gray (10YR 6/2) iron depletions and common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few iron-manganese concretions; strongly acid; gradual smooth boundary.

Cg1—27 to 59 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; common fine prominent dark reddish brown (2.5YR 3/4) and yellowish brown (10YR 5/8) masses of oxidized iron in the matrix; many iron-manganese concretions, increasing in number and size with increasing depth; strongly acid; gradual smooth boundary.

Cg2—59 to 80 inches; dark gray (10YR 4/1) silt loam; massive; friable; common medium faint gray (10YR 6/1) iron depletions and few medium prominent brown (7.5YR 5/4) masses of oxidized iron in the matrix; many iron-manganese concretions; moderately acid.

Range in Characteristics

Depth to the base of soil development: 12 to 40 inches; ranges to 60 inches in some pedons

Reaction: Strongly acid or very strongly acid in the particle-size control section

Ap or A horizon:

Hue—10YR

Value—4 to 6 (6 or 7 dry); 3 in some pedons in uncultivated areas

Chroma—2 or 3

Texture—silt loam

Reaction—very strongly acid to moderately acid, except in areas that have been limed

Bg or Bw horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 to 4

Texture—silt loam to a depth of at least 40 inches; strata of loam or silty clay loam below a depth of 40 inches in some pedons

Cg or C horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—silt loam or silt to a depth of at least 40 inches; strata of loam or silty clay loam below a depth of 40 inches in some pedons

Blair Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Taxadjunct features: The Blair soil in map unit 927D3 has more sand in the subsoil than is defined as the range for the series. This difference, however, does not significantly affect the use and management of the soil. This soil is classified as a fine-loamy, mixed, superactive, mesic Aquic Hapludalf.

Typical Pedon

Blair silt loam, on a northeast-facing slope of 14 percent in a severely eroded area in a cultivated field at an elevation of about 485 feet above mean sea level; approximately 1,280 feet north and 700 feet west of the center of sec. 15, T. 4 S., R. 2 W.; Perry County, Illinois; USGS Todds Mill, Illinois, topographic quadrangle; lat. 38 degrees 10 minutes 55 seconds N. and long. 89 degrees 18 minutes 30 seconds W.; UTM Zone 16, Easting 297816, Northing 4228527; NAD 83:

Ap—0 to 5 inches; yellowish brown (10YR 5/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate coarse angular clods parting to weak fine subangular blocky structure; firm; few faint brown (10YR 4/3) organic coatings on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few fine grayish brown (10YR 5/2) peds of silty clay loam subsoil material; 3 percent sand; slightly acid; abrupt smooth boundary.

Bt1—5 to 12 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; friable; few distinct very dark grayish brown (10YR 3/2) organic coatings and common distinct brown (10YR 4/3) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; 14 percent sand and 1 percent fine gravel; very strongly acid; clear smooth boundary.

Bt2—12 to 20 inches; grayish brown (10YR 5/2) silt loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 15 percent sand; very strongly acid; gradual smooth boundary.

Bt3—20 to 30 inches; dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) silt loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses of oxidized iron in the matrix; 18 percent sand and 2 percent fine and medium gravel; strongly acid; clear smooth boundary.

Bt4—30 to 36 inches; light brownish gray (10YR 6/2) silt loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions and many medium distinct dark yellowish brown (10YR 4/4) masses of oxidized iron in the matrix; common fine prominent black (10YR 2/1) iron-manganese nodules; 20 percent sand and 2 percent fine and medium gravel; slightly acid; clear smooth boundary.

Btg—36 to 47 inches; light brownish gray (2.5Y 6/2) silt loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; few faint grayish brown (10YR 5/2) clay films on faces of peds; common medium prominent brown (7.5YR 4/4) masses of oxidized iron in the matrix; 15 percent sand and 1 percent fine and medium gravel; neutral; clear smooth boundary.

BCg—47 to 55 inches; gray (10YR 6/1) silt loam; weak coarse prismatic structure; friable; few fine faint gray (10YR 5/1) iron depletions and many coarse prominent yellowish red (5YR 4/6) and few medium prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 22 percent sand and 1 percent fine and medium gravel; neutral; gradual smooth boundary.

Cg—55 to 71 inches; gray (5Y 6/1) silt loam; massive; friable; few fine faint gray (5Y 5/1) iron depletions and common coarse prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 20 percent sand and 2 percent fine and medium gravel; neutral; clear smooth boundary.

2Btgb—71 to 80 inches; gray (5Y 6/1) clay loam; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; common distinct dark gray (5Y 4/1) clay films on faces of peds; many coarse prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; about 5 percent fine and medium gravel; slightly alkaline.

Range in Characteristics

Thickness of the loess: 0 to 20 inches

Depth to the base of the argillic horizon: 40 to 68 inches

Particle-size control section: Averages 25 to 35 percent clay, 10 to 25 percent sand, and less than 10 percent gravel; typically, about one-third to one-half of the sand is very fine sand

Other characteristics: The 2Btgb horizon formed in accretion gley or in till that contains a strongly developed paleosol.

Ap or A horizon:

Hue—10YR
Value—4 or 5 (6 or 7 dry)
Chroma—2 to 4
Texture—commonly silt loam or loam; silty clay loam or clay loam in some pedons in severely eroded areas

E horizon (if it occurs):

Hue—10YR
Value—4 or 5 (6 or 7 dry)
Chroma—2 to 4
Texture—silt loam or loam

Bt horizon:

Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam, silt loam, clay loam, or loam

Btg horizon:

Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, silt loam, clay loam, or loam

BCg horizon (if it occurs):

Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, loam, silty clay loam, or clay loam

Cg horizon (if it occurs):

Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam or loam

2Btgb horizon (if it occurs):
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, silt loam, or loam
Content of rock fragments—0 to 10 percent

Bluford Series

Taxonomic classification: Fine, smectitic, mesic Aeric Fragic Epiaqualfs

Typical Pedon

Bluford silt loam, on a southwest-facing slope of 2 percent in a cultivated field at an elevation of about 549 feet above mean sea level; 1,585 feet south and 925 feet west of the northeast corner of sec. 16, T. 8 N., R. 13 W.; Crawford County, Illinois; USGS Annapolis, Illinois, topographic quadrangle; lat. 39 degrees 08 minutes 22.7 seconds N. and long. 87 degrees 51 minutes 27.9 seconds W.; UTM Zone 16, Easting 425872, Northing 4332623; NAD 83:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; very friable; few very fine roots; few fine spherical weakly cemented manganese nodules throughout; neutral; abrupt smooth boundary.

E1—7 to 15 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; very friable; few very fine roots; many medium distinct yellowish brown (10YR 5/4) and few medium faint brown (10YR 5/3) masses of oxidized iron in the matrix; common fine spherical weakly cemented iron-manganese nodules throughout; very strongly acid; clear smooth boundary.

E2—15 to 20 inches; pale brown (10YR 6/3) silt loam, pale yellow (2.5Y 8/2) dry; moderate medium platy structure parting to moderate very fine subangular blocky; very friable; few very fine roots; common prominent white (10YR 8/1) (dry) silt coatings on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

Btg—20 to 35 inches; grayish brown (10YR 5/2) silty clay; moderate medium subangular blocky structure; firm; few very fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common medium distinct dark yellowish brown (10YR 4/4) and many medium prominent yellowish brown (10YR 5/6) extremely weakly cemented iron-manganese accumulations in the matrix; common fine prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; few fine spherical weakly cemented iron-manganese nodules throughout; very strongly acid; clear smooth boundary.

2Btgx—35 to 42 inches; grayish brown (10YR 5/2) silty clay loam; moderate coarse prismatic structure; firm; brittle; few faint grayish brown (10YR 5/2) clay films and common prominent white (10YR 8/1) silt coatings on faces of peds; few fine faint gray (10YR 6/1) iron depletions and common medium distinct dark yellowish brown (10YR 4/4) extremely weakly cemented iron-manganese accumulations in the matrix; common fine prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and in pores; few fine spherical weakly cemented iron-manganese nodules throughout; brittle; very strongly acid; gradual smooth boundary.

2Btg—42 to 60 inches; gray (10YR 5/1) silty clay loam; weak coarse prismatic structure; very firm; few faint dark gray (10YR 4/1) clay films in root channels;

common medium distinct yellowish brown (10YR 5/4) and common medium prominent yellowish brown (10YR 5/6) extremely weakly cemented iron-manganese accumulations in the matrix; common fine spherical weakly cemented iron-manganese nodules throughout; about 1 percent gravel; very strongly acid.

Range in Characteristics

Depth to fragic soil properties: 24 to 48 inches
Thickness of the Peoria Loess: 30 to 55 inches
Particle-size control section: Averages 35 to 42 percent clay and less than 8 percent sand
Other characteristics: Some pedons have a BE horizon.

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 3
Texture—silt loam
Reaction—very strongly acid or strongly acid; ranges to neutral in some pedons in areas that have been limed

E horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Reaction—very strongly acid to neutral

Bt and/or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 3
Texture—silty clay loam or silty clay
Reaction—very strongly acid to slightly acid

2Btgx horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture—silt loam, loam, silty clay loam, or clay loam
Reaction—very strongly acid to moderately acid

2Btg or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—silty clay loam, silt loam, or loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to moderately acid

3Agb or 3Btgb horizon (if it occurs):
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, silt loam, or loam

Content of rock fragments—0 to 5 percent
Reaction—moderately acid to slightly alkaline

Bonnie Series

Taxonomic classification: Fine-silty, mixed, active, acid, mesic Typic Fluvaquents

Typical Pedon

Bonnie silt loam, in a cultivated field on a flood plain at an elevation of about 419 feet above mean sea level; 2,660 feet north and 1,920 feet east of the southwest corner of sec. 21, T. 5 S., R. 4 E.; Franklin County, Illinois; USGS Ewing, Illinois, topographic quadrangle; lat. 38 degrees 04 minutes 32 seconds N. and long. 88 degrees 46 minutes 17 seconds W.; UTM Zone 16, Easting 344630, Northing 4215680; NAD 83:

Ap1—0 to 5 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; common fine and medium roots throughout; common fine spherical extremely weakly cemented iron-manganese accumulations; slightly acid; abrupt smooth boundary.

Ap2—5 to 10 inches; light brownish gray (10YR 6/2) and dark grayish brown (10YR 4/2) silt loam; weak medium angular blocky structure parting to weak medium platy; friable; common fine and medium roots throughout; common fine and medium faint brown (10YR 4/3) masses of oxidized iron and manganese; common fine spherical masses of oxidized iron; moderately acid; abrupt smooth boundary.

Cg1—10 to 27 inches; gray (10YR 6/1) and light gray (10YR 7/1) silt loam; massive; friable; few very fine roots throughout; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of oxidized iron and common medium faint grayish brown (10YR 5/2) iron depletions; common fine spherical extremely weakly cemented iron-manganese accumulations; very strongly acid; clear smooth boundary.

Cg2—27 to 80 inches; gray (10YR 6/1) silt loam; massive; friable; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of oxidized iron; common fine spherical extremely weakly cemented iron-manganese accumulations; very strongly acid.

Range in Characteristics

Particle-size control section: Averages 18 to 27 percent clay and less than 10 percent sand

Reaction: Strongly acid or very strongly acid from a depth of 10 to 40 inches; very strongly acid to slightly alkaline below a depth of 40 inches

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 3
Texture—silt loam

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—5 to 7
Chroma—0 to 2
Texture—commonly silt loam; less commonly silty clay loam (below a depth of 40 inches)

Cape Series

Taxonomic classification: Fine, smectitic, acid, mesic Vertic Endoaquepts

Typical Pedon

Cape silty clay loam, on a nearly level or depressional flood plain in a cultivated field at an elevation of about 375 feet above mean sea level; about 1,290 feet north and 660 feet west of the center of sec. 10, T. 10 S., R. 5 E.; Saline County, Illinois; USGS Carrier Mills, Illinois, topographic quadrangle; lat. 37 degrees 40 minutes 08 seconds N. and long. 88 degrees 38 minutes 45 seconds W.; UTM Zone 16, Easting 354838, Northing 4170366; NAD 83:

Ap—0 to 10 inches; dark gray (10YR 4/1) silty clay loam; weak medium angular blocky structure; very firm; neutral; abrupt smooth boundary.

Bg1—10 to 22 inches; dark gray (10YR 4/1) silty clay loam; moderate coarse prismatic structure parting to weak medium angular blocky; very firm; common medium distinct brown (10YR 4/3) masses of oxidized iron and manganese in the matrix; common prominent threadlike extremely weakly cemented iron-manganese accumulations on surfaces along root channels; strongly acid; clear smooth boundary.

Bg2—22 to 28 inches; gray (10YR 5/1) silty clay; weak coarse prismatic structure parting to weak medium angular blocky; very firm; common medium distinct brown (10YR 4/3) masses of oxidized iron and manganese in the matrix; prominent threadlike extremely weakly cemented iron-manganese accumulations on surfaces along root channels; strongly acid; clear smooth boundary.

Bg3—28 to 35 inches; gray (10YR 5/1), dark gray (10YR 4/1), and gray (10YR 6/1) silty clay; weak coarse prismatic structure parting to weak medium and coarse angular blocky; very firm; common medium prominent dark reddish brown (5YR 3/3) masses of oxidized iron and manganese in the matrix; few prominent threadlike extremely weakly cemented iron-manganese accumulations on surfaces along root channels; strongly acid; clear smooth boundary.

Bg4—35 to 45 inches; gray (10YR 5/1) and grayish brown (10YR 5/2) silty clay; weak coarse angular blocky structure; firm; common medium distinct pale brown (10YR 6/3) and faint dark grayish brown (10YR 4/2) masses of oxidized iron and manganese in the matrix; common prominent threadlike extremely weakly cemented iron-manganese accumulations on surfaces along root channels; strongly acid; gradual smooth boundary.

Cg—45 to 80 inches; gray (10YR 6/1), light gray (10YR 7/1), and grayish brown (10YR 5/2) silty clay loam; massive; firm; common medium distinct pale brown (10YR 6/3) masses of oxidized iron and manganese in the matrix; common prominent threadlike extremely weakly cemented iron-manganese accumulations on surfaces along root channels; strongly acid.

Range in Characteristics

Depth to the base of the cambic horizon: 40 to more than 60 inches
Particle-size control section: Averages 40 to 55 percent clay

Ap or A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 (5 or 6 dry)
Chroma—1 or 2
Texture—silty clay loam, silty clay, or clay; silt loam in overwash phases

Bg horizon:
Hue—10YR, 2.5Y, or N

Value—4 to 6 (5 to 7 dry)
Chroma—0 to 2
Texture—silty clay or clay; silty clay loam in the upper part in some pedons

Cg horizon:
Hue—10YR, 2.5Y, or N
Value—4 to 7
Chroma—0 to 2
Texture—silty clay loam, silty clay, or clay

Chauncey Series

Taxonomic classification: Fine, smectitic, mesic Typic Argialbolls

Typical Pedon

Chauncey silt loam, 0 to 2 percent slopes, in a cultivated field at an elevation of about 518 feet above mean sea level; 1,480 feet north and 940 feet west of the southeast corner of sec. 24, T. 3 S., R. 3 E.; Jefferson County, Illinois; USGS Spring Garden, Illinois, topographic quadrangle; lat. 38 degrees 14 minutes 51 seconds N. and long. 88 degrees 49 minutes 03 seconds W.; UTM Zone 16, Easting 340949, Northing 4234825; NAD 83:

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common very fine and fine roots throughout; few fine and medium prominent dark yellowish brown (10YR 4/6) masses of oxidized iron on faces of peds and in pores; common fine spherical iron-manganese concretions; neutral; abrupt smooth boundary.

A—5 to 12 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate thick platy structure parting to moderate very fine subangular blocky; friable; common very fine and fine roots throughout; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; few fine and medium prominent dark yellowish brown (10YR 4/6) masses of oxidized iron on faces of peds and in pores and faint very dark brown (10YR 2/2) organic coatings on faces of peds; common fine and medium spherical iron-manganese concretions; neutral; abrupt smooth boundary.

Eg1—12 to 17 inches; dark gray (10YR 4/1) silt loam; weak thin platy structure; friable; common very fine and fine roots throughout; common fine and medium faint grayish brown (10YR 5/2) iron depletions and common fine and medium distinct brown (10YR 4/3) masses of oxidized iron in the matrix; few fine and medium prominent dark yellowish brown (10YR 4/6) masses of oxidized iron on faces of peds and in pores and distinct very dark brown (10YR 2/2) organic coatings on faces of peds; common fine and medium spherical iron-manganese concretions; slightly acid; clear smooth boundary.

Eg2—17 to 26 inches; gray (10YR 5/1) silt loam; moderate medium subangular blocky structure; friable; common very fine and fine roots throughout; common fine and medium faint grayish brown (2.5Y 5/2) and dark gray (10YR 4/1) iron depletions in the matrix; few fine and medium distinct yellowish brown (10YR 5/4) and few fine and medium prominent dark yellowish brown (10YR 4/6) masses of oxidized iron on faces of peds and in pores; common fine and medium irregular extremely weakly cemented iron-manganese accumulations and common fine and medium spherical iron-manganese concretions; very strongly acid; clear smooth boundary.

Btg1—26 to 31 inches; gray (10YR 5/1) silty clay loam; moderate medium subangular blocky structure; firm; common very fine and fine roots between peds; common faint dark gray (10YR 4/1) clay films on faces of peds and in pores and few distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine and medium faint dark grayish brown (10YR 4/2) and few fine and medium faint dark gray (10YR 4/1) iron depletions in the matrix; common fine and medium irregular extremely weakly cemented iron-manganese accumulations and common fine and medium spherical iron-manganese concretions; very strongly acid; clear wavy boundary.

Btg2—31 to 46 inches; grayish brown (2.5Y 5/2) silty clay; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; common very fine and fine roots between peds; common prominent dark grayish brown (10YR 4/2) clay films on faces of peds and in pores and few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine and medium prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds; common medium and coarse irregular extremely weakly cemented iron-manganese accumulations and common fine and medium spherical iron-manganese concretions; very strongly acid; gradual wavy boundary.

2Btg3—46 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots between peds; few prominent dark grayish brown (10YR 4/2) clay films on faces of peds and in pores and very few prominent very dark gray (10YR 3/1) organic coatings in root channels and/or pores; few fine and medium prominent strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds; common medium and coarse irregular extremely weakly cemented iron-manganese accumulations and few fine cylindrical barite crystals; very strongly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the loess: 50 to more than 60 inches

A or Ap horizon:
Hue—10YR
Value—2 to 3
Chroma—1 or 2
Texture—silt loam

Eg horizon:
Hue—10YR
Value—4 to 7
Chroma—1 or 2
Texture—silt loam

Btg or 2Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silty clay

BCg, 2BCg, Cg, or 2Cg horizon (if it occurs):
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, loam, clay loam, or silty clay loam

Cisne Series

Taxonomic classification: Fine, smectitic, mesic Mollic Albaqualfs

Typical Pedon

Cisne silt loam, in a nearly level area in a cultivated field at an elevation of 556 feet above mean sea level; 1,960 feet west and 420 feet south of the northeast corner of sec. 3, T. 6 N., R. 9 E.; Jasper County, Illinois; USGS Newton, Illinois, topographic quadrangle; lat. 38 degrees 59 minutes 36.6 seconds N. and long. 88 degrees 11 minutes 42.9 seconds W.; UTM Zone 16, Easting 396490, Northing 4316734; NAD 83:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few very dark gray (10YR 3/1) organic stains on faces of peds; few fine and medium distinct black (10YR 2/1) weakly cemented iron and manganese nodules throughout; moderately acid; abrupt smooth boundary.

Eg1—8 to 13 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate medium platy structure; friable; common fine prominent yellowish brown (10YR 5/8) masses of oxidized iron in the matrix; common fine and medium distinct black (10YR 2/1) weakly cemented iron and manganese nodules throughout; strongly acid; clear smooth boundary.

Eg2—13 to 17 inches; light gray (10YR 7/2) and light brownish gray (10YR 6/2) silt loam, very pale brown (10YR 8/2) dry; moderate medium platy structure; friable; common fine and medium distinct black (10YR 2/1) weakly cemented iron-manganese nodules throughout; strongly acid; abrupt smooth boundary.

B/E—17 to 19 inches; gray (10YR 6/1) silty clay loam (B); moderate fine angular blocky structure; friable; common prominent light gray (10YR 7/1) silt coatings on faces of peds (E); common medium prominent yellowish red (5YR 4/6) masses of oxidized iron in the matrix; common fine and medium distinct black (10YR 2/1) weakly cemented iron-manganese nodules throughout; strongly acid; clear smooth boundary.

Btg1—19 to 28 inches; grayish brown (10YR 5/2) silty clay loam; strong fine prismatic structure parting to strong fine angular blocky; firm; many distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish red (5YR 4/6) masses of oxidized iron in the matrix; strongly acid; clear smooth boundary.

Btg2—28 to 37 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium angular blocky structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) extremely weakly cemented iron and manganese accumulations in the matrix; strongly acid; clear smooth boundary.

2Btg3—37 to 43 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak coarse angular blocky structure; firm; few faint gray (10YR 5/1) clay films on faces of peds; common medium and coarse distinct dark yellowish brown (10YR 4/4) extremely weakly cemented iron-manganese accumulations in the matrix; about 15 percent sand; few pebbles; strongly acid; gradual smooth boundary.

2BCg—43 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak coarse angular blocky structure; firm; common coarse distinct dark yellowish brown (10YR 4/4) extremely weakly cemented iron-manganese accumulations in the matrix; about 15 percent sand in the upper part (the content of sand increases with increasing depth); few pebbles; moderately acid; gradual smooth boundary.

2Cg—60 to 80 inches; dark grayish brown (10YR 4/2) silt loam; massive; firm; many coarse prominent gray (N 6/ and 7/) iron depletions in the matrix; few fine and medium distinct black (10YR 2/1) iron-manganese concretions throughout; about 20 percent sand; about 2 percent pebbles; slightly acid.

Range in Characteristics

Thickness of the dark surface layer: 7 to 9 inches
Thickness of the loess: 30 to 55 inches
Depth to the base of the argillic horizon: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 to 3
Chroma—1 to 3
Texture—silt loam
Reaction—strongly acid to neutral

E horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—1 or 2
Texture—silt loam or silt
Reaction—very strongly acid to moderately acid; ranges to neutral in areas that have been limed

B/E, BE, or EB horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—very strongly acid to moderately acid

Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silty clay
Reaction—very strongly acid to moderately acid

2Btg or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to slightly acid

2Cg, 3Ab, or 3Btb horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, loam, or silt loam
Content of rock fragments—2 to 15 percent
Reaction—moderately acid to neutral

Creal Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs

Typical Pedon

Creal silt loam, in a nearly level area in a cropped field at an elevation of 412 feet above mean sea level; approximately 2,244 feet north and 110 feet west of the southeast corner of sec. 36, T. 3 S., R. 5 E.; Hamilton County, Illinois; USGS Belle Prairie City, Illinois, topographic quadrangle; lat. 38 degrees 13 minutes 07 seconds N. and long. 88 degrees 35 minutes 37 seconds W.; UTM Zone 16, Easting 360500, Northing 4231284; NAD 83:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

E—9 to 18 inches; brown (10YR 5/3) silt loam; weak thick platy structure; friable; few dark grayish brown (10YR 4/2) organic coatings on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses of oxidized iron and common medium faint dark yellowish brown (10YR 4/4) masses of oxidized iron and manganese; few fine distinct black (10YR 2/1) iron-manganese nodules; moderately acid; clear smooth boundary.

Eg—18 to 27 inches; light brownish gray (10YR 6/2) silt loam; weak thick platy structure; friable; common medium vesicular pores; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; common coarse prominent black (10YR 2/1) iron-manganese nodules; very strongly acid; clear smooth boundary.

Btg1—27 to 32 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium angular and subangular blocky structure; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg2—32 to 41 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; many medium prominent black (10YR 2/1) iron-manganese nodules; very strongly acid; clear smooth boundary.

Btg3—41 to 55 inches; light brownish gray (10YR 6/2) silty clay loam; weak coarse prismatic structure; firm; few faint grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; common medium prominent black (10YR 2/1) iron-manganese nodules; strongly acid; clear smooth boundary.

BCg—55 to 60 inches; light brownish gray (10YR 6/2) silt loam; weak coarse prismatic structure; friable; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; slightly acid.

Range in Characteristics

Depth to the top of the argillic horizon: 24 to 36 inches
Particle-size control section: Averages 25 to 35 percent clay and less than 15 percent sand

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3

Texture—silt loam
Reaction—strongly acid to neutral

E or Eg horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Reaction—extremely acid to strongly acid; ranges to neutral in the upper part in some pedons in areas that have been limed

Btg or Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam
Reaction—very strongly acid to slightly acid

BCg, 2Btg, or 2BCg horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silt loam or silty clay loam
Reaction—very strongly acid to neutral

Grantsburg Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Grantsburg silt loam, on a southwest-facing, convex slope of 7 percent in a wooded area at an elevation of about 500 feet above mean sea level; approximately 992 feet east and 106 feet south of the northwest corner of sec. 4, T. 13 S., R. 5 E.; Pope County, Illinois; USGS Glendale, Illinois, topographic quadrangle; lat. 37 degrees 25 minutes 30 seconds N. and long. 88 degrees 40 minutes 07 seconds W.; UTM Zone 16, Easting 352358, Northing 4143340; NAD 83:

A—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many roots; very strongly acid; abrupt smooth boundary.
E—2 to 7 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; many roots; very strongly acid; clear smooth boundary.
BE—7 to 12 inches; strong brown (7.5YR 5/6) silt loam; weak fine subangular blocky structure; friable; many roots; very strongly acid; gradual smooth boundary.
Bt1—12 to 20 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common roots; few distinct brown (7.5YR 5/4) clay films on faces of peds; few black (10YR 2/1) iron-manganese concretions; very strongly acid; gradual smooth boundary.
Bt2—20 to 24 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few roots; few distinct brown (7.5YR 5/4) clay films on faces of peds; very strongly acid; abrupt smooth boundary.
Bt/E—24 to 27 inches; brown (10YR 5/3) silty clay loam (Bt); many prominent light gray (10YR 7/1) silt coatings on faces of peds and as fillings between peds (E); moderate fine subangular blocky structure; firm; common roots; few black (10YR 2/1) iron-manganese concretions; very strongly acid; clear smooth boundary.

B´t—27 to 38 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse prismatic structure parting to moderate medium angular and subangular blocky; very firm and hard; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds and lining pores and channels; few white (10YR 8/1) uncoated silt grains on faces of peds; common medium prominent strong brown (7.5YR 5/8) masses of oxidized iron and common medium distinct light gray (10YR 7/1) iron depletions; few black (N 2.5/) iron-manganese concretions throughout; slightly brittle; very strongly acid; clear smooth boundary.

Btx1—38 to 52 inches; yellowish brown (10YR 5/4) silt loam; moderate very coarse prismatic structure parting to weak coarse angular and subangular blocky; very firm and hard; few roots, mostly confined to cracks between peds; few distinct brown (7.5YR 4/4) clay films on faces of peds and lining pores and some old root channels; light gray (10YR 7/1) silt or silt loam fillings in vertical cracks about $^1/_2$ inch to $1^1/_2$ inches in width that surround the polygons of the prismatic structure; common medium prominent strong brown (7.5YR 5/8) masses of oxidized iron and common medium distinct light gray (10YR 7/1) iron depletions; few black (N 2.5/) iron-manganese concretions throughout; brittle; very strongly acid; clear smooth boundary.

Btx2—52 to 61 inches; yellowish brown (10YR 5/4) silt loam; moderate very coarse prismatic structure parting to weak coarse angular blocky; very firm and hard; few roots, mostly confined to cracks between peds; few distinct dark yellowish brown (10YR 4/4) clay films on vertical faces of peds and lining a few old worm holes and root channels; light gray (10YR 7/1) silt or silt loam fillings in vertical cracks that surround the polygons of the prismatic structure; common medium prominent brownish yellow (10YR 6/8) masses of oxidized iron and common medium distinct light brownish gray (10YR 6/2) iron depletions; few black (N 2.5/) iron-manganese concretions throughout; brittle; strongly acid; gradual smooth boundary.

C—61 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common medium prominent brownish yellow (10YR 6/8) masses of oxidized iron and common medium distinct light brownish gray (10YR 6/2) iron depletions; moderately acid.

Range in Characteristics

Depth to the top of the argillic horizon: 8 to 23 inches
Depth to second sequum (Bt/E and B´t horizons): 20 to 36 inches
Depth to the fragipan: 24 to 40 inches
Thickness of the solum: 48 to more than 70 inches
Depth to bedrock: 5 to 12 feet
Particle-size control section: Averages 25 to 35 percent clay and 2 to 10 percent sand
Reaction in the subsoil: Strongly acid to extremely acid
Other characteristics: Some pedons have clay films or silt coatings on faces of peds in the BE horizon.

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam; silty clay loam in some pedons in severely eroded areas

E horizon:
Hue—10YR
Value—5 or 6
Chroma—3 or 4
Texture—silt loam or silty clay loam

BE horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or silty clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or silty clay loam

Bt/E horizon (Bt part):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam

Bt/E horizon (E part):
Hue—10YR
Value—5 to 8
Chroma—1 to 4
Texture—silt or silt loam

B´t horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—silt loam or silty clay loam
Other characteristics—the horizon is firm or very firm and is typically brittle in some part, but brittleness is not observed in all pedons. Clay films are on both vertical and horizontal faces of peds.

Btx or 2Btx horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—silt loam or silty clay loam (averages less than 10 percent sand by volume)
Other characteristics—primary structure is very coarse prismatic; the polygons are separated or surrounded by cracks filled with silt that is grayer and typically has less clay than the interiors of the polygons.

C or 2C horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 8
Texture—silt loam or silty clay loam

Hickory Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Hickory silt loam, in a wooded area of Hickory-Kell silt loams, 18 to 35 percent slopes, at an elevation of about 465 feet above mean sea level; 1,979 feet west and 1,173 feet north of the southeast corner of sec. 15, T. 3 S., R. 3 E.; Jefferson County, Illinois;

USGS Opdyke, Illinois, topographic quadrangle; lat. 38 degrees 15 minutes 39 seconds N. and long. 88 degrees 51 minutes 29 seconds W.; UTM Zone 16, Easting 337441, Northing 4236375; NAD 83:

A—0 to 3 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common fine and medium roots throughout; very strongly acid; clear smooth boundary.

E—3 to 11 inches; brown (10YR 4/3) silt loam; weak thick platy structure; friable; few fine and medium roots throughout; very strongly acid; clear smooth boundary.

EB—11 to 16 inches; dark yellowish brown (10YR 4/4) silt loam; weak thick platy structure parting to weak medium subangular blocky; friable; few fine and medium roots between peds; very strongly acid; clear smooth boundary.

Bt1—16 to 23 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure; friable; few fine and medium roots between peds; few distinct brown (10YR 4/3) and dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; very strongly acid; 5 percent sedimentary pebbles; clear smooth boundary.

Bt2—23 to 36 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; few medium and coarse roots throughout; few distinct brown (10YR 4/3) and dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; few medium distinct brown (7.5YR 4/4) masses of oxidized iron in the matrix; very strongly acid; 7 percent igneous pebbles; 5 percent sedimentary pebbles; clear smooth boundary.

Bt3—36 to 43 inches; yellowish brown (10YR 5/6) clay loam; moderate medium angular blocky structure; firm; few distinct dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; few fine prominent dark reddish brown (5YR 2.5/2) manganese masses and few medium distinct yellowish red (5YR 4/6) masses of oxidized iron in the matrix; very strongly acid; 7 percent igneous pebbles; 7 percent sedimentary pebbles; gradual smooth boundary.

Bt4—43 to 52 inches; yellowish brown (10YR 5/6) loam; common coarse prominent light gray (10YR 7/2) relict mottles; moderate medium subangular blocky structure; firm; few distinct dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; few fine prominent dark reddish brown (5YR 2.5/2) manganese masses and very few medium distinct yellowish red (5YR 4/6) masses of oxidized iron in the matrix; very strongly acid; 5 percent igneous pebbles; 7 percent sedimentary pebbles; abrupt smooth boundary.

Bt5—52 to 60 inches; yellowish brown (10YR 5/6) loam; few coarse prominent light gray (10YR 7/2) relict mottles; strong medium subangular blocky structure; very firm; few distinct dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; many fine prominent dark reddish brown (5YR 2.5/2) manganese masses in the matrix; very strongly acid; 5 percent igneous pebbles; 7 percent sedimentary pebbles.

Range in Characteristics

Thickness of the loess: 0 to 20 inches
Depth to carbonates: 40 to 72 inches
Depth to bedrock: More than 80 inches

A horizon:
Hue—7.5YR or 10YR
Value—2 to 5
Chroma—2 to 4
Texture—silt loam, loam, silty clay loam, or clay loam
Content of rock fragments—0 to 5 percent

E or EB horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—0 to 20 percent

C horizon (if it occurs):
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 6
Texture—loam, clay loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments—0 to 20 percent

Hoyleton Series

Taxonomic classification: Fine, smectitic, mesic Aquollic Hapludalfs

Typical Pedon

Hoyleton silt loam, on a slope of 2 percent in a cultivated field at an elevation of 655 feet above mean sea level; 295 feet south and 2,160 feet east of the northwest corner of sec. 15, T. 9 N., R. 5 E.; Shelby County, Illinois; USGS Shumway, Illinois, topographic quadrangle; lat. 39 degrees 13 minutes 46.1 seconds N. and long. 88 degrees 37 minutes 48.4 seconds W.; UTM Zone 16, Easting 359299, Northing 4343508; NAD 83:

Ap—0 to 8 inches; dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many very fine roots; few fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout and few fine distinct spherical weakly cemented black (10YR 2/1) manganese masses with sharp boundaries throughout; moderately acid; abrupt smooth boundary.

E—8 to 11 inches; brown (10YR 5/3) silt loam; weak thin platy structure; friable; common very fine and few fine roots; common faint dark grayish brown (10YR 4/2) organic stains lining root channels and pores; few fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout and few fine distinct spherical weakly cemented black (10YR 2/1) manganese masses with sharp boundaries throughout; strongly acid; clear smooth boundary.

BEt—11 to 14 inches; brown (10YR 5/3) silty clay loam; weak fine subangular blocky structure; friable; few very fine roots; few faint grayish brown (10YR 5/2) clay films and few distinct very pale brown (10YR 7/3) silt coatings on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout and few fine distinct spherical weakly cemented black (10YR 2/1) manganese masses with sharp boundaries throughout; strongly acid; clear smooth boundary.

Bt1—14 to 20 inches; brown (10YR 5/3) silty clay loam; strong fine subangular blocky structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films and many prominent very pale brown (10YR 8/2) silt coatings on faces of peds; common medium prominent yellowish red (5YR 5/6 and 5/8) masses of oxidized iron in the matrix; few fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout; strongly acid; clear smooth boundary.

Bt2—20 to 33 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; few fine and very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct dark gray (10YR 4/1) clay films lining root channels and pores; common fine prominent yellowish red (5YR 5/8) masses of oxidized iron and common medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout; strongly acid; gradual smooth boundary.

2Bt3—33 to 39 inches; pale brown (10YR 6/3) silty clay loam; weak coarse subangular blocky structure; firm; few fine and very fine roots; few faint grayish brown (10YR 5/2) clay films on faces of peds; few faint very dark grayish brown (10YR 3/2) organo-clay films lining root channels and pores; many medium prominent yellowish brown (10YR 5/8) masses of oxidized iron and common medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout; about 10 percent fine sand; strongly acid; gradual smooth boundary.

2BCt—39 to 54 inches; pale brown (10YR 6/3) silt loam; massive; friable; few very fine roots; few faint dark gray (10YR 4/1) clay films lining root channels and pores; few fine prominent yellowish brown (10YR 5/8) masses of oxidized iron and few fine faint yellowish brown (10YR 5/4) masses of oxidized iron and manganese in the matrix; common medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine prominent spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout; about 15 percent fine sand; slightly acid; gradual smooth boundary.

2Cg—54 to 80 inches; brown (7.5YR 5/2) silt loam; massive; friable; many medium prominent strong brown (7.5YR 4/6) masses of oxidized iron and many medium distinct brown (7.5YR 4/4) masses of oxidized iron and manganese in the matrix; few fine distinct spherical weakly cemented black (10YR 2/1) iron-manganese concretions with sharp boundaries throughout; about 25 percent fine sand; slightly acid.

Range in Characteristics

Thickness of the dark surface layer: 7 to 9 inches
Thickness of the loess: 30 to 55 inches
Depth to the base of the argillic horizon: More than 36 inches
Depth to carbonates: More than 60 inches
Particle-size control section: Averages 35 to 45 percent clay and less than 7 percent fine sand or coarser

Ap or A horizon:
Hue—10YR
Value—2 to 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid, except in areas that have been limed

E, EB, or BE horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid, except in areas that have been limed

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—very strongly acid or strongly acid

2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—1 to 4
Texture—silt loam, loam, silty clay loam, or clay loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to slightly acid

2Cg or 2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6
Chroma—1 to 4
Texture—silty clay loam, clay loam, or silt loam
Content of rock fragments—0 to 10 percent by volume
Reaction—moderately acid to neutral

Kell Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Kell silt loam, in a wooded area of Hickory-Kell silt loams, 18 to 35 percent slopes, at an elevation of about 460 feet above sea level; 1,975 feet west and 1,175 feet north of the southeast corner of sec. 15, T. 3 S., R. 3 E.; Jefferson County, Illinois; USGS Opdyke, Illinois, topographic quadrangle; lat. 38 degrees 15 minutes 39 seconds N. and long. 88 degrees 51 minutes 28 seconds W.; UTM Zone 16, Easting 337457, Northing 4236400; NAD 83:

A—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; common very fine and fine roots throughout; moderately acid; abrupt smooth boundary.

E—3 to 7 inches; 60 percent dark grayish brown (10YR 4/2) and 40 percent dark yellowish brown (10YR 4/4) silt loam; weak thin platy structure; friable; common very fine and fine roots; few fine distinct spherical black (10YR 2/1) iron-manganese concretions throughout; 1 percent shale pebbles; 1 percent subrounded quartz pebbles; moderately acid; clear smooth boundary.

Bt1—7 to 13 inches; yellowish brown (10YR 5/4) silt loam; strong fine subangular blocky structure; friable; common fine and medium roots; few distinct brown (10YR 4/3) clay films on faces of peds; few fine faint dark brown (10YR 4/3) masses of oxidized iron on faces of peds; common fine distinct spherical black (10YR 2/1) iron-manganese concretions throughout; 1 percent shale pebbles; 1 percent subrounded quartz pebbles; moderately acid; clear smooth boundary.

2Bt2—13 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few medium roots between peds; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; many fine distinct irregular yellowish brown (10YR 5/8) masses of oxidized iron with clear boundaries on faces of peds; few fine distinct spherical black (10YR 2/1) iron-manganese concretions throughout; 1 percent shale pebbles; 1 percent subrounded quartz pebbles; very strongly acid; clear smooth boundary.

2Bt3—18 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few medium roots between peds; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; few fine distinct irregular yellowish brown (10YR 5/8) masses of oxidized iron with clear boundaries on faces of peds; few fine distinct spherical black (10YR 2/1) iron-manganese concretions throughout; 10 percent shale pebbles; 1 percent subrounded quartz pebbles; very strongly acid; clear smooth boundary.

2BC—25 to 35 inches; 50 percent yellowish brown (10YR 5/4) and 50 percent light brownish gray (2.5Y 6/2) very channery silty clay loam; weak coarse prismatic structure; firm; few medium roots in cracks; few fine prominent irregular yellowish brown (10YR 5/8) and reddish yellow (7.5YR 6/6) masses of oxidized iron with clear boundaries around rock fragments; 50 percent shale fragments; extremely acid; gradual wavy boundary.

3Cr—35 to 60 inches; 50 percent yellowish brown (10YR 5/4) and 50 percent light brownish gray (2.5Y 6/2), weathered shale bedrock; few fine prominent irregular yellowish brown (10YR 5/8) and reddish yellow (7.5YR 6/6) masses of oxidized iron with clear boundaries around rock fragments.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—0 to 15 percent

E horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—0 to 15 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam or silty clay loam
Content of rock fragments—0 to 15 percent

2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 8

Texture—silt loam, silty clay loam, loam, or clay loam or the channery or very channery analogs of these textures
Content of rock fragments—0 to 60 percent

2BC horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—silt loam, silty clay loam, loam, or clay loam or the channery or very channery analogs of these textures
Content of rock fragments—5 to 60 percent

Lenzburg Series

Taxonomic classification: Fine-loamy, mixed, active, calcareous, mesic Haplic Udarents

Typical Pedon

Lenzburg silt loam, on a convex slope of 4 percent in a graded area in a field of fescue and alfalfa at an elevation of about 520 feet above sea level; approximately 12 feet south and 580 feet east of the center of sec. 22, T. 5 S., R. 6 W.; Randolph County, Illinois; USGS Steeleville, Illinois, topographic quadrangle; lat. 38 degrees 04 minutes 55 seconds N. and long. 89 degrees 44 minutes 53 seconds W.; UTM Zone 16, Easting 258966, Northing 4218479; NAD 83:

Ap—0 to 3 inches; mixed brown (10YR 4/3), light brownish gray (10YR 6/2), yellowish brown 10YR 5/6), and yellowish red (5YR 5/6) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable, slightly hard; about 7 percent till gravel and channers and flags of limestone and siltstone; slightly effervescent; slightly alkaline; abrupt wavy boundary.

AC—3 to 6 inches; mixed yellowish brown (10YR 5/4), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silt loam; moderate medium platy structure; friable, hard and slightly hard; about 9 percent till gravel and channers and flags of limestone and siltstone; strongly effervescent; slightly alkaline; abrupt wavy boundary.

C1—6 to 10 inches; brown (10YR 4/3) silt loam; strong thick horizontal layers; massive; firm, hard; few fragments of light brownish gray (10YR 6/2) silty clay loam; few distinct very dark gray (10YR 3/1) coatings on faces of soil fragments; about 11 percent till gravel and channers and flags of limestone and siltstone; strongly effervescent; slightly alkaline; abrupt wavy boundary.

C2—10 to 33 inches; mixed brown (7.5YR 4/4) and pale brown (10YR 6/3) clay loam; massive; firm, hard; few vertical cleavage planes; few gray (10YR 5/1) soil fragments throughout; few yellowish red (5YR 5/6) soil fragments in the lower part; about 9 percent till gravel and channers and flags of limestone and siltstone; strongly effervescent; slightly alkaline; clear smooth boundary.

C3—33 to 45 inches; mixed dark yellowish brown (10YR 4/4) and pale brown (10YR 6/3) clay loam; massive; firm, hard; few gray (10YR 6/1) and grayish brown (10YR 5/2) soil fragments; about 10 percent till gravel and channers and flags of limestone and siltstone; strongly effervescent; slightly alkaline; clear smooth boundary.

C4—45 to 60 inches; mixed brown (7.5YR 4/4) and gray (10YR 5/1) channery clay loam; very firm, very hard; few yellowish red (5YR 5/8) soil fragments; about 17 percent fragments of limestone; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to bedrock: More than 80 inches
Stones on the surface: On the average, stones cover about 0.01 to 0.1 percent of the surface area. The stones are spaced about 26 to 65 feet apart.
Content of rock fragments: 5 to 35 percent in the particle-size control section
Reaction in the series control section: Slightly alkaline or moderately alkaline; carbonates typically occur throughout

A horizon:
Hue—5YR, 7.5YR, 10YR, 2.5Y, or 5Y
Value—2 to 5 (4 to 7 dry)
Chroma—1 to 6; typically 2 to 4
Texture—silt loam, silty clay loam, clay loam, or loam or the gravelly, stony, or channery analogs of these textures

C horizon:
Hue—7.5YR or 10YR
Value—2 to 6; dominantly 4 to 6
Chroma—1 to 4; dominantly 3 or 4
Texture—silty clay loam, silt loam, loam, silty clay, or clay loam or the channery, gravelly, or cobbly analogs of these textures; thin strata or small pockets of coarser or finer textured material in some pedons

Orion Series

Taxonomic classification: Coarse-silty, mixed, superactive, nonacid, mesic Aquic Udifluvents
Taxadjunct features: The Orion soils in this survey area have more sand in the particle-size control section than is defined as the range for the series. This difference, however, does not significantly affect the use and management of the soils. These soils are classified as coarse-loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents.

Typical Pedon

Orion silt loam, in a nearly level area in a cultivated field at an elevation of about 502 feet above mean sea level; approximately 160 feet north and 455 feet east of the center of sec. 1, T. 1 N., R. 1 E.; Marion County, Illinois; USGS Centralia East, Illinois, topographic quadrangle; lat. 38 degrees 33 minutes 14 seconds N. and long. 89 degrees 02 minutes 20 seconds W.; UTM Zone 16, Easting 322331, Northing 4269270; NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine and very fine granular structure; friable; few very fine and fine roots throughout; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine spherical masses of iron-manganese; about 14 percent sand; moderately acid; clear smooth boundary.
C1—7 to 19 inches; brown (10YR 4/3) silt loam; weak medium and thick platy structure parting to weak medium granular; friable; few very fine and fine roots throughout; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine faint dark grayish brown (10YR 4/2) and common fine distinct gray (10YR 5/1) iron depletions; common fine spherical masses of iron-manganese; slightly acid; gradual smooth boundary.
C2—19 to 24 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; friable; few very fine roots throughout; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine

faint dark gray (10YR 4/1) iron depletions and common fine distinct yellowish brown (10YR 5/4) masses of oxidized iron; common fine and medium spherical masses of iron-manganese; moderately acid; about 21 percent sand; abrupt wavy boundary.

Ab1—24 to 35 inches; very dark gray (10YR 3/1) silt loam; weak medium and fine prismatic structure parting to weak medium and fine subangular blocky; friable; very few fine roots; many fine faint grayish brown (10YR 5/2) iron depletions and few fine distinct yellowish brown (10YR 5/4) masses of oxidized iron; common fine and medium spherical masses of iron-manganese; about 23 percent sand; 1 percent igneous pebbles; moderately acid; clear smooth boundary.

Ab2—35 to 42 inches; 50 percent very dark gray (10YR 3/1) and 50 percent very dark grayish brown (10YR 3/2) silt loam; moderate medium and fine prismatic structure; friable; very few fine roots; common fine faint grayish brown (10YR 5/2) iron depletions and few fine distinct yellowish brown (10YR 5/4) masses of oxidized iron; common fine and medium spherical masses of iron-manganese; about 34 percent sand; 2 percent igneous pebbles; moderately acid; clear smooth boundary.

ACb—42 to 60 inches; 60 percent grayish brown (10YR 5/2) and 40 percent very dark gray (10YR 3/1) silt loam; weak medium prismatic structure; firm; very few fine roots; common fine prominent yellowish brown (10YR 5/6) masses of oxidized iron; common fine and medium spherical masses of iron-manganese; about 35 percent sand; 2 percent igneous pebbles; neutral.

Range in Characteristics

Depth to the buried horizon: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam

C horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam

Ab or ACb horizon:
Hue—10YR or 2.5Y
Value—2 to 3 (Ab); 2 to 5 (ACb)
Chroma—1 or 2
Texture—silt loam

Pike Series

Taxonomic classification: Fine-silty, mixed, active, mesic Ultic Hapludalfs
Taxadjunct features: The Pike soils in this survey area have a base saturation of more than 60 percent at a depth of 125 cm below the top of the argillic horizon. This difference, however, does not significantly affect the use and management of the soils. These soils are classified as fine-silty, mixed, active, mesic Typic Hapludalfs.

Typical Pedon

Pike silt loam, in a nearly level field at an elevation of about 487 feet above mean sea level; approximately 2,060 feet north and 700 feet east of the southwest corner of sec. 22, T. 5 S., R. 1 E.; Franklin County, Illinois; USGS Sesser, Illinois, topographic quadrangle; lat. 38 degrees 04 minutes 21 seconds N. and long. 89 degrees 05 minutes 35 seconds W.; UTM Zone 16, Easting 316395, Northing 4215939; NAD 83:

A—0 to 4 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; strong fine crumb structure; very friable; many very fine and fine roots throughout; neutral; clear smooth boundary.

E—4 to 8 inches; brown (10YR 4/3) and dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; many very fine roots throughout; neutral; clear smooth boundary.

Bt1—8 to 12 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; common very fine roots throughout; very few distinct brown (7.5YR 4/4) clay films on faces of peds and in pores and few brown (10YR 4/3) organic coatings on faces of peds; slightly acid; clear smooth boundary.

Bt2—12 to 38 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; very firm; common very fine roots between peds; few distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; common fine spherical iron-manganese concretions; strongly acid; gradual smooth boundary.

2Bt3—38 to 57 inches; strong brown (7.5YR 4/6) silt loam; moderate coarse prismatic structure; firm; few very fine roots between peds; few distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; common fine spherical masses of iron-manganese; very strongly acid; gradual smooth boundary.

3Btb—57 to 75 inches; yellowish red (5YR 4/6) clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few very fine roots between peds; few distinct pinkish gray (7.5YR 7/2) silt coatings throughout and very few brown (7.5YR 4/4) clay films on faces of peds and in pores; 2 percent igneous pebbles; very strongly acid; gradual smooth boundary.

3BCb—75 to 104 inches; yellowish red (5YR 4/6) clay loam; massive; firm; very few distinct brown (7.5YR 4/4) clay films in root channels and pores and few pinkish gray (7.5YR 7/2) silt coatings throughout; common fine distinct brown (7.5YR 4/4) masses of oxided iron; 2 percent igneous pebbles; very strongly acid; gradual smooth boundary.

3C—104 to 124 inches; red (2.5YR 4/6) clay loam; massive; firm; 5 percent igneous pebbles; 2 percent sandstone pebbles; very strongly acid.

Range in Characteristics

Thickness of the loess: 40 to 60 inches
Depth to carbonates: More than 60 inches
Depth to bedrock: More than 80 inches

A or Ap horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—1 to 6
Texture—silt loam or silty clay loam

E horizon:
Hue—7.5YR or 10YR
Value—3 to 6

Chroma—4 to 6
Texture—silt loam or silty clay loam

Bt or 2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—silt loam or silty clay loam

2C horizon (if it occurs):
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—3 to 6
Texture—loam, clay loam, sandy loam, or sandy clay loam

3Btb horizon:
Hue—2.5YR, 5YR, or 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture—loam, clay loam, sandy loam, or sandy clay loam

Plumfield Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aquic Fragiudalfs

Typical Pedon

Plumfield silty clay loam, on a slope of 8 percent in a grass-legume field at an elevation of about 400 feet above mean sea level; 500 feet east and 2,060 feet south of the northwest corner of sec. 18, T. 7 S., R. 2 E.; Franklin County, Illinois; USGS Christopher, Illinois, topographic quadrangle; lat. 37 degrees 54 minutes 56 seconds N. and long. 89 degrees 02 minutes 15 seconds W.; UTM Zone 16, Easting 320900, Northing 4198402; NAD 83:

Ap—0 to 5 inches; yellowish brown (10YR 5/4) silty clay loam, light yellowish brown (10YR 6/4) dry; weak fine granular structure; friable; common very fine and fine roots throughout; very strongly acid; abrupt smooth boundary.

Btx1—5 to 7 inches; yellowish brown (10YR 5/6) silty clay loam; strong thick platy structure parting to strong medium platy; very firm; few very fine roots between peds; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; common fine prominent spherical very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; brittle; extremely acid; abrupt smooth boundary.

2Btx2—7 to 12 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; very firm; few very fine roots between peds; common faint grayish brown (10YR 5/2) and brown (10YR 5/3) clay films on faces of peds and in pores; few prominent white (10YR 8/1) silt coatings on faces of peds and in pores; common fine and medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine prominent spherical very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; brittle; extremely acid; clear smooth boundary.

2Btx3—12 to 36 inches; yellowish brown (10YR 5/6) silt loam; weak very coarse prismatic structure; very firm; few very fine roots between peds; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; common fine prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine prominent spherical very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; very strongly acid; 1 percent pebbles (igneous); brittle; very strongly acid; gradual smooth boundary.

3Btgb1—36 to 46 inches; grayish brown (10YR 5/2) silty clay loam; moderate coarse and medium prismatic structure parting to moderate medium angular blocky; very firm; few distinct dark yellowish brown (10YR 4/6) and few faint brown (10YR 5/3) and gray (10YR 5/1) clay films on faces of peds and in pores; many fine and medium prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine faint irregular very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; common fine irregular barite crystals; 1 percent gravel; strongly acid; gradual smooth boundary.

3Btgb2—46 to 56 inches; grayish brown (10YR 5/2) silty clay loam; weak coarse prismatic structure; very firm; few distinct dark yellowish brown (10YR 4/6) and few faint brown (10YR 5/3) and gray (10YR 5/1) clay films on faces of peds and in pores; many fine and medium prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine faint irregular very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; common fine irregular barite crystals; 1 percent gravel; moderately acid; gradual smooth boundary.

3Btgb3—56 to 70 inches; grayish brown (10YR 5/2) silty clay loam; weak very coarse prismatic structure; very firm; common faint gray (10YR 5/1) and brown (10YR 5/3) and few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; many fine and medium prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; many fine and medium faint irregular very dark gray (10YR 3/1) extremely weakly cemented iron-manganese accumulations; common fine irregular barite crystals; 1 percent gravel; slightly acid.

Range in Characteristics

Thickness of the loess: 0 to 20 inches
Depth to the fragipan: 5 to 20 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam

Btx horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam or silty clay loam

2Btx horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam, silty clay loam, or loam

3Btgb horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—1 or 2
Texture—loam, silt loam, clay loam, or silty clay loam

Racoon Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Endoaqualfs

Typical Pedon

Racoon silt loam, in a nearly level area in a cultivated field at an elevation of about 425 feet above mean sea level; approximately 135 feet north and 2,095 feet east of the center of sec. 30, T. 7 S., R. 5 E.; Saline County, Illinois; USGS Akin, Illinois, topographic quadrangle; lat. 37 degrees 53 minutes 08 seconds N. and long. 88 degrees 41 minutes 23 seconds W.; UTM Zone 16, Easting 351411, Northing 4194463; NAD 83:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; common fine faint very dark grayish brown (10YR 3/2) extremely weakly cemented iron-manganese accumulations throughout; neutral; abrupt smooth boundary.

Eg1—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak thin platy structure; firm, dense as if compacted like a plowsole; common fine faint very dark grayish brown (10YR 3/2) extremely weakly cemented iron-manganese accumulations throughout; neutral; abrupt smooth boundary.

Eg2—10 to 14 inches; dark grayish brown (10YR 4/2) silt loam; weak medium platy structure parting to weak fine granular; friable; common fine faint grayish brown (10YR 5/2) and few fine distinct light gray (10YR 7/1) iron depletions in the matrix; common fine faint very dark grayish brown (10YR 3/2) extremely weakly cemented iron-manganese accumulations throughout; strongly acid; clear smooth boundary.

Eg3—14 to 30 inches; gray (10YR 6/1) silt loam; weak medium platy structure parting to weak fine granular; friable; common very fine constricted tubular pores; common medium prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) masses of oxidized iron in the matrix; many fine prominent black (10YR 2/1) manganese masses throughout; few grayish brown (10YR 5/2) krotovinas; very strongly acid; clear smooth boundary.

Btg1—30 to 37 inches; gray (10YR 6/1) silty clay loam; weak medium prismatic structure parting to weak fine subangular blocky; firm; few very fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) masses of oxidized iron in the matrix; common fine prominent black (10YR 2/1) iron-manganese concretions; very strongly acid; clear smooth boundary.

Btg2—37 to 47 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine faint light gray (10YR 7/1) iron depletions and many fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine prominent black (10YR 2/1) iron-manganese concretions; very strongly acid; clear smooth boundary.

Btg3—47 to 59 inches; gray (10YR 6/1) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few faint gray (10YR 5/1) clay films and common prominent dark olive gray (5Y 3/2) organo-clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) and brown (7.5YR 4/4) masses of oxidized iron and manganese in the matrix; few fine prominent black (10YR 2/1) iron-manganese concretions; strongly acid; clear smooth boundary.

Cg—59 to 80 inches; gray (5Y 6/1) and gray (10YR 6/1) silt loam; massive; friable; many coarse distinct grayish brown (10YR 5/2) and prominent brown (7.5YR 4/4) masses of oxidized iron and manganese in the matrix; slightly acid increasing to neutral in the lower part.

Range in Characteristics

Depth to the top of the argillic horizon: 24 to 36 inches
Depth to the base of the argillic horizon: 40 to 75 inches
Particle-size control section: Averages 27 to 35 percent clay, less than 10 percent sand, and less than 2 percent gravel

Ap or A horizon:
Hue—10YR
Value—3 to 6 (5 to 7 dry)
Chroma—2 or 3
Texture—silt loam

Eg horizon:
Hue—10YR or 2.5Y
Value—4 to 7 (6 to 8 dry)
Chroma—1 or 2
Texture—silt loam

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 7
Chroma—0 to 2
Texture—dominantly silty clay loam; silt loam in the upper or lower subhorizons in some pedons

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 7
Chroma—1 or 2
Texture—dominantly silt loam or loam; stratified loamy fine sand to silty clay in some pedons

Rend Series

Taxonomic classification: Fine-silty, mixed, active, mesic Fragic Oxyaquic Hapludalfs

Typical Pedon

Rend silt loam, on a convex slope of 6 percent in an open field at an elevation of 420 feet above mean sea level; 710 feet south and 320 feet west of the northeast corner of sec. 14, T. 5 S., R. 2 E.; Franklin County, Illinois; USGS Rend Lake Dam, Illinois, topographic quadrangle; lat. 38 degrees 05 minutes 42 seconds N. and long. 88 degrees 57 minutes 04 seconds W.; UTM Zone 16, Easting 328907, Northing 4218166; NAD 83:

Ap—0 to 5 inches; brown 10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine angular blocky structure parting to weak fine granular; friable; many fine roots throughout; few fine distinct spherical black (2.5Y 2.5/1) iron-manganese concretions; slightly acid; abrupt smooth boundary.

Bt1—5 to 15 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine prismatic structure parting to strong fine subangular blocky; firm; common fine roots between peds; common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; few fine prominent spherical black (2.5Y 2.5/1) iron-manganese concretions; very strongly acid; abrupt smooth boundary.

Bt2—15 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; strong medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine and fine roots between peds; many distinct brown (10YR 4/3) clay films on faces of peds and in pores; common medium distinct strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; few fine prominent spherical black (2.5Y 2.5/1) iron-manganese concretions; very strongly acid; abrupt smooth boundary.

2Btx1—24 to 40 inches; yellowish brown (10YR 5/6) silt loam; weak coarse prismatic structure; firm; few very fine roots between peds; few prominent gray (10YR 6/1) silt coatings on faces of peds and in pores; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; common medium distinct yellowish brown (10YR 5/4) masses of oxidized iron and common fine and medium prominent light brownish gray (10YR 6/2) iron depletions in the matrix; few fine prominent spherical black (2.5Y 2.5/1) iron-manganese concretions; brittle; very strongly acid; clear smooth boundary.

2Btx2—40 to 50 inches; yellowish brown (10YR 5/4) silt loam; weak coarse prismatic structure; firm; few very fine roots between peds; few prominent gray (10YR 6/1) silt coatings on faces of peds and in pores; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; common medium faint yellowish brown (10YR 5/4) masses of oxidized iron and common fine and medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine prominent spherical black (2.5Y 2.5/1) iron-manganese concretions; brittle; strongly acid; clear smooth boundary.

2Btx3—50 to 60 inches; yellowish brown (10YR 5/4) silt loam; moderate coarse prismatic structure; firm; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many fine and medium distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few fine prominent black (2.5Y 2.5/1) manganese coatings; common fine and medium prominent spherical black (2.5Y 2.5/1) iron-manganese concretions; brittle; slightly acid.

Range in Characteristics

Thickness of the Peoria Loess: 16 to 40 inches
Depth to bedrock: More than 80 inches

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam or silty clay loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam

B/E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 8
Chroma—1 to 6
Texture—silty clay loam or silt loam

B´t horizon (if it occurs):
Hue—7.5YR or 10YR

Value—3 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Btx horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam or silty clay loam

3Bt horizon (if it occurs):
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—1 to 15 percent

Richview Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Mollic Oxyaquic Hapludalfs

Typical Pedon

Richview silt loam, on a slope of 3 percent in a cultivated field at an elevation of 500 feet above mean sea level; 1,200 feet west and 400 feet north of the southeast corner of sec. 21, T. 5 S., R. 3 E.; Franklin County, Illinois; USGS Rend Lake Dam, Illinois, topographic quadrangle; lat. 38 degrees 04 minutes 05 seconds N. and long. 88 degrees 52 minutes 33 seconds W.; UTM Zone 16, Easting 335456, Northing 4215026; NAD 83:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; many very fine and fine roots throughout; neutral; abrupt smooth boundary.

BE—9 to 11 inches; strong brown (7.5YR 5/6) silty clay loam; moderate fine subangular blocky structure parting to moderate very fine subangular blocky; friable; common very fine and fine roots throughout; common faint very dark grayish brown (10YR 3/2) organic stains on faces of peds and in pores; many fine distinct yellowish red (5YR 5/8) masses of oxidized iron in the matrix; neutral; clear smooth boundary.

Bt1—11 to 19 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine and fine roots between peds; common faint yellowish brown (10YR 5/4) clay films on faces of peds and in pores and few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; many fine and medium prominent red (2.5YR 5/8) and common fine distinct strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; very strongly acid; clear smooth boundary.

Bt2—19 to 22 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots between peds; common faint grayish brown (10YR 5/2) clay films on faces of peds and in pores; very few prominent white (10YR 8/1) silt coatings on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; many fine and medium prominent red (2.5YR 5/8) and common fine prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; very strongly acid; clear smooth boundary.

2Bt3—22 to 31 inches; yellowish brown (10YR 5/4) silt loam; moderate medium prismatic structure parting to weak medium and coarse angular blocky; firm; few very fine roots between peds; few faint grayish brown (10YR 5/2) clay films on faces of peds and in pores; common distinct very dark gray (10YR 3/1) organic stains on faces of peds; common fine and medium prominent red (2.5YR 5/8) masses of oxidized iron and common medium faint brown (10YR 5/3) iron depletions with diffuse boundaries in the matrix; few fine distinct spherical white (10YR 8/1) barite crystals; very strongly acid; clear smooth boundary.

2Bt4—31 to 39 inches; yellowish brown (10YR 5/4) silt loam; weak coarse prismatic structure; very firm; few very fine roots between peds; common distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds and in pores and few faint grayish brown (10YR 5/2) clay films; common fine faint brown (10YR 5/3) iron depletions in the matrix; few fine distinct spherical white (10YR 8/1) barite crystals; brittle; very strongly acid; gradual smooth boundary.

2BC—39 to 50 inches; dark yellowish brown (10YR 4/4) silt loam; weak coarse prismatic structure; very firm; common fine and medium distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few fine prominent spherical white (10YR 8/1) barite crystals and few fine prominent spherical black (2.5Y 2.5/1) extremely weakly cemented iron-manganese accumulations; brittle; very strongly acid; gradual smooth boundary.

2CB—50 to 70 inches; yellowish brown (10YR 5/6) silt loam; weak coarse prismatic structure; very firm; common medium and coarse distinct brown (10YR 5/3) iron depletions in the matrix; few fine prominent spherical black (2.5Y 2.5/1) extremely weakly cemented iron-manganese accumulations; brittle; strongly acid.

Range in Characteristics

Thickness of the dark surface layer: 7 to 9 inches
Thickness of the loess: 30 to 50 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—2 to 3
Chroma—1 to 3
Texture—silt loam

BE and E horizons (if they occur):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 6
Texture—silt loam or silty clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam, loam, or clay loam

2BC or 2CB horizon (if it occurs):
Hue—10YR
Value—4 to 6

Chroma—3 to 6
Texture—silt loam, loam, or clay loam

2C horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—loam, clay loam, or silt loam
Content of rock fragments—0 to 10 percent

Schuline Series

Taxonomic classification: Fine-loamy, mixed, superactive, calcareous, mesic Alfic Udarents

Typical Pedon

Schuline silt loam, on a convex slope of 2 percent in a cultivated field at an elevation of about 460 feet above mean sea level; approximately 1,600 feet north and 300 feet east of the center of sec. 22, T. 5 S., R. 2 W.; Perry County, Illinois; USGS Pyatts, Illinois, topographic quadrangle; lat. 38 degrees 04 minutes 37 seconds N. and long. 89 degrees 18 minutes 13 seconds W.; UTM Zone 16, Easting 297940, Northing 4216864; NAD 83:

Ap—0 to 6 inches; mixed brown (10YR 5/3) and yellowish brown (10YR 5/6) silt loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; common very fine and fine roots; about 9 percent sand; moderately acid; abrupt smooth boundary.

AC—6 to 10 inches; mixed brown (10YR 5/3), yellowish brown (10YR 5/6), and gray (10YR 5/1) silt loam, very pale brown (10YR 7/3) dry; weak fine subangular blocky structure; firm; few very fine and fine roots; about 9 percent sand; slightly acid; abrupt smooth boundary.

C1—10 to 21 inches; mixed light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) loam; massive with few medium subangular blocky clods; firm; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay depletions on faces of clods; few fine prominent black (10YR 2/1) iron-manganese concretions throughout; about 30 percent sand and 5 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—21 to 36 inches; mixed yellowish brown (10YR 5/4), brownish yellow (10YR 6/6), gray (10YR 5/1), and light brownish gray (10YR 6/2) loam; massive; firm; few fine distinct black (10YR 2/1) iron-manganese concretions throughout; about 30 percent sand and 5 percent gravel; slightly effervescent; slightly alkaline; gradual smooth boundary.

C3—36 to 54 inches; mixed yellowish brown (10YR 5/6), grayish brown (10YR 5/2), and brownish yellow (10YR 6/8) loam; massive; firm; weathered shale fragments in the lower part; about 30 percent sand and 7 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

C4—54 to 60 inches; mixed yellowish brown (10YR 5/4 and 5/6), gray (10YR 5/1), and dark grayish brown (10YR 4/2) loam; massive; friable; few fine distinct black (10YR 2/1) iron-manganese concretions throughout; about 40 percent sand and 15 percent gravel; violently effervescent; slightly alkaline.

Range in Characteristics

Depth to bedrock: More than 80 inches
Content of rock fragments: 0 to 15 percent in the particle-size control section and 0

to 35 percent below a depth of 48 inches. Some pedons contain stones below a depth of 48 inches that occur at random depth, spacing, and orientation.

A horizon and AC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5 (6 or 7 dry)
Chroma—1 to 6; dominantly 3 or 4
Texture—silt loam, silty clay loam, clay loam, or loam
Content of rock fragments—0 to 10 percent

C horizon:
Hue—7.5YR or 10YR
Value—4 to 7
Chroma—1 to 6
Texture—loam, clay loam, silty clay loam, or silt loam to a depth of 48 inches; clay loam, loam, silty clay loam, silt loam, or silty clay or the gravelly or channery analogs of these textures below a depth of 48 inches
Content of rock fragments—0 to 18 percent
Other characteristics—some pedons have, below a depth of 48 inches, strata, pockets, or soil fragments that do not contain carbonates

Sharon Series

Taxonomic classification: Coarse-silty, mixed, active, mesic Oxyaquic Dystrudepts

Typical Pedon

Sharon silt loam, in a frequently flooded area on a flood plain in a cultivated field at an elevation of about 424 feet above mean sea level; approximately 1,800 feet west and 140 feet south of the northeast corner of sec. 25, T. 7 S., R. 4 E.; Franklin County, Illinois; USGS Akin, Illinois, topographic quadrangle; lat. 37 degrees 53 minutes 32 seconds N. and long. 88 degrees 42 minutes 45 seconds W.; UTM Zone 16, Easting 349425, Northing 4195221; NAD 83:

Ap1—0 to 3 inches; 60 percent brown (10YR 4/3) and 40 percent dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; strong fine and medium granular structure; friable; common fine and medium roots throughout; slightly acid; abrupt smooth boundary.

Ap2—3 to 9 inches; 60 percent brown (10YR 4/3) and 40 percent dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; strong medium granular structure; friable; common fine and medium roots throughout; strongly acid; abrupt smooth boundary.

A—9 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; strong fine granular structure; friable; common fine and medium roots throughout; strongly acid; clear smooth boundary.

BA—13 to 17 inches; 60 percent yellowish brown (10YR 5/6) and 40 percent brown (10YR 4/3) silt loam; weak fine subangular blocky structure parting to weak fine granular; friable; few fine roots throughout; strongly acid; clear smooth boundary.

Bw—17 to 23 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; few fine roots throughout; very strongly acid; clear smooth boundary.

C1—23 to 29 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; strongly acid; clear smooth boundary.

C2—29 to 40 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; very few faint brown (10YR 4/3) organic stains in root channels and pores; common fine distinct grayish brown (10YR 5/2) iron depletions; few fine spherical extremely weakly cemented iron-manganese accumulations; strongly acid; clear smooth boundary.

C3—40 to 60 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few faint very dark grayish brown (10YR 3/2) organic stains in root channels and pores; common fine distinct grayish brown (10YR 5/2) iron depletions; few fine spherical extremely weakly cemented iron-manganese accumulations; moderately acid.

Range in Characteristics

Depth to the base of the cambic horizon: 20 to 40 inches

Particle-size control section: Averages less than 18 percent clay and less than 15 percent fine or coarser sand

Reaction: Strongly acid or very strongly acid from below the surface layer to a depth of 40 inches and very strongly acid to neutral below a depth of 40 inches

Other characteristics: Irregular decrease in organic-carbon content between the surface and a depth of 50 inches or an organic-carbon content of 0.2 percent or more at a depth of 50 inches; some pedons contain a buried A horizon below a depth of 40 inches

Ap and A horizons:
Hue—10YR
Value—3 to 5; 2 in some pedons in uncultivated areas
Chroma—2 to 4
Texture—silt loam

BA or Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam

C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 7
Chroma—2 to 6
Texture—silt loam; stratified loam, sandy loam, loamy sand, or sand in some pedons below a depth of 40 inches

Wilbur Series

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Fluvaquentic Eutrudepts

Typical Pedon

Wilbur silt loam, in a nearly level area in a cultivated field at an elevation of about 445 feet above mean sea level; approximately 1,155 feet west and 1,292 feet south of the northeast corner of sec. 9, T. 1 S., R. 10 W.; Monroe County, Illinois; USGS Columbia, Illinois, topographic quadrangle; lat. 38 degrees 28 minutes 03 seconds N. and long. 90 degrees 12 minutes 17 seconds W.; UTM Zone 15, Easting 743863, Northing 4261373; NAD 83:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common very fine roots; few fine constricted tubular pores; about 18 percent clay; slightly acid; clear smooth boundary.

Bw1—7 to 15 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; few very fine roots; common fine and medium continuous tubular pores; few medium distinct spherical black (7.5YR 2.5/1) iron-manganese nodules with clear strong brown (7.5YR 5/6) boundaries; about 17 percent clay; neutral; clear smooth boundary.

Bw2—15 to 22 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; few very fine roots; few fine and medium continuous tubular pores; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct irregular strong brown (7.5YR 5/6) extremely weakly cemented iron-manganese accumulations and few fine and medium distinct spherical black (7.5YR 2.5/1) iron-manganese nodules with clear strong brown (7.5YR 5/6) boundaries; about 16 percent clay; neutral; clear smooth boundary.

Bw3—22 to 41 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few very fine roots; common very fine and fine constricted tubular pores; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct irregular strong brown (7.5YR 5/6) extremely weakly cemented iron-manganese accumulations and few fine distinct spherical black (7.5YR 2.5/1) iron-manganese nodules with clear strong brown (7.5YR 5/6) boundaries; few thin light yellowish brown (10YR 6/4) strata; about 16 percent clay; neutral; clear smooth boundary.

Cg—41 to 65 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; few very fine roots; few fine constricted tubular pores; few fine distinct dark yellowish brown (10YR 3/4) extremely weakly cemented iron-manganese accumulations in the matrix; common fine distinct irregular black (7.5YR 2.5/1) and brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations; about 22 percent clay; neutral.

Range in Characteristics

Depth to the base of the cambic horizon: 24 to 42 inches
Depth to a buried soil (if it occurs): More than 60 inches
Particle-size control section: Averages 10 to 18 percent clay, less than 15 percent fine sand or coarser, and less than 15 percent very fine sand
Content of rock fragments: Less than 1 percent throughout
Reaction: Moderately acid to slightly alkaline

Ap or A horizon:
Hue—10YR
Value—4 or 5 (6 or 7 dry)
Chroma—2 to 4
Texture—silt loam

Bw horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam

C or Cg horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 6
Texture—silt loam; loam and thin strata of fine sandy loam or sandy loam below a depth of 40 inches in some pedons

Wirt Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Wirt silt loam, in a nearly level, wooded area at an elevation of about 480 feet above mean sea level; 250 feet west and 2,560 feet south of the northeast corner of sec. 21, T. 3 N., R. 1 E.; Marion County, Illinois; USGS Fairman, Illinois, topographic quadrangle; lat. 38 degrees 41 minutes 06 seconds N. and long. 89 degrees 05 minutes 14 seconds W.; UTM Zone 16, Easting 318456, Northing 4283890; NAD 83:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; common fine to coarse roots throughout; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine spherical black (10YR 2/1) extremely weakly cemented iron-manganese accumulations; neutral; abrupt wavy boundary.

A2—3 to 12 inches; brown (10YR 4/3) silt loam; weak coarse angular blocky structure; friable; common very fine to coarse roots throughout; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine spherical black (10YR 2/1) extremely weakly cemented iron-manganese accumulations; slightly acid; abrupt wavy boundary.

Bw—12 to 36 inches; brown (10YR 4/3) silt loam; moderate medium prismatic structure parting to moderate coarse angular blocky; friable; common very fine to coarse roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine spherical black (10YR 2/1) extremely weakly cemented iron-manganese accumulations; moderately acid; gradual wavy boundary.

C1—36 to 46 inches; brown (10YR 5/3), stratified silt loam and loam; massive; friable; few very fine to coarse roots; common distinct very dark grayish brown (10YR 3/2) organic coatings in pores; few fine spherical black (10YR 2/1) extremely weakly cemented iron-manganese accumulations; moderately acid; abrupt wavy boundary.

C2—46 to 60 inches; yellowish brown (10YR 5/6) sandy loam; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix and common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; massive; very friable; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Reaction: Moderately acid to neutral

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam or loam

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—3 to 6
Texture—silt loam, loam, or sandy loam

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam, loam, or sandy loam or the gravelly analogs of these textures

Wynoose Series

Taxonomic classification: Fine, smectitic, mesic Typic Albaqualfs

Typical Pedon

Wynoose silt loam, in a nearly level area in a cultivated field at an elevation of 455 feet above mean sea level; 967 feet west and 2,458 feet north of the southeast corner of sec. 10, T. 1 N., R. 8 E.; Wayne County, Illinois; USGS Enterprise, Illinois, topographic quadrangle; lat. 38 degrees 31 minutes 57.4 seconds N. and long. 88 degrees 17 minutes 50.3 seconds W.; UTM Zone 16, Easting 386926, Northing 4265710; NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; common very fine roots throughout; common fine distinct brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations in the matrix; few fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; neutral; abrupt smooth boundary.

Eg1—7 to 14 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; friable; few very fine roots throughout; common distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine prominent strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; strongly acid; clear smooth boundary.

Eg2—14 to 20 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; friable; few very fine roots throughout; common distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; few fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; few fine prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; very strongly acid; abrupt smooth boundary.

Btg1—20 to 29 inches; light brownish gray (10YR 6/2) silty clay; strong medium prismatic structure parting to strong medium angular blocky; firm; few very fine roots along faces of peds; many distinct gray (10YR 5/1) clay films and common distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine and medium prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; common fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; common fine and medium prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

Btg2—29 to 36 inches; light brownish gray (10YR 6/2) silty clay; strong medium prismatic structure parting to strong medium angular blocky; firm; few very fine roots along faces of peds; common distinct gray (10YR 5/1) clay films and few distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine and medium prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; few fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; few fine prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

2Btg3—36 to 48 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots along faces of peds; few distinct grayish brown (10YR 5/2) clay films and few distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) masses of oxidized iron in the matrix; few fine distinct spherical brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations throughout; few fine prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; about 2 percent angular gravel by volume; strongly acid; clear smooth boundary.

2Btg4—48 to 66 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots along faces of peds; few distinct gray (10YR 5/1) clay films on faces of peds and few distinct dark grayish brown (10YR 4/2) clay films in root channels and pores; common fine and medium prominent strong brown (7.5YR 5/8) masses of oxidized iron in the matrix; few fine prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; about 2 percent angular gravel by volume; strongly acid; clear smooth boundary.

3Btgb—66 to 80 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; very firm; common distinct gray (10YR 5/1) clay films on faces of peds and common prominent black (N 2.5/) manganese coatings on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6 and 5/8) masses of oxidized iron in the matrix; common medium prominent irregular reddish black (2.5YR 2.5/1) iron-manganese concretions throughout; about 5 percent angular gravel by volume; moderately acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to the base of the argillic horizon: More than 40 inches
Particle-size control section: Averages 35 to 42 percent clay and less than 15 percent sand

Ap or A horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Reaction—strongly acid; ranges to neutral in areas that have been limed

Eg horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Texture—silt loam
Reaction—extremely acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silty clay
Reaction—extremely acid to moderately acid

2Btg or 2BCg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, silty clay loam, or clay loam

Content of rock fragments—0 to 5 percent
Reaction—extremely acid to moderately acid

3Agb and/or 3Btgb horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, silty clay loam, or clay loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to slightly alkaline

Zanesville Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Zanesville silt loam, on a smooth, convex ridgetop in a cultivated field at an elevation of about 571 feet above mean sea level; approximately 1/4 mile north of Needmore, along the west side of Kentucky Highway 293, about 300 feet south of Liberty Church; Caldwell County, Kentucky; USGS Olney, Kentucky, 7.5´ topographic quadrangle; lat. 37 degrees 13 minutes 34 seconds N. and long. 87 degrees 50 minutes 42 seconds W.; UTM Zone 16, Easting 425044, Northing 4120291; NAD 83:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; moderately acid; abrupt smooth boundary.
Bt—7 to 28 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common faint brown (10YR 5/3) and reddish brown (5YR 5/4) clay films on faces of peds; few fine black (N 2.5/) iron-manganese concretions; very strongly acid; clear wavy boundary.
Btx—28 to 39 inches; yellowish brown (10YR 5/4) silt loam; many medium distinct gray (10YR 6/1) and strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; very firm; few fine roots between prisms; many distinct gray (10YR 6/1) silt coatings and clay films on vertical faces of peds and common faint brown (10YR 5/3) and common distinct reddish brown (5YR 5/4) clay films on faces of peds; few fine black (N 2.5/) iron-manganese concretions; brittle in 60 percent of the matrix; very strongly acid; gradual wavy boundary.
2BC—39 to 60 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium distinct light brownish gray (2.5Y 6/2) and light yellowish brown (10YR 6/4) mottles; weak thick platy structure; firm; few fine black (N 2.5/) iron-manganese concretions; 10 percent weathered brown sandstone and siltstone fragments; very strongly acid; clear wavy boundary.
2R—60 inches; gray and brown, acid sandstone and siltstone.

Range in Characteristics

Depth to the fragipan: 20 to 32 inches
Thickness of the solum: 35 to 70 inches
Depth to bedrock: 40 to 80 inches
Reaction: Moderately acid to very strongly acid, except in areas that have been limed

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4

Texture—typically silt loam; silty clay loam in some pedons in severely eroded areas

A horizon (in uncultivated areas):
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—1 to 4
Texture—silt loam
Thickness—1 to 3 inches

E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam

Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 or 5
Chroma—4 to 6
Texture—silt loam or silty clay loam

Btx or 2Btx horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—commonly silt loam or silty clay loam; less commonly loam, clay loam, sandy clay loam, or fine sandy loam
Content of rock fragments—0 to 15 percent

2C, 3C, 2BC, or 3BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam, silt loam, loam, clay loam, sandy clay loam, or fine sandy loam or the gravelly, channery, or very channery analogs of these textures
Content of rock fragments—5 to 50 percent

2Cr or 3Cr horizon (if it occurs):
Kind of bedrock—paralithic (rippable), interbedded sandstone, siltstone, or shale

2R or 3R layer:
Kind of bedrock—lithic (hard) sandstone or siltstone

Formation of the Soils

This section relates the soils in the survey area to the major factors of soil formation and describes the processes of soil formation.

Factors of Soil Formation

Soil is produced by soil-forming processes, such as weathering and other geologic processes, acting on materials deposited or accumulated by geologic agents. The characteristics of the soil at any given point on the landscape depend upon five major soil-forming factors: parent material, climate, living organisms, relief, and time (Jenny, 1941). Climate and living organisms are the active forces of soil formation. They act on the parent material accumulated through the weathering of rock and slowly change it into soil. All five factors are involved in the formation of every soil. The relative importance of each factor differs from place to place. In extreme cases, one factor may dominate in the formation of a soil and fix most of its properties. In general, however, it is the combined action of the five factors that determines the present character of each soil.

Parent Material

Parent material is derived mainly from the weathering of rock, but it may have been sorted and moved from place to place by glaciers, wind, or water. The soils of Jefferson County formed mostly in loess, till, or alluvium. Some soils formed as a result of surface mining.

Loess, or wind-deposited material, is the most extensive parent material in the county. It blankets many of the other materials. Upland ridgetops in the county generally are blanketed with 3 to 6 feet of loess. The loess is thinner on the steeper side slopes. The valleys of the Mississippi River, the Big Muddy River, and the Kaskaskia River were the main sources of loess deposits in the county. The loess was deposited during two periods. Peoria Loess was deposited during the Woodfordian Substage of the Wisconsinan Stage, about 25,000 to 12,000 years ago. Underlying the Peoria Loess is Roxana Silt. The Roxana Silt is loess that was deposited more than 60,000 to 28,000 years ago, during the Altonian Substage (Hansel and Johnson, 1996). The Roxana Loess generally makes up from one-third to one-half of the total thickness of the loess. The uppermost layer, the Peorian Loess, ordinarily is the thickest and is the material in which most of the modern soils developed. Cisne and Hoyleton are examples of soils that formed mainly in loess.

Till is material deposited directly by a glacier without subsequent reworking by meltwater. It generally consists of a mixture of clay, silt, sand, gravel, stones, and boulders. Hickory soils are examples of soils that formed in till. In Jefferson County, the till overlies Pennsylvanian-age bedrock, generally thin-bedded sandstone, siltstone, and shale. In the steeper areas, the soils formed both in till and in till and the underlying bedrock. Kell soils formed in till and in the underlying bedrock.

Alluvium is material, such as sand, silt, or clay, deposited on land by streams. Belknap and Bonnie are examples of soils that formed in alluvium.

Some areas in the southern part of the county have been surface mined. The age of the mining determines the amount and degree of reclamation that has taken place. The older mining, before 1977, left parallel ridges with steep side slopes and valleys, many of which are permanent water bodies. Lenzburg soils occur in these areas. They consist of mine spoil that contains a high content of rock fragments. The less sloping phases of these soils are in areas where the mine spoil ridges were more graded. Since 1977, reclamation has been characterized by the premining stockpiling of topsoil, subsoil, and substratum separately. These stockpiles are later redistributed over graded mine spoil using a belt line, bucket wheel, and scrapers. A bulldozer is used for the final grading. Schuline soils occur in these gently sloping reclaimed areas.

Climate and Living Organisms

Climate largely determines the rate of weathering, and it also influences the type of vegetation that grows on soils. The humid, temperate climate of Jefferson County is conducive to the relatively rapid breakdown of minerals, to the formation of clay, and to the translocation of these materials downward in the soil profile. It is also conducive to the growth of deciduous forest, which for a significant period prior to settlement covered a large part of the uplands and most of the terraces and bottom land. As a result, most of the soils have a relatively light-colored surface horizon. Examples are Bluford and Ava soils. Richview and Hoyleton soils formed predominantly under mixed prairie vegetation and scattered trees. These soils have a dark surface layer. Sharon and Belknap soils are examples of soils that formed in alluvium under forest vegetation. These soils have a light-colored surface layer.

Relief

Under given climatic conditions and in uniform parent material, relief largely controls the amount of moisture in the soil. It influences the amount of runoff, the amount of infiltration, and the degree of erosion. In uniform materials, such as loess, differences in natural soil drainage generally are closely associated with slope, or relief. For example, both the moderately well drained Ava soils and the somewhat poorly drained Bluford soils formed in loess and are commonly adjacent to each other on the landscape, but the Ava soils are in the higher positions.

Time

The length of time necessary for the development of a soil depends on the other factors of soil formation. Soil development generally is faster in a humid climate that supports plentiful vegetation than in a dry climate that supports little vegetation. Soils normally become more strongly developed with increased time of exposure to weathering processes. Belknap soils are examples of weakly developed soils. Wynoose soils are examples of strongly developed soils.

Processes of Soil Formation

Soil forms through the complex interaction of four general processes (Simonson, 1959). These processes are additions, transformations, removals, and transfers. The degree of interaction of each of these processes in soil formation varies, resulting in the variety of soils on the landscape.

Additions to the soil can occur directly through the deposition of sediment on the soil surface from flooding or through the accumulation of windblown sediment. The accumulation and incorporation of organic material in the A horizon of mineral soils also is an addition. The most striking example of this addition is the formation of the mollic epipedon. The mollic epipedon forms in an environment that features optimum moisture, temperature, and amount of bivalent cations. Such an environment allows grasses to thrive. The grassland vegetation produces large amounts of organic material. Microbial decomposition of subsurface organic residues and organic residues from the surface taken underground by soil fauna results in the most recognizable property of the mollic epipedon, which is its dark color. Chauncey soils are examples of soils that have a mollic epipedon.

Transformations are changes that take place in the soil through the interaction of biological, chemical, and physical processes. An example is the reduction of iron and manganese oxides, which occurs in soils saturated with water. Typically, iron oxides coat soil particles and produce brownish, yellowish, or reddish colors, and manganese oxides produce black colors. When a soil becomes saturated with water and the dissolved oxygen is removed, anaerobic conditions develop. These conditions result in changes in the biogeochemical processes occurring in the soils and in the development of distinctive soil morphological characteristics (redoximorphic features). Reduced iron and manganese can move with the soil water to other parts of the soil or can be removed entirely from the soil by leaching. After the iron and manganese are gone, the leached area, or area of depletion, generally has a grayish or whitish color. If the reduced iron comes in contact with oxygen, it can re-oxidize. The result is the formation of bright-colored concentrations or accumulations. Repeated cycles of saturation and drying create a mottled soil. Part of the soil is gray because of the loss of iron, and other parts are brown because the iron oxide has accumulated or has not been removed. The somewhat poorly drained Bluford soils are examples of soils in which this process has occurred. If a soil remains saturated for long periods, iron may be leached from the profile. Such soils are generally grayish, or gleyed. The poorly drained Wynoose soils are examples.

Removals from the soil can occur as solid mineral and organic particles are lost from the soil surface as a result of either wind or water. This process is called soil erosion. Such losses can be serious because the material lost is typically the most productive part of the soil profile. The strongly sloping Atlas and Blair soils are examples of soils that are highly susceptible to removals by soil erosion.

Removals can also occur within the soil, commonly as a result of leaching. The leaching of calcium carbonate from calcareous loess is an example of a removal. The loess was initially high in calcium carbonate. Water percolating through the loess dissolved and transported the calcium carbonate deeper into the soil profile. Calcium carbonate is relatively soluble and is removed early in the formation of the soil. It is also a powerful flocculent that creates microscopic soil particles too large to be transported in suspension in the soil water. Removal of calcium carbonate facilitates the dispersion of clay particles. Translocation of the dispersed clay particles can then occur in percolating soil water. Bluford soils are examples of soils in which significant removals from leaching have occurred.

Translocations are movements from one place to another in the soil. An example is the formation of an illuvial horizon through the translocation of clay from the A or E horizon, the zone of eluviation, or loss, to the B horizon, the zone of illuviation, or gain. In Cisne and Bluford soils, for example, significant clay has accumulated in the form of an illuvial horizon called an argillic horizon. Argillic horizons tend to develop on stable landscapes. Fine clay was transferred from the A or E horizon by water from rain and melting snow downward through the soil to the B horizon, where it was deposited on the faces of peds and along pores.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the “National Soil Survey Handbook” (available in local offices of the Natural Resources Conservation Service or on the Internet).

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

Ablation till. Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Accretion gley. A term used to describe a soil parent material that was deposited by water in shallow depressions and developed under conditions that resulted in a gleyed (gray) color.

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. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

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

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

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

Aspect. The direction toward which a slope faces. Also called slope aspect.

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.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

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.

Basal till. Compact till deposited beneath the ice.

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 (geomorphology). 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 plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

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.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. An informal term loosely applied to various portions of a flood plain.

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

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

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.

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

Calcium carbonate. A common mineral in sediments and soils.

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 and under similar climatic conditions but that 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. See Terracettes.

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. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

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.

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

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

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. See Redoximorphic features.

Congeliturbate. Soil material disturbed by frost action.

Conglomerate. A coarse grained, clastic sedimentary 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.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

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

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

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

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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.

Diamicton. A generic term for a till-like mixture of unsorted, unstratified rock debris composed of a wide range of particle sizes. Use of this term carries no suggestion about how such debris was formed or deposited.

Diatomaceous earth. A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

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

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

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

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

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

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.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

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.

End moraine. A ridgelike accumulation that is being or was produced at the outer margin of an actively flowing glacier at any given time.

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 deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

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 surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Esker. A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

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

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

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

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

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.

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

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular 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. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

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.

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.

Geosol. A buried soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists at the site. The former pedogenic process was interrupted by burial. A geosol is a laterally traceable, mappable, geologic weathering profile that has a consistent stratigraphic position. (See Paleosol.)

Glacial (geology). This term embraces both the processes and results of erosion and deposition arising from the presence of an ice mass (glacier) on a landscape.

Glacial lake (relict). An area formerly occupied by a glacial lake. (See Glaciolacustrine deposits.)

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded 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 moraine. An extensive, fairly even layer of till having an uneven or undulating surface.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

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 slope (geomorphology). 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 generic term for an elevated area 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. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

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.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

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.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

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

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

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

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

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

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

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation include:

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

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.

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

Kame. A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. 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.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

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

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

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

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

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.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

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 at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

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

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

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

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

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

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. In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

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

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

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
Nodules. See Redoximorphic features.
Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).
Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.
Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.
Paleosol. A general term used to describe a soil that formed on a landscape of the past; it may be a buried soil, a relict soil, or an exhumed soil. (See Geosol.)
Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.
Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.
Parent material. The unconsolidated organic and mineral material in which soil forms.
Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)
Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.
Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.
Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
Percolation. The movement of water through the soil.
Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as

"permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

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

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

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

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

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

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

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

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

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

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Saturated hydraulic conductivity (Ksat). See Permeability.

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

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

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. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

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

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

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

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

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

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 (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

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.

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

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 and by the passage of time.

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

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

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

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

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.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

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 grain* (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.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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.

Talf. A geomorphic component of flat plains consisting of an essentially flat and broad area dominated by closed depressions and a nonintegrated or poorly integrated drainage system. Precipitation tends to pond locally, and lateral transport is slow both above and below ground. These conditions favor the accumulation of soil organic matter and a retention of fine earth sediments; better drained soils are commonly adjacent to drainageways.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

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. Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain. An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

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

Toeslope. 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.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

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 disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth’s surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Mt. Vernon, Illinois)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	37.3	19.7	28.5	66	-12	4	2.53	1.02	4.02	5	6.4
February---	43.4	24.1	33.8	72	-6	10	2.69	1.35	3.81	5	4.4
March------	53.9	33.5	43.7	80	9	61	3.84	2.32	5.18	7	1.9
April------	65.2	43.4	54.3	85	23	187	4.50	2.71	6.05	8	.4
May--------	75.0	52.9	63.9	90	34	425	4.55	2.52	6.16	7	.0
June-------	84.1	62.2	73.2	97	45	692	3.61	1.59	5.65	6	.0
July-------	87.9	66.5	77.2	98	52	837	3.57	1.83	5.17	5	.0
August-----	86.5	64.0	75.3	99	50	769	3.27	1.41	5.03	4	.0
September--	79.5	55.9	67.7	95	35	527	3.11	1.37	4.63	4	.0
October----	68.5	43.9	56.2	87	24	232	2.90	1.48	3.97	5	.2
November---	54.2	35.0	44.6	77	13	66	4.35	2.02	6.52	6	.7
December---	42.0	24.4	33.2	67	-3	10	3.20	1.60	4.44	6	3.6
Yearly:											
Average---	64.8	43.8	54.3	---	---	---	---	---	---	---	---
Extreme---	102	-21	---	100	-14	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,820	42.12	34.91	48.10	68	17.6

* 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 1971-2000 at Mt. Vernon, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 11	Apr. 17	Apr. 27
2 years in 10 later than--	Apr. 6	Apr. 12	Apr. 22
5 years in 10 later than--	Mar. 26	Apr. 3	Apr. 13
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 23	Oct. 12	Sept. 30
2 years in 10 earlier than--	Oct. 29	Oct. 18	Oct. 5
5 years in 10 earlier than--	Nov. 8	Oct. 28	Oct. 14

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Mt. Vernon, Illinois)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	204	184	165
8 years in 10	212	192	171
5 years in 10	226	208	184
2 years in 10	240	223	196
1 year in 10	247	231	202

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
2A	Cisne silt loam, 0 to 2 percent slopes	16,595	4.4
3A	Hoyleton silt loam, 0 to 2 percent slopes	21,748	5.8
3B2	Hoyleton silt loam, 2 to 5 percent slopes, eroded	7,614	2.0
4B2	Richview silt loam, 2 to 5 percent slopes, eroded	2,319	0.6
4C2	Richview silt loam, 5 to 10 percent slopes, eroded	818	0.2
5C2	Blair silt loam, 5 to 10 percent slopes, eroded	25	*
5C3	Blair silty clay loam, 5 to 10 percent slopes, severely eroded	19,949	5.3
7C2	Atlas silt loam, 5 to 10 percent slopes, eroded	43	*
7D2	Atlas silt loam, 10 to 18 percent slopes, eroded	4	*
8D2	Hickory silt loam, 10 to 18 percent slopes, eroded	25	*
8D3	Hickory clay loam, 10 to 18 percent slopes, severely eroded	10,793	2.9
8F	Hickory silt loam, 18 to 35 percent slopes	58	*
8G	Hickory silt loam, 35 to 60 percent slopes	7	*
10C	Plumfield silty clay loam, 5 to 10 percent slopes	13,320	3.6
10D	Plumfield silty clay loam, 10 to 18 percent slopes	3,483	0.9
12A	Wynoose silt loam, 0 to 2 percent slopes	13,879	3.7
13A	Bluford silt loam, 0 to 2 percent slopes	37,885	10.1
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded	16,715	4.5
14B	Ava silt loam, 2 to 5 percent slopes	24,974	6.7
14B2	Ava silt loam, 2 to 5 percent slopes, eroded	7,941	2.1
14C2	Ava silt loam, 5 to 10 percent slopes, eroded	8,418	2.3
109A	Racoon silt loam, 0 to 2 percent slopes	1,605	0.4
287A	Chauncey silt loam, 0 to 2 percent slopes	654	0.2
301B	Grantsburg silt loam, 2 to 5 percent slopes	21,474	5.7
301C3	Grantsburg silty clay loam, 5 to 10 percent slopes, severely eroded	13,622	3.6
337A	Creal silt loam, 0 to 2 percent slopes	661	0.2
340D3	Zanesville silty clay loam, 10 to 18 percent slopes, severely eroded	5,096	1.4
376A	Cisne silt loam, bench, 0 to 2 percent slopes	2,356	0.6
377A	Hoyleton silt loam, bench, 0 to 2 percent slopes	1,135	0.3
377B2	Hoyleton silt loam, bench, 2 to 5 percent slopes, eroded	448	0.1
421G	Kell silt loam, 35 to 60 percent slopes	2,699	0.7
518B	Rend silt loam, 2 to 5 percent slopes	910	0.2
518B2	Rend silt loam, 2 to 5 percent slopes, eroded	3,862	1.0
518C2	Rend silt loam, 5 to 10 percent slopes, eroded	1,630	0.4
533	Urban land	682	0.2
536	Dumps, mine	421	0.1
583B	Pike silt loam, 2 to 5 percent slopes	73	*
583C2	Pike silt loam, 5 to 10 percent slopes, eroded	48	*
639A	Wynoose silt loam, bench, 0 to 2 percent slopes	8,087	2.2
640A	Bluford silt loam, bench, 0 to 2 percent slopes	4,714	1.3
802B	Orthents, loamy, undulating	3,292	0.9
802F	Orthents, loamy, hilly and very hilly	560	0.1
823B	Schuline silt loam, 1 to 5 percent slopes	2,360	0.6
866	Dumps, slurry	302	*
871D	Lenzburg gravelly silty clay loam, 7 to 20 percent slopes, stony	368	*
871G	Lenzburg gravelly silty clay loam, 20 to 60 percent slopes, stony	800	0.2
908F	Hickory-Kell silt loams, 18 to 35 percent slopes	18,565	5.0
927D3	Blair-Atlas silty clay loams, 10 to 18 percent slopes, severely eroded	4,912	1.3
1108A	Bonnie silt loam, undrained, 0 to 2 percent slopes, frequently flooded	2,203	0.6
3072A	Sharon silt loam, 0 to 2 percent slopes, frequently flooded	5,378	1.4
3108A	Bonnie silt loam, 0 to 2 percent slopes, frequently flooded	11,839	3.2
3226A	Wirt silt loam, 0 to 2 percent slopes, frequently flooded	9	*
3336A	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded	60	*
3382A	Belknap silt loam, 0 to 2 percent slopes, frequently flooded	34,757	9.3
3415A	Orion silt loam, 0 to 2 percent slopes, frequently flooded	5	*
3422A	Cape silty clay loam, 0 to 2 percent slopes, frequently flooded	55	*
MW	Miscellaneous water	47	*
W	Water	11,218	3.0
	Total	373,520	100.0

* Less than 0.1 percent.

Table 5.--Limitations and Hazards Affecting Cropland and Pastureland

(See text for a description of the limitations and hazards listed in this table. Only the soils that are generally available for use as cropland or pastureland are listed)

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
2A:		
Cisne	Wetness, low pH, crusting, restricted permeability	Wetness, restricted trafficability, low pH
3A:		
Hoyleton	Low pH, crusting, restricted permeability	Restricted trafficability, low pH
3B2:		
Hoyleton	Low pH, crusting, water erosion, restricted permeability	Restricted trafficability, low pH, water erosion
4B2:		
Richview	Low pH, crusting, water erosion	Low pH, water erosion
4C2:		
Richview	Low pH, crusting, water erosion	Low pH, water erosion
5C2:		
Blair	Low pH, crusting, water erosion	Restricted trafficability, low pH, water erosion
5C3:		
Blair	Low pH, crusting, water erosion	Restricted trafficability, low pH, water erosion
7C2:		
Atlas	Wetness, low pH, crusting, water erosion, restricted permeability	Restricted trafficability, low pH, water erosion
7D2:		
Atlas	Equipment limitation (slope), wetness, low pH, crusting, water erosion, restricted permeability	Equipment limitation (slope), restricted trafficability, low pH, water erosion
8D2:		
Hickory	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), low pH, water erosion
8D3:		
Hickory	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), low pH, water erosion
8F:		
Hickory	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), low pH, water erosion
8G:		
Hickory	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), low pH, water erosion

Table 5.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
10C:		
Plumfield	Limited rooting depth (fragipan), low pH, crusting, water erosion, limited available water capacity, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion, limited available water capacity
10D:		
Plumfield	Equipment limitation (slope), limited rooting depth (fragipan), low pH, crusting, water erosion, limited available water capacity, restricted permeability	Equipment limitation (slope), limited rooting depth (fragipan), low pH, water erosion, limited available water capacity
12A:		
Wynoose	Ponding, wetness, low pH, crusting, restricted permeability	Ponding, wetness, restricted trafficability, low pH
13A:		
Bluford	Wetness, low pH, crusting, restricted permeability	Restricted trafficability, low pH
13B2:		
Bluford	Wetness, low pH, crusting, water erosion, restricted permeability	Restricted trafficability, low pH, water erosion
14B:		
Ava	Limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion
14B2:		
Ava	Limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion
14C2:		
Ava	Limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion
109A:		
Racoon	Ponding, wetness, low pH, crusting, restricted permeability	Ponding, wetness, restricted trafficability, low pH
287A:		
Chauncey	Ponding, wetness, low pH, restricted permeability	Ponding, wetness, restricted trafficability, low pH
301B:		
Grantsburg	Limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion

Table 5.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
301C3:		
Grantsburg	Limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Limited rooting depth (fragipan), low pH, water erosion
337A:		
Creal	Low pH, crusting	Restricted trafficability, low pH
340D3:		
Zanesville	Equipment limitation (slope), limited rooting depth (fragipan), low pH, crusting, water erosion, restricted permeability	Equipment limitation (slope), limited rooting depth (fragipan), low pH, water erosion
376A:		
Cisne	Wetness, low pH, crusting, restricted permeability	Wetness, restricted trafficability, low pH
377A:		
Hoyleton	Low pH, crusting, restricted permeability	Restricted trafficability, low pH
377B2:		
Hoyleton	Low pH, crusting, water erosion, restricted permeability	Restricted trafficability, low pH, water erosion
421G:		
Kell	Equipment limitation (slope), low pH, water erosion, limited available water capacity	Equipment limitation (slope), low pH, water erosion, limited available water capacity
518B:		
Rend	Low pH, crusting, water erosion, restricted permeability	Low pH, water erosion
518B2:		
Rend	Low pH, crusting, water erosion, restricted permeability	Low pH, water erosion
518C2:		
Rend	Low pH, crusting, water erosion, restricted permeability	Low pH, water erosion
583B:		
Pike	Low pH, crusting, water erosion	Low pH, water erosion
583C2:		
Pike	Low pH, crusting, water erosion	Low pH, water erosion
639A:		
Wynoose	Ponding, wetness, low pH, crusting, restricted permeability	Ponding, wetness, restricted trafficability, low pH

Table 5.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
640A:		
Bluford	Wetness, low pH, crusting, restricted permeability	Restricted trafficability, low pH
823B:		
Schuline	Crusting, water erosion, high pH	Water erosion, high pH
871D:		
Lenzburg	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), high pH, crusting, water erosion	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), high pH, water erosion
871G:		
Lenzburg	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), high pH, crusting, water erosion	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), high pH, water erosion
908F:		
Hickory	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), low pH, water erosion
Kell	Equipment limitation (slope), low pH, water erosion, limited available water capacity	Equipment limitation (slope), low pH, water erosion, limited available water capacity
927D3:		
Blair	Equipment limitation (slope), low pH, crusting, water erosion	Equipment limitation (slope), restricted trafficability, low pH, water erosion
Atlas	Equipment limitation (slope), wetness, low pH, crusting, water erosion, restricted permeability	Equipment limitation (slope), restricted trafficability, low pH, water erosion
1108A:		
Bonnie	Flooding, ponding, wetness, low pH, crusting	Flooding, ponding, wetness, restricted trafficability, low pH
3072A:		
Sharon	Flooding, low pH, crusting	Flooding, low pH
3108A:		
Bonnie	Flooding, ponding, wetness, low pH, crusting	Flooding, ponding, wetness, restricted trafficability, low pH
3226A:		
Wirt	Flooding, low pH, crusting	Flooding, low pH
3336A:		
Wilbur	Flooding, low pH, crusting	Flooding, low pH

Table 5.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
3382A:		
Belknap	Flooding, wetness, low pH	Flooding, restricted trafficability, low pH
3415A:		
Orion	Flooding, crusting	Flooding, restricted trafficability
3422A:		
Cape	Flooding, ponding, wetness, low pH, restricted permeability	Flooding, ponding, wetness, restricted trafficability, low pH

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	Grain sorghum	Soybeans	Winter wheat	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
2A:							
Cisne----------------	3w	135	102	41	53	4.18	6.20
3A:							
Hoyleton------------	2w	132	103	42	52	4.18	6.20
3B2:							
Hoyleton, eroded----	2e	125	98	40	49	3.97	5.80
4B2:							
Richview, eroded----	2e	130	100	41	51	3.33	4.90
4C2:							
Richview, eroded----	3e	127	98	40	50	3.26	4.70
5C2:							
Blair, eroded-------	3e	115	92	37	47	3.68	5.36
5C3:							
Blair, severely eroded-------------	4e	107	85	34	43	3.41	4.90
7C2:							
Atlas, eroded-------	3e	95	---	33	38	2.80	4.20
7D2:							
Atlas, eroded-------	3e	95	---	33	38	2.80	4.20
8D2:							
Hickory, eroded-----	4e	93	---	31	37	3.10	4.40
8D3:							
Hickory, severely eroded-------------	4e	86	---	29	35	2.86	4.00
8F:							
Hickory-------------	6e	---	---	---	---	2.20	3.20
8G:							
Hickory-------------	7e	---	---	---	---	---	---
10C:							
Plumfield-----------	4e	92	78	31	36	3.03	4.40
10D:							
Plumfield-----------	6e	---	---	---	---	2.88	4.20
12A:							
Wynoose-------------	3w	115	97	38	46	3.84	5.70
13A:							
Bluford-------------	2w	122	99	40	50	3.05	4.50
13B2:							
Bluford, eroded-----	2e	116	94	38	48	2.91	4.20

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
14B:							
Ava-----------------	2e	120	95	39	50	2.91	4.20
14B2:							
Ava, eroded---------	2e	113	89	36	47	2.73	4.10
14C2:							
Ava, eroded---------	3e	109	86	35	45	2.65	3.90
109A:							
Racoon--------------	3w	130	103	41	51	3.50	5.20
287A:							
Chauncey------------	2w	145	105	46	57	4.29	6.30
301B:							
Grantsburg----------	2e	119	93	41	50	2.91	4.20
301C3:							
Grantsburg, severely eroded-------------	4e	89	70	30	37	2.20	3.10
337A:							
Creal---------------	2w	136	106	43	53	3.62	5.30
340D3:							
Zanesville, severely eroded-------------	6e	---	---	---	---	2.35	3.90
376A:							
Cisne, bench--------	3w	135	102	41	53	4.18	6.20
377A:							
Hoyleton, bench-----	2w	132	103	42	52	4.18	6.20
377B2:							
Hoyleton, bench, eroded-------------	2e	125	98	40	49	3.97	5.80
421G:							
Kell----------------	7e	---	---	---	---	---	---
518B:							
Rend----------------	2e	127	95	40	50	3.40	4.80
518B2:							
Rend, eroded--------	2e	119	89	37	46	3.20	4.50
518C2:							
Rend, eroded--------	3e	115	86	36	45	3.10	4.30
533.							
Urban land							
536.							
Dumps, mine							
583B:							
Pike----------------	2e	144	105	44	56	3.80	5.60

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
583C2:							
Pike, eroded	3e	135	100	41	53	3.57	5.20
639A:							
Wynoose, bench	3w	115	94	36	46	3.84	5.70
640A:							
Bluford, bench	2w	122	99	40	50	3.05	4.50
802B:							
Orthents, loamy	2e	---	---	---	---	---	---
802F:							
Orthents, loamy	7e	---	---	---	---	---	---
823B:							
Schuline	2e	119	101	39	---	2.91	4.20
866.							
Dumps, slurry							
871D:							
Lenzburg, stony	6s	---	---	---	---	3.29	4.80
871G:							
Lenzburg, stony	7s	---	---	---	---	---	---
908F:							
Hickory	6e	---	---	---	---	2.79	4.00
Kell	6e	---	---	---	---	2.70	3.90
927D3:							
Blair, severely eroded	6e	---	---	---	---	3.13	4.40
Atlas, severely eroded	6e	---	---	---	---	2.12	3.50
1108A:							
Bonnie, undrained, frequently flooded	5w	---	---	---	---	---	---
3072A:							
Sharon, frequently flooded	2w	133	---	43	---	3.86	5.70
3108A:							
Bonnie, frequently flooded	3w	121	---	40	---	3.76	5.60
3226A:							
Wirt, frequently flooded	3w	118	91	38	---	2.80	4.20
3336A:							
Wilbur, frequently flooded	2w	140	---	45	---	4.40	6.50

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
3382A:							
Belknap, frequently flooded------------	3w	127	---	42	---	3.96	5.90
3415A:							
Orion, frequently flooded------------	3w	146	---	46	---	4.10	6.00
3422A:							
Cape, frequently flooded------------	3w	111	---	38	---	3.46	5.10

* Animal unit month: The amount of forage required to feed one mature cow, of approximately 1,000 pounds weight, with or without a calf, for 30 days.

Table 7.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
2A	Cisne silt loam, 0 to 2 percent slopes (where drained)
3A	Hoyleton silt loam, 0 to 2 percent slopes
3B2	Hoyleton silt loam, 2 to 5 percent slopes, eroded
4B2	Richview silt loam, 2 to 5 percent slopes, eroded
13A	Bluford silt loam, 0 to 2 percent slopes (where drained)
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded
14B	Ava silt loam, 2 to 5 percent slopes
14B2	Ava silt loam, 2 to 5 percent slopes, eroded
109A	Racoon silt loam, 0 to 2 percent slopes (where drained)
287A	Chauncey silt loam, 0 to 2 percent slopes (where drained)
301B	Grantsburg silt loam, 2 to 5 percent slopes
337A	Creal silt loam, 0 to 2 percent slopes (where drained)
376A	Cisne silt loam, bench, 0 to 2 percent slopes (where drained)
377A	Hoyleton silt loam, bench, 0 to 2 percent slopes
377B2	Hoyleton silt loam, bench, 2 to 5 percent slopes, eroded
518B	Rend silt loam, 2 to 5 percent slopes
518B2	Rend silt loam, 2 to 5 percent slopes, eroded
583B	Pike silt loam, 2 to 5 percent slopes
640A	Bluford silt loam, bench, 0 to 2 percent slopes (where drained)
823B	Schuline silt loam, 1 to 5 percent slopes
3072A	Sharon silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3108A	Bonnie silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3226A	Wirt silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3336A	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3382A	Belknap silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3415A	Orion silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3422A	Cape silty clay loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)

Table 8.--Map Units With Major Components of Hydric Soils

(This table lists only the map units that have hydric soils as major components. See text for a description of hydric qualities and definitions of the codes in the hydric criteria column)

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric criteria
2A:				
Cisne silt loam, 0 to 2 percent slopes	Cisne	90	Flats	2B3
12A:				
Wynoose silt loam, 0 to 2 percent slopes	Wynoose	90	Flats	2B3
109A:				
Racoon silt loam, 0 to 2 percent slopes	Racoon	90	Fans	2B3
287A:				
Chauncey silt loam, 0 to 2 percent slopes	Chauncey	90	Flats	2B3
376A:				
Cisne silt loam, bench, 0 to 2 percent slopes	Cisne, bench	90	Structural benches	2B3
639A:				
Wynoose silt loam, bench, 0 to 2 percent slopes	Wynoose, bench	90	Structural benches	2B3
1108A:				
Bonnie silt loam, undrained, 0 to 2 percent slopes, frequently flooded	Bonnie, undrained, frequently flooded	90	Flood plains	3,2B3,4
3108A:				
Bonnie silt loam, 0 to 2 percent slopes, frequently flooded	Bonnie, frequently flooded	90	Flood plains	2B3
3422A:				
Cape silty clay loam, 0 to 2 percent slopes, frequently flooded	Cape, frequently flooded	90	Flood plains	2B3

Table 9.--Map Units With Minor Components of Hydric Soils

(This table lists only the map units that have hydric soils as minor components. A few components may not be mapped in this survey area but are part of the map unit concept for the MLRA. See text for a description of hydric qualities and definitions of the codes in the hydric criteria column)

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric criteria
3A:				
Hoyleton silt loam, 0 to 2 percent slopes	Cisne	5	Flats	2B3
13A:				
Bluford silt loam, 0 to 2 percent slopes	Wynoose	5	Flats	2B3
337A:				
Creal silt loam, 0 to 2 percent slopes	Racoon	5	Depressions	2B3
377A:				
Hoyleton silt loam, bench, 0 to 2 percent slopes	Cisne, bench	5	Structural benches	2B3
640A:				
Bluford silt loam, bench, 0 to 2 percent slopes	Wynoose, bench	5	Structural benches	2B3
3382A:				
Belknap silt loam, 0 to 2 percent slopes, frequently flooded	Bonnie, frequently flooded	3	Flood plains	2B3
	Piopolis, frequently flooded	3	Flood plains	2B3
3415A:				
Orion silt loam, 0 to 2 percent slopes, frequently flooded	Bonnie, frequently flooded	5	Flood plains	2B3

Table 10a.--Forestland Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. See text for definitions of terms used in this table)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
2A:			
Cisne	Moderate Low strength	Poorly suited Wetness Low strength	Moderately suited Low strength
3A:			
Hoyleton	Moderate Low strength	Moderately suited Low strength Wetness	Moderately suited Low strength
3B2:			
Hoyleton, eroded	Moderate Low strength	Moderately suited Low strength Wetness	Moderately suited Low strength
4B2:			
Richview, eroded	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
4C2:			
Richview, eroded	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength
5C2:			
Blair, eroded	Moderate Low strength	Moderately suited Low strength Slope Wetness	Moderately suited Low strength
5C3:			
Blair, severely eroded	Moderate Low strength	Moderately suited Low strength Slope Wetness	Moderately suited Low strength
7C2:			
Atlas, eroded	Moderate Low strength	Moderately suited Wetness Low strength Slope	Moderately suited Low strength
7D2:			
Atlas, eroded	Moderate Low strength	Poorly suited Slope Wetness Low strength	Moderately suited Low strength
8D2:			
Hickory, eroded	Moderate Low strength	Poorly suited Slope Low strength	Moderately suited Low strength

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
8D3:			
Hickory, severely eroded	Moderate Low strength	Poorly suited Slope Low strength	Moderately suited Low strength
8F:			
Hickory	Moderate Slope	Poorly suited Slope Low strength	Moderately suited Low strength Slope
8G:			
Hickory	Severe Slope Low strength	Poorly suited Slope Low strength	Poorly suited Slope Low strength
10C:			
Plumfield	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength
10D:			
Plumfield	Moderate Low strength	Poorly suited Slope Low strength	Moderately suited Low strength
12A:			
Wynoose	Moderate Low strength	Poorly suited Ponding Wetness Low strength	Moderately suited Low strength
13A:			
Bluford	Moderate Low strength	Moderately suited Wetness Low strength	Moderately suited Low strength
13B2:			
Bluford, eroded	Moderate Low strength	Moderately suited Wetness Low strength	Moderately suited Low strength
14B:			
Ava	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
14B2:			
Ava, eroded	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
14C2:			
Ava, eroded	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength
109A:			
Racoon	Moderate Low strength	Poorly suited Ponding Wetness Low strength	Moderately suited Low strength

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
287A:			
Chauncey	Moderate Low strength	Poorly suited Ponding Wetness Low strength	Moderately suited Low strength
301B:			
Grantsburg	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
301C3:			
Grantsburg, severely eroded	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength
337A:			
Creal	Moderate Low strength	Moderately suited Low strength Wetness	Moderately suited Low strength
340D3:			
Zanesville, severely eroded	Moderate Low strength	Poorly suited Slope Low strength	Moderately suited Low strength
376A:			
Cisne, bench	Moderate Low strength	Poorly suited Wetness Low strength	Moderately suited Low strength
377A:			
Hoyleton, bench	Moderate Low strength	Moderately suited Low strength Wetness	Moderately suited Low strength
377B2:			
Hoyleton, bench, eroded	Moderate Low strength	Moderately suited Low strength Wetness	Moderately suited Low strength
421G:			
Kell	Severe Slope Low strength	Poorly suited Slope Low strength	Poorly suited Slope Low strength
518B:			
Rend	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
518B2:			
Rend, eroded	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
518C2:			
Rend, eroded	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
533:			
Urban land	Not rated	Not rated	Not rated
536:			
Dumps, mine	Not rated	Not rated	Not rated
583B:			
Pike	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
583C2:			
Pike, eroded	Moderate Low strength	Moderately suited Low strength Slope	Moderately suited Low strength
639A:			
Wynoose, bench	Moderate Low strength	Poorly suited Ponding Wetness Low strength	Moderately suited Low strength
640A:			
Bluford, bench	Moderate Low strength	Moderately suited Wetness Low strength	Moderately suited Low strength
802B:			
Orthents, loamy	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
802F:			
Orthents, loamy	Severe Slope Low strength	Poorly suited Slope Low strength	Poorly suited Slope Low strength
823B:			
Schuline	Moderate Low strength	Moderately suited Low strength	Moderately suited Low strength
866:			
Dumps, slurry	Not rated	Not rated	Not rated
871D:			
Lenzburg, stony	Moderate Slope	Poorly suited Slope Low strength	Moderately suited Low strength
871G:			
Lenzburg, stony	Severe Slope Low strength	Poorly suited Slope Low strength	Poorly suited Slope Low strength
908F:			
Hickory	Moderate Slope	Poorly suited Slope Low strength	Moderately suited Low strength Slope
Kell	Moderate Slope Restrictive layer	Poorly suited Slope Low strength	Moderately suited Low strength Slope

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
927D3:			
Blair, severely eroded	Moderate Low strength	Poorly suited Slope Low strength Wetness	Moderately suited Low strength
Atlas, severely eroded	Moderate Stickiness/slope Low strength	Poorly suited Slope Low strength Stickiness; high plasticity index Wetness	Moderately suited Low strength Stickiness; high plasticity index
1108A:			
Bonnie, undrained, frequently flooded	Severe Flooding Low strength	Poorly suited Ponding Flooding Wetness Low strength	Moderately suited Low strength
3072A:			
Sharon, frequently flooded	Severe Flooding Low strength	Poorly suited Flooding Low strength	Moderately suited Low strength
3108A:			
Bonnie, frequently flooded	Severe Flooding Low strength	Poorly suited Ponding Flooding Wetness Low strength	Moderately suited Low strength
3226A:			
Wirt, frequently flooded	Severe Flooding Low strength	Poorly suited Flooding Low strength	Moderately suited Low strength
3336A:			
Wilbur, frequently flooded	Severe Flooding Low strength	Poorly suited Flooding Low strength Wetness	Moderately suited Low strength
3382A:			
Belknap, frequently flooded	Severe Flooding Low strength	Poorly suited Flooding Wetness Low strength	Moderately suited Low strength

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings	Suitability for log landings	Suitability for use of harvesting equipment
	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
3415A:			
Orion, frequently flooded-----------	Severe Flooding Low strength	Poorly suited Flooding Low strength	Moderately suited Low strength
3422A:			
Cape, frequently flooded-----------	Severe Flooding Low strength	Poorly suited Ponding Flooding Wetness Low strength	Moderately suited Low strength

Table 10b.--Forestland Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. See text for definitions of terms used in this table)

Map symbol and soil name	Suitability for mechanized site preparation	Limitations affecting prescribed burning
	Rating class and limiting features	Rating class and limiting features
2A:		
Cisne	Well suited	Moderate Root restriction
3A:		
Hoyleton	Well suited	Slight
3B2:		
Hoyleton, eroded	Well suited	Slight
4B2:		
Richview, eroded	Well suited	Slight
4C2:		
Richview, eroded	Well suited	Slight
5C2:		
Blair, eroded	Well suited	Slight
5C3:		
Blair, severely eroded	Well suited	Slight
7C2:		
Atlas, eroded	Well suited	Slight
7D2:		
Atlas, eroded	Well suited	Slight
8D2:		
Hickory, eroded	Well suited	Slight
8D3:		
Hickory, severely eroded	Well suited	Slight
8F:		
Hickory	Poorly suited Slope	Slight
8G:		
Hickory	Unsuited Slope	Moderate Slope
10C:		
Plumfield	Well suited	Moderate Root restriction
10D:		
Plumfield	Well suited	Moderate Root restriction
12A:		
Wynoose	Well suited	Moderate Root restriction

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Suitability for mechanized site preparation	Limitations affecting prescribed burning
	Rating class and limiting features	Rating class and limiting features
13A:		
Bluford	Well suited	Slight
13B2:		
Bluford, eroded	Well suited	Slight
14B:		
Ava	Well suited	Slight
14B2:		
Ava, eroded	Well suited	Moderate Root restriction
14C2:		
Ava, eroded	Well suited	Moderate Root restriction
109A:		
Racoon	Well suited	Slight
287A:		
Chauncey	Well suited	Moderate Root restriction
301B:		
Grantsburg	Well suited	Slight
301C3:		
Grantsburg, severely eroded	Well suited	Moderate Root restriction
337A:		
Creal	Well suited	Slight
340D3:		
Zanesville, severely eroded	Well suited	Moderate Root restriction
376A:		
Cisne, bench	Well suited	Moderate Root restriction
377A:		
Hoyleton, bench	Well suited	Slight
377B2:		
Hoyleton, bench, eroded	Well suited	Slight
421G:		
Kell	Unsuited Slope	Moderate Slope Root restriction
518B:		
Rend	Well suited	Slight

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Suitability for mechanized site preparation	Limitations affecting prescribed burning
	Rating class and limiting features	Rating class and limiting features
518B2:		
Rend, eroded	Well suited	Slight
518C2:		
Rend, eroded	Well suited	Slight
533:		
Urban land	Not rated	Not rated
536:		
Dumps, mine	Not rated	Not rated
583B:		
Pike	Well suited	Slight
583C2:		
Pike, eroded	Well suited	Slight
639A:		
Wynoose, bench	Well suited	Moderate Root restriction
640A:		
Bluford, bench	Well suited	Slight
802B:		
Orthents, loamy	Well suited	Slight
802F:		
Orthents, loamy	Unsuited Slope	Moderate Slope
823B:		
Schuline	Well suited	Slight
866:		
Dumps, slurry	Not rated	Not rated
871D:		
Lenzburg, stony	Poorly suited Slope	Slight
871G:		
Lenzburg, stony	Unsuited Slope	Moderate Slope
908F:		
Hickory	Poorly suited Slope	Slight
Kell	Poorly suited Slope	Moderate Root restriction
927D3:		
Blair, severely eroded	Well suited	Slight
Atlas, severely eroded	Well suited	Slight

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Suitability for mechanized site preparation	Limitations affecting prescribed burning
	Rating class and limiting features	Rating class and limiting features
1108A:		
Bonnie, undrained, frequently flooded	Well suited	Slight
3072A:		
Sharon, frequently flooded	Well suited	Slight
3108A:		
Bonnie, frequently flooded	Well suited	Slight
3226A:		
Wirt, frequently flooded	Well suited	Slight
3336A:		
Wilbur, frequently flooded	Well suited	Slight
3382A:		
Belknap, frequently flooded	Well suited	Slight
3415A:		
Orion, frequently flooded	Well suited	Slight
3422A:		
Cape, frequently flooded	Well suited	Slight

Table 10c.--Forestland Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. See text for definitions of terms used in this table)

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
2A:		
Cisne	Slight	Poorly suited Wetness Low strength
3A:		
Hoyleton	Slight	Moderately suited Low strength Wetness
3B2:		
Hoyleton, eroded	Moderate Slope/erodibility	Moderately suited Low strength Wetness
4B2:		
Richview, eroded	Moderate Slope/erodibility	Moderately suited Low strength
4C2:		
Richview, eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope
5C2:		
Blair, eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope Wetness
5C3:		
Blair, severely eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope Wetness
7C2:		
Atlas, eroded	Moderate Slope/erodibility	Moderately suited Wetness Low strength Slope
7D2:		
Atlas, eroded	Severe Slope/erodibility	Poorly suited Slope Wetness Low strength
8D2:		
Hickory, eroded	Severe Slope/erodibility	Poorly suited Slope Low strength

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
8D3:		
Hickory, severely eroded	Severe Slope/erodibility	Poorly suited Slope Low strength
8F:		
Hickory	Severe Slope/erodibility	Poorly suited Slope Low strength
8G:		
Hickory	Severe Slope/erodibility	Poorly suited Slope Low strength
10C:		
Plumfield	Moderate Slope/erodibility	Moderately suited Low strength Slope
10D:		
Plumfield	Severe Slope/erodibility	Poorly suited Slope Low strength
12A:		
Wynoose	Slight	Poorly suited Ponding Wetness Low strength
13A:		
Bluford	Slight	Moderately suited Wetness Low strength
13B2:		
Bluford, eroded	Moderate Slope/erodibility	Moderately suited Wetness Low strength
14B:		
Ava	Moderate Slope/erodibility	Moderately suited Low strength
14B2:		
Ava, eroded	Moderate Slope/erodibility	Moderately suited Low strength
14C2:		
Ava, eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope
109A:		
Racoon	Slight	Poorly suited Ponding Wetness Low strength

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
287A:		
Chauncey	Slight	Poorly suited Ponding Wetness Low strength
301B:		
Grantsburg	Moderate Slope/erodibility	Moderately suited Low strength
301C3:		
Grantsburg, severely eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope
337A:		
Creal	Slight	Moderately suited Low strength Wetness
340D3:		
Zanesville, severely eroded	Severe Slope/erodibility	Poorly suited Slope Low strength
376A:		
Cisne, bench	Slight	Poorly suited Wetness Low strength
377A:		
Hoyleton, bench	Slight	Moderately suited Low strength Wetness
377B2:		
Hoyleton, bench, eroded	Moderate Slope/erodibility	Moderately suited Low strength Wetness
421G:		
Kell	Severe Slope/erodibility	Poorly suited Slope Low strength
518B:		
Rend	Moderate Slope/erodibility	Moderately suited Low strength
518B2:		
Rend, eroded	Moderate Slope/erodibility	Moderately suited Low strength
518C2:		
Rend, eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
533:		
Urban land	Not rated	Not rated
536:		
Dumps, mine	Not rated	Not rated
583B:		
Pike	Moderate Slope/erodibility	Moderately suited Low strength
583C2:		
Pike, eroded	Moderate Slope/erodibility	Moderately suited Low strength Slope
639A:		
Wynoose, bench	Slight	Poorly suited Ponding Wetness Low strength
640A:		
Bluford, bench	Slight	Moderately suited Wetness Low strength
802B:		
Orthents, loamy	Moderate Slope/erodibility	Moderately suited Low strength
802F:		
Orthents, loamy	Severe Slope/erodibility	Poorly suited Slope Low strength
823B:		
Schuline	Moderate Slope/erodibility	Moderately suited Low strength
866:		
Dumps, slurry	Not rated	Not rated
871D:		
Lenzburg, stony	Severe Slope/erodibility	Poorly suited Slope Low strength
871G:		
Lenzburg, stony	Severe Slope/erodibility	Poorly suited Slope Low strength
908F:		
Hickory	Severe Slope/erodibility	Poorly suited Slope Low strength
Kell	Severe Slope/erodibility	Poorly suited Slope Low strength

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
927D3:		
Blair, severely eroded	Severe Slope/erodibility	Poorly suited Slope Low strength Wetness
Atlas, severely eroded	Severe Slope/erodibility	Poorly suited Slope Low strength Stickiness; high plasticity index Wetness
1108A:		
Bonnie, undrained, frequently flooded	Slight	Poorly suited Ponding Flooding Wetness Low strength
3072A:		
Sharon, frequently flooded	Slight	Poorly suited Flooding Low strength
3108A:		
Bonnie, frequently flooded	Slight	Poorly suited Ponding Flooding Wetness Low strength
3226A:		
Wirt, frequently flooded	Slight	Poorly suited Flooding Low strength
3336A:		
Wilbur, frequently flooded	Slight	Poorly suited Flooding Low strength Wetness
3382A:		
Belknap, frequently flooded	Slight	Poorly suited Flooding Wetness Low strength

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Hazard of erosion on roads and trails	Suitability for roads (natural surface)
	Rating class and limiting features	Rating class and limiting features
3415A:		
Orion, frequently flooded	Slight	Poorly suited Flooding Low strength
3422A:		
Cape, frequently flooded	Slight	Poorly suited Ponding Flooding Wetness Low strength

Table 11.--Forestland Productivity

(Only the soils commonly used for production of commercial trees are listed)

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
2A:			
Cisne	Eastern cottonwood	96	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	87	
	Yellow poplar	84	
3A:			
Hoyleton	Eastern cottonwood	102	Bur oak, cherrybark oak, common persimmon, hickory, pin oak, white oak.
	Northern red oak	74	
	Pin oak	92	
	White oak	78	
	Yellow poplar	88	
3B2:			
Hoyleton, eroded	Eastern cottonwood	99	Bur oak, cherrybark oak, common persimmon, hickory, pin oak, white oak.
	Northern red oak	72	
	Pin oak	87	
	White oak	71	
	Yellow poplar	85	
4B2:			
Richview, eroded	Northern red oak	77	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	75	
4C2:			
Richview, eroded	Northern red oak	75	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	73	
5C2:			
Blair, eroded	Northern red oak	67	Black oak, bur oak, cherrybark oak, hickory, northern red oak, white oak.
	White oak	66	
	Yellow poplar	77	
5C3:			
Blair, severely eroded	Northern red oak	67	Black oak, bur oak, cherrybark oak, hickory, northern red oak, white oak.
	White oak	66	
	Yellow poplar	77	
7C2:			
Atlas, eroded	Northern red oak	73	Black oak, bur oak, cherrybark oak, hickory, northern red oak, white oak.
	White oak	63	
	Yellow poplar	73	
7D2:			
Atlas, eroded	Northern red oak	68	Black oak, bur oak, cherrybark oak, hickory, northern red oak, white oak.
	White oak	59	
	Yellow poplar	68	
8D2:			
Hickory, eroded	Northern red oak	65	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	70	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
8D3:			
Hickory, severely eroded	Northern red oak	61	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	65	
8F:			
Hickory	Northern red oak	65	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	69	
8G:			
Hickory	Northern red oak	39	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	40	
10C:			
Plumfield	Northern red oak	64	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	58	
10D:			
Plumfield	Northern red oak	60	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	54	
12A:			
Wynoose	Eastern cottonwood	98	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	89	
13A:			
Bluford	Eastern cottonwood	103	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, pin oak, yellow poplar.
	Northern red oak	72	
	Pin oak	93	
	White oak	73	
	Yellow poplar	96	
13B2:			
Bluford, eroded	Eastern cottonwood	96	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, pin oak, yellow poplar.
	Northern red oak	67	
	Pin oak	88	
	White oak	68	
	Yellow poplar	89	
14B:			
Ava	Northern red oak	71	Black oak, chinkapin oak, hickory, northern red oak, white oak.
	White oak	70	
	Yellow poplar	90	
14B2:			
Ava, eroded	Northern red oak	68	Black oak, chinkapin oak, hickory, northern red oak, white oak.
	White oak	66	
	Yellow poplar	85	
14C2:			
Ava, eroded	Northern red oak	63	Black oak, chinkapin oak, hickory, northern red oak, white oak.
	White oak	62	
	Yellow poplar	81	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
109A:			
Racoon	Cottonwood	103	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	93	
287A:			
Chauncey	Cottonwood	97	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	87	
301B:			
Grantsburg	White oak	70	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	Northern red oak	71	
301C3:			
Grantsburg, severely eroded	White oak	52	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	Northern red oak	53	
337A:			
Creal	White oak	76	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, hickory, pin oak, red maple, swamp white oak, sweetgum, yellow poplar.
	Northern red oak	75	
	Pin oak	91	
	Yellow poplar	89	
340D3:			
Zanesville, severely eroded	White oak	45	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	Northern red oak	43	
376A:			
Cisne, bench	Eastern cottonwood	96	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	87	
	Yellow poplar	84	
377A:			
Hoyleton, bench	Eastern cottonwood	102	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, hickory, pin oak, white oak.
	Northern red oak	74	
	Pin oak	92	
	White oak	73	
	Yellow poplar	88	
377B2:			
Hoyleton, bench, eroded	Eastern cottonwood	99	Bur oak, cherrybark oak, common persimmon, hickory, pin oak, white oak.
	Northern red oak	72	
	Pin oak	87	
	White oak	71	
	Yellow poplar	85	
421G:			
Kell	Northern red oak	35	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	33	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
518B:			
Rend	Northern red oak	75	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	76	
518B2:			
Rend, eroded	Northern red oak	72	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	73	
518C2:			
Rend, eroded	Northern red oak	70	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	71	
583B:			
Pike	Northern red oak	77	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	75	
583C2:			
Pike, eroded	Northern red oak	72	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	70	
639A:			
Wynoose, bench	Eastern cottonwood	98	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	89	
640A:			
Bluford, bench	Eastern cottonwood	103	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, pin oak, post oak, yellow poplar.
	Northern red oak	72	
	Pin oak	93	
	White oak	73	
	Yellow poplar	96	
802B:			
Orthents, loamy	---	---	Black locust, eastern white pine, hickory, northern red oak, pin oak, white oak.
802F:			
Orthents, loamy	---	---	Black locust, eastern white pine, hickory, northern red oak, pin oak, white oak.
823B:			
Schuline	Eastern cottonwood	103	Black oak, cherrybark oak, common persimmon, eastern white pine, hickory, northern red oak, white oak.
	Northern red oak	73	
	Pin oak	94	
	White oak	76	
	Yellow poplar	79	
871D:			
Lenzburg, stony	Eastern cottonwood	93	Black locust, black oak, chinkapin oak, northern red oak, white oak.
	Northern red oak	68	
	Pin oak	85	
	White oak	67	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
871G:			
Lenzburg, stony	Eastern cottonwood	52	Black locust, black oak, chinkapin oak, northern red oak, white oak.
	Northern red oak	38	
	White oak	39	
908F:			
Hickory	Northern red oak	65	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	69	
Kell	Northern red oak	57	Black oak, chinkapin oak, hickory, northern red oak, southern red oak, white oak.
	White oak	54	
927D3:			
Blair, severely eroded	Northern red oak	56	Black oak, cherrybark oak, hickory, northern red oak, pin oak, white oak.
	White oak	56	
	Yellow poplar	69	
Atlas, severely eroded	Northern red oak	57	Black oak, cherrybark oak, hickory, northern red oak, pin oak, white oak.
	White oak	50	
	Yellow poplar	56	
1108A:			
Bonnie, undrained, frequently flooded	Eastern cottonwood	100	Baldcypress, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum, water tupelo.
	Pin oak	90	
3072A:			
Sharon, frequently flooded	Eastern cottonwood	103	Black walnut, cherrybark oak, common persimmon, pecan, shellbark hickory, swamp white oak.
	Pin oak	93	
3108A:			
Bonnie, frequently flooded	Eastern cottonwood	100	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	90	
3226A:			
Wirt, frequently flooded	Eastern cottonwood	104	Black walnut, cherrybark oak, common persimmon, hickory, pecan, pin oak, swamp white oak, yellow poplar.
	Pin oak	93	
	Yellow poplar	88	
3336A:			
Wilbur, frequently flooded	Eastern cottonwood	105	Black walnut, cherrybark oak, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak, sweetgum.
	Pin oak	94	
3382A:			
Belknap, frequently flooded	Eastern cottonwood	102	Bur oak, cherrybark oak, common persimmon, eastern cottonwood, pin oak, red maple, shellbark hickory, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	92	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Suggested trees to plant
3415A:			
Orion, frequently flooded	Eastern cottonwood	105	Cherrybark oak, common persimmon, eastern cottonwood, hickory, pecan, pin oak, red maple, swamp white oak, sweetgum.
	Pin oak	95	
3422A:			
Cape, frequently flooded	Eastern cottonwood	91	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	83	

Table 12.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
2A:					
Cisne	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3A:					
Hoyleton	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3B2:					
Hoyleton, eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
4B2:					
Richview, eroded	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
4C2:					
Richview, eroded	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
5C2:					
Blair, eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
5C3:					
Blair, severely eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
7C2: Atlas, eroded	American cranberrybush	Silky dogwood, southern arrowwood	Washington hawthorn, eastern redcedar, osageorange, Austrian pine	Eastern white pine, pin oak	---
7D2: Atlas, eroded	American cranberrybush	Silky dogwood, southern arrowwood	Washington hawthorn, eastern redcedar, osageorange, Austrian pine	Eastern white pine, pin oak	---
8D2: Hickory, eroded	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
8D3: Hickory, severely eroded	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
8F: Hickory	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 12.--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
8G:					
Hickory	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
10C:					
Plumfield	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
10D:					
Plumfield	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
12A:					
Wynoose	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
13A:					
Bluford	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
13B2:					
Bluford, eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
14B:					
Ava	American cranberrybush, American hazelnut, Canada yew, black chokeberry, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, gray dogwood, mapleleaf viburnum, northern spicebush, redosier dogwood, silky dogwood	American plum, Washington hawthorn, blackhaw, cockspur hawthorn, common chokecherry, common pawpaw, common serviceberry, nannyberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, staghorn sumac, witchhazel	Austrian pine, Douglas fir, Virginia pine, arborvitae, black oak, blackgum, blue spruce, bur oak, chinkapin oak, common hackberry, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
14B2:					
Ava, eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
14C2:					
Ava, eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
109A:					
Racoon	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
287A:					
Chauncey	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
301B:					
Grantsburg	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
301C3: Grantsburg, severely eroded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
337A: Creal	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
340D3: Zanesville, severely eroded	American cranberrybush, American hazelnut, black chokeberry, common juniper, coralberry, gray dogwood, mapleleaf viburnum, silky dogwood	American plum, American witchhazel, Washington hawthorn, blackhaw, common chokecherry, common serviceberry, nannyberry, prairie crabapple, roughleaf dogwood, staghorn sumac	Virginia pine, arborvitae, black oak, blackgum, bur oak, chinkapin oak, common hackberry, eastern redcedar	Norway spruce	Carolina poplar

Table 12.--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
376A:					
Cisne, bench	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
377A:					
Hoyleton, bench	Black chokeberry	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
377B2:					
Hoyleton, bench, eroded	Black chokeberry	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
421G:					
Kell	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 12.--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
518B:					
Rend	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
518B2:					
Rend, eroded	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
518C2:					
Rend, eroded	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
533.					
Urban land					
536.					
Dumps, mine					

Table 12.--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
583B:					
Pike	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
583C2:					
Pike, eroded	Silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
639A:					
Wynoose, bench	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
640A:					
Bluford, bench	Black chokeberry, common juniper, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
802B:					
Orthents, loamy	Common winterberry, coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood	American plum, blackhaw, hazelnut, prairie crabapple, roughleaf dogwood	Eastern redcedar, nannyberry, shadbush, tamarack, northern white-cedar	Baldcypress, common hackberry, tuliptree, Norway spruce	Eastern cottonwood, eastern white pine, pin oak
802F:					
Orthents, loamy	Silky dogwood	American cranberrybush	Washington hawthorn, blue spruce, northern white-cedar, white fir	Austrian pine, Norway spruce	Pin oak, eastern white pine
823B:					
Schuline	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
866.					
Dumps, slurry					
871D:					
Lenzburg, stony	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 12.--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
871G:					
Lenzburg, stony	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
908F:					
Hickory	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
Kell	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
927D3:					
Blair, severely eroded	Silky dogwood	American cranberrybush	Washington hawthorn, blue spruce, northern white-cedar, white fir	Austrian pine, Norway spruce	Pin oak, eastern white pine

Table 12.--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
927D3:					
Atlas, severely eroded	Black chokeberry	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
1108A:					
Bonnie, undrained, frequently flooded	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3072A:					
Sharon, frequently flooded	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 12.--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
3108A: Bonnie, frequently flooded	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3226A: Wirt, frequently flooded	Common winterberry, coralberry, silky dogwood	American plum, shadbush	Washington hawthorn, eastern redcedar, nannyberry, southern red oak	Norway spruce, baldcypress, common hackberry	Eastern cottonwood, eastern white pine, pin oak
3336A: Wilbur, frequently flooded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3382A: Belknap, frequently flooded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 12.--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
3415A:					
Orion, frequently flooded	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3422A:					
Cape, frequently flooded	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 13a.--Recreational Development

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:							
Cisne	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
3A:							
Hoyleton	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
		Depth to saturated zone	0.44	Depth to saturated zone	0.22	Depth to saturated zone	0.44
3B2:							
Hoyleton, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
		Depth to saturated zone	0.44	Depth to saturated zone	0.22	Depth to saturated zone	0.44
						Slope	0.12
4B2:							
Richview, eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.50
4C2:							
Richview, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
5C2:							
Blair, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Depth to saturated zone	0.88
		Slope	0.01	Slope	0.01	Slow water movement	0.21
5C3:							
Blair, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Depth to saturated zone	0.88
		Slope	0.01	Slope	0.01	Slow water movement	0.21
7C2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00	Slow water movement	1.00
		Slope	0.01	Slope	0.01	Slope	1.00

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
7D2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.96	Slope	0.96	Slow water movement	1.00
8D2:							
Hickory, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
8D3:							
Hickory, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
8F:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
10C:							
Plumfield	90	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slope	1.00
		Slope	0.01	Slope	0.01	Slow water movement	0.21
10D:							
Plumfield	90	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Slope	1.00
		Slope	0.96	Slope	0.96	Depth to cemented pan	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
12A:							
Wynoose	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
13A:							
Bluford	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	0.96	Depth to saturated zone	1.00
		Slow water movement	0.96	Depth to saturated zone	0.94	Slow water movement	0.96

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
13B2:							
Bluford, eroded	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	0.96	Depth to saturated zone	1.00
		Slow water movement	0.96	Depth to saturated zone	0.94	Slow water movement	0.96
						Slope	0.50
14B:							
Ava	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
		Depth to cemented pan	0.06	Depth to cemented pan	0.06	Slope	0.12
						Depth to cemented pan	0.06
14B2:							
Ava, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to cemented pan	0.65	Depth to cemented pan	0.65	Depth to cemented pan	0.64
		Slow water movement	0.21	Slow water movement	0.21	Slope	0.50
						Slow water movement	0.21
14C2:							
Ava, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.65	Depth to cemented pan	0.65	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Depth to cemented pan	0.64
		Slope	0.01	Slope	0.01	Slow water movement	0.21
109A:							
Racoon	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
287A:							
Chauncey	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
301B:							
Grantsburg	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.21	Slow water movement	0.21	Slope	0.50
		Depth to cemented pan	0.01	Depth to cemented pan	0.01	Slow water movement	0.21
						Depth to cemented pan	0.01

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
301C3:							
Grantsburg, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.21	Slow water movement	0.21	Slope	1.00
		Depth to cemented pan	0.20	Depth to cemented pan	0.20	Slow water movement	0.21
		Slope	0.01	Slope	0.01	Depth to cemented pan	0.20
337A:							
Creal	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.22	Depth to saturated zone	0.44
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
340D3:							
Zanesville, severely eroded	90	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Slope	1.00
		Slope	0.96	Slope	0.96	Depth to cemented pan	1.00
376A:							
Cisne, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
377A:							
Hoyleton, bench	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
		Depth to saturated zone	0.44	Depth to saturated zone	0.22	Depth to saturated zone	0.44
377B2:							
Hoyleton, bench, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
		Depth to saturated zone	0.44	Depth to saturated zone	0.22	Depth to saturated zone	0.44
						Slope	0.12
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
518B:							
Rend	90	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Slope	0.50

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
518B2:							
Rend, eroded	90	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Slope	0.50
518C2:							
Rend, eroded	90	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Not limited		Not limited		Somewhat limited	
						Slope	0.50
583C2:							
Pike, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
639A:							
Wynoose, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
640A:							
Bluford, bench	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	0.96	Depth to saturated zone	1.00
		Slow water movement	0.96	Depth to saturated zone	0.94	Slow water movement	0.96
802B:							
Orthents, loamy	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
						Slope	0.12
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
823B:							
Schuline	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.21	Slow water movement	0.21	Slope	0.50
						Slow water movement	0.21
						Large stones	0.01

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Gravel content	0.28
		Large stones	0.01	Large stones	0.01	Slow water movement	0.21
						Large stones	0.01
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.21	Slow water movement	0.21	Gravel content	0.28
		Large stones	0.01	Large stones	0.01	Slow water movement	0.21
						Large stones	0.01
908F:							
Hickory	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Kell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
927D3:							
Blair, severely eroded	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
Atlas, severely eroded	40	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slope	1.00
		Depth to saturated zone	0.98	Slope	0.96	Slow water movement	1.00
		Slope	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.98
1108A:							
Bonnie, undrained, frequently flooded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Flooding	0.40	Ponding	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3072A:							
Sharon, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00

Table 13a.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
3108A:							
Bonnie, frequently flooded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Flooding	0.40	Ponding	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3226A:							
Wirt, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
3336A:							
Wilbur, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Depth to saturated zone	0.43	Flooding	1.00
		Depth to saturated zone	0.77	Flooding	0.40	Depth to saturated zone	0.77
3382A:							
Belknap, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
3415A:							
Orion, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
3422A:							
Cape, frequently flooded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Slow water movement	1.00	Ponding	1.00
		Slow water movement	1.00	Flooding	0.40	Slow water movement	1.00

Table 13b.--Recreational Development

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:							
Cisne	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3A:							
Hoyleton	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.22
3B2:							
Hoyleton, eroded	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.22
4B2:							
Richview, eroded	90	Not limited		Not limited		Not limited	
4C2:							
Richview, eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.01
5C2:							
Blair, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
						Slope	0.01
5C3:							
Blair, severely eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
						Slope	0.01
7C2:							
Atlas, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Slope	0.01
7D2:							
Atlas, eroded	90	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Slope	0.96
8D2:							
Hickory, eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.96

Table 13b.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
8D3:							
Hickory, severely eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.96
8F:							
Hickory	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.02	Slope	1.00
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
10C:							
Plumfield	90	Not limited		Not limited		Very limited	
						Depth to cemented pan	1.00
						Slope	0.01
10D:							
Plumfield	90	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to cemented pan	1.00
						Slope	0.96
12A:							
Wynoose	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
13A:							
Bluford	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
13B2:							
Bluford, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
14B:							
Ava	90	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.06
14B2:							
Ava, eroded	90	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.64
14C2:							
Ava, eroded	90	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.64
						Slope	0.01

Table 13b.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
109A:							
Racoon	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
287A:							
Chauncey	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
301B:							
Grantsburg	90	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.01
301C3:							
Grantsburg, severely eroded	90	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.20
						Slope	0.01
337A:							
Creal	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.22
340D3:							
Zanesville, severely eroded	90	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to cemented pan	1.00
						Slope	0.96
						Droughty	0.02
376A:							
Cisne, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
377A:							
Hoyleton, bench	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.22
377B2:							
Hoyleton, bench, eroded	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.22
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10

Table 13b.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
518B:							
Rend	90	Not limited		Not limited		Not limited	
518B2:							
Rend, eroded	90	Not limited		Not limited		Not limited	
518C2:							
Rend, eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.01
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Not limited		Not limited		Not limited	
583C2:							
Pike, eroded	90	Not limited		Not limited		Somewhat limited	
						Slope	0.01
639A:							
Wynoose, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
640A:							
Bluford, bench	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
802B:							
Orthents, loamy	90	Not limited		Not limited		Not limited	
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
823B:							
Schuline	90	Not limited		Not limited		Not limited	
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Somewhat limited		Somewhat limited		Very limited	
		Large stones	0.01	Large stones	0.01	Slope	1.00
						Large stones	0.11
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones	0.01	Large stones	0.01	Large stones	0.11

Table 13b.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
908F:							
Hickory-------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.02	Slope	1.00
Kell----------------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.02	Slope	1.00
						Depth to bedrock	0.10
927D3:							
Blair, severely eroded-------------	50	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.96
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
Atlas, severely eroded-------------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Slope	0.96
						Depth to saturated zone	0.75
1108A:							
Bonnie, undrained, frequently flooded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
						Flooding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	0.40	Flooding	0.40		
3072A:							
Sharon, frequently flooded------------	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
3108A:							
Bonnie, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
						Flooding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	0.40	Flooding	0.40		
3226A:							
Wirt, frequently flooded------------	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
3336A:							
Wilbur, frequently flooded------------	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
3382A:							
Belknap, frequently flooded------------	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
						Depth to saturated zone	0.94
		Flooding	0.40	Flooding	0.40		

Table 13b.--Recreational Development--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
3415A:							
Orion, frequently flooded-----------	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Depth to saturated zone	0.19
3422A:							
Cape, frequently flooded-----------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00

Table 14.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2A: Cisne	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3A: Hoyleton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3B2: Hoyleton, eroded	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
4B2: Richview, eroded	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
4C2: Richview, eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
5C2: Blair, eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
5C3: Blair, severely eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7C2: Atlas, eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7D2: Atlas, eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8D2: Hickory, eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8D3: Hickory, severely eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8F: Hickory	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
8G: Hickory	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
10C: Plumfield	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
10D: Plumfield	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
12A: Wynoose	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
13A: Bluford	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
13B2: Bluford, eroded	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
14B: Ava	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
14B2: Ava, eroded	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
14C2: Ava, eroded	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
109A: Racoon	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
287A: Chauncey	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
301B: Grantsburg	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
301C3: Grantsburg, severely eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
337A: Creal	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Poor.
340D3: Zanesville, severely eroded	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
376A: Cisne, bench	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
377A: Hoyleton, bench	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
377B2: Hoyleton, bench, eroded	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
421G: Kell	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
518B: Rend	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 14.--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
518B2:										
Rend, eroded	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
518C2:										
Rend, eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
533. Urban land										
536. Dumps, mine										
583B:										
Pike	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
583C2:										
Pike, eroded	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
639A:										
Wynoose, bench	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
640A:										
Bluford, bench	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
802B:										
Orthents, loamy	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
802F:										
Orthents, loamy	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
823B:										
Schuline	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
866. Dumps, slurry										
871D:										
Lenzburg, stony	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
871G:										
Lenzburg, stony	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
908F:										
Hickory	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Kell	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

Table 14.--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
927D3:										
Blair, severely eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Atlas, severely eroded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
1108A:										
Bonnie, undrained, frequently flooded	Very poor.	Very poor.	Very poor.	Fair	Very poor.	Good	Good	Very poor.	Poor	Good.
3072A:										
Sharon, frequently flooded	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
3108A:										
Bonnie, frequently flooded	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3226A:										
Wirt, frequently flooded	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
3336A:										
Wilbur, frequently flooded	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
3382A:										
Belknap, frequently flooded	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
3415A:										
Orion, frequently flooded	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3422A:										
Cape, frequently flooded	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

Table 15a.--Building Site Development

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
2A:							
Cisne	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.99	Shrink-swell	0.01	Shrink-swell	0.99
3A:							
Hoyleton	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
3B2:							
Hoyleton, eroded	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
4B2:							
Richview, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
				Shrink-swell	0.50		
4C2:							
Richview, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
		Slope	0.01	Shrink-swell	0.50	Shrink-swell	0.50
				Slope	0.01		
5C2:							
Blair, eroded	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.01	Slope	0.01	Depth to saturated zone	0.88
5C3:							
Blair, severely eroded	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.01	Slope	0.01	Depth to saturated zone	0.88
7C2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.01	Slope	0.01	Slope	1.00

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
7D2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
		Slope	0.96	Slope	0.96	Shrink-swell	1.00
8D2:							
Hickory, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
8D3:							
Hickory, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
8F:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.04			Shrink-swell	0.04
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.04			Shrink-swell	0.04
10C:							
Plumfield	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Depth to saturated zone	0.99	Slope	1.00
				Slope	0.01		
10D:							
Plumfield	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Depth to saturated zone	0.99	Slope	1.00
				Slope	0.96		
12A:							
Wynoose	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	0.06	Shrink-swell	1.00
13A:							
Bluford	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00			Shrink-swell	1.00
13B2:							
Bluford, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
14B:							
Ava	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.14	Depth to saturated zone	0.99	Shrink-swell	0.14
				Shrink-swell	0.14		
14B2:							
Ava, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.38	Depth to saturated zone	0.99	Shrink-swell	0.38
				Shrink-swell	0.38		
14C2:							
Ava, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.38	Depth to saturated zone	0.99	Slope	1.00
		Slope	0.01			Shrink-swell	0.38
				Shrink-swell	0.38		
				Slope	0.01		
109A:							
Racoon	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
				Shrink-swell	0.50		
287A:							
Chauncey	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Shrink-swell	1.00	Ponding	1.00
				Ponding	1.00		
301B:							
Grantsburg	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
				Shrink-swell	0.50		
301C3:							
Grantsburg, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Depth to saturated zone	0.99	Slope	1.00
		Slope	0.01			Shrink-swell	0.50
				Shrink-swell	0.50		
				Slope	0.01		
337A:							
Creal	90	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	1.00	Depth to saturated zone	0.44
				Shrink-swell	0.50		

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
340D3:							
Zanesville, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Depth to saturated zone	0.99	Slope	1.00
				Slope	0.96		
				Depth to hard bedrock	0.08		
376A:							
Cisne, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.99	Shrink-swell	0.01	Shrink-swell	0.99
377A:							
Hoyleton, bench	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
377B2:							
Hoyleton, bench, eroded	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
				Depth to soft bedrock	0.10		
518B:							
Rend	90	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.99		
518B2:							
Rend, eroded	90	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.99		
518C2:							
Rend, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Depth to saturated zone	0.99	Slope	1.00
				Slope	0.01		
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
583B:							
Pike	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
583C2:							
Pike, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.01	Slope	0.01	Shrink-swell	0.50
639A:							
Wynoose, bench	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	0.06	Shrink-swell	1.00
640A:							
Bluford, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00			Shrink-swell	1.00
802B:							
Orthents, loamy	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
823B:							
Schuline	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
908F:							
Hickory	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.04			Shrink-swell	0.04
Kell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.10	Depth to soft bedrock	0.10	Depth to hard bedrock	0.10

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
927D3:							
Blair, severely eroded-------------	50	Somewhat limited		Very limited		Very limited	
		Slope	0.96	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.88	Slope	0.96	Depth to saturated zone	0.88
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Atlas, severely eroded-------------	40	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.98	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.96	Slope	0.96	Depth to saturated zone	0.98
1108A:							
Bonnie, undrained, frequently flooded	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3072A:							
Sharon, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.61		
3108A:							
Bonnie, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3226A:							
Wirt, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
3336A:							
Wilbur, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
3382A:							
Belknap, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 15a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
3415A:							
Orion, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
3422A:							
Cape, frequently flooded------------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 15b.--Building Site Development

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
2A:							
Cisne	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
		Shrink-swell	0.99				
3A:							
Hoyleton	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.22				
3B2:							
Hoyleton, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.22				
4B2:							
Richview, eroded	90	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Depth to saturated zone	0.95		
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
4C2:							
Richview, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.95	Slope	0.01
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Slope	0.01		
		Slope	0.01				
5C2:							
Blair, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
		Depth to saturated zone	0.56	Slope	0.01		
		Slope	0.01				
5C3:							
Blair, severely eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
		Depth to saturated zone	0.56	Slope	0.01		
		Slope	0.01				

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
7C2:							
Atlas, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
		Shrink-swell	1.00	Slope	0.01		
		Depth to saturated zone	0.99				
		Slope	0.01				
7D2:							
Atlas, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Low strength	1.00	Slope	0.96	Slope	0.96
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Depth to saturated zone	0.99				
		Slope	0.96				
8D2:							
Hickory, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.96	Slope	0.96
		Slope	0.96	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
8D3:							
Hickory, severely eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.96	Slope	0.96
		Slope	0.96	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
8F:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Frost action	0.50				
		Shrink-swell	0.04				
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Frost action	0.50				
		Shrink-swell	0.04				
10C:							
Plumfield	90	Very limited		Somewhat limited		Very limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	1.00
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
		Slope	0.01	Slope	0.01		
10D:							
Plumfield	90	Very limited		Somewhat limited		Very limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	1.00
		Low strength	1.00	Slope	0.96	Slope	0.96
		Slope	0.96	Cutbanks cave	0.10		

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
12A:							
Wynoose	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	1.00	Too clayey	0.01		
		Shrink-swell	1.00				
13A:							
Bluford	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.94				
13B2:							
Bluford, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.01		
		Depth to saturated zone	0.94				
14B:							
Ava	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	0.06
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.14				
14B2:							
Ava, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	0.64
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.38				
14C2:							
Ava, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	0.64
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
		Shrink-swell	0.38	Slope	0.01		
		Slope	0.01				
109A:							
Racoon	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Ponding	1.00	Ponding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Ponding	1.00				
287A:							
Chauncey	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Cutbanks cave	0.10		
				Too clayey	0.01		

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
301B:							
Grantsburg	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	0.01
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
301C3:							
Grantsburg, severely eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Depth to cemented pan	0.20
		Shrink-swell	0.50	Cutbanks cave	0.10	Slope	0.01
		Slope	0.01	Slope	0.01		
337A:							
Creal	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
		Low strength	0.78	Cutbanks cave	0.10		
		Depth to saturated zone	0.22				
340D3:							
Zanesville, severely eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Depth to saturated zone	0.99	Depth to cemented pan	1.00
		Frost action	0.50	Slope	0.96	Slope	0.96
				Depth to hard bedrock	0.08	Droughty	0.02
376A:							
Cisne, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
		Shrink-swell	0.99				
377A:							
Hoyleton, bench	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.22				
377B2:							
Hoyleton, bench, eroded	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.22				

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Depth to bedrock	0.10
		Frost action	0.50	Depth to soft bedrock	0.10		
518B:							
Rend	90	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Depth to saturated zone	0.99		
		Low strength	1.00	Cutbanks cave	0.10		
518B2:							
Rend, eroded	90	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Depth to saturated zone	0.99		
		Low strength	1.00	Cutbanks cave	0.10		
518C2:							
Rend, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	0.99	Slope	0.01
		Low strength	1.00	Cutbanks cave	0.10		
		Slope	0.01	Slope	0.01		
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
		Shrink-swell	0.50				
583C2:							
Pike, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Frost action	1.00	Cutbanks cave	0.10	Slope	0.01
		Low strength	1.00	Slope	0.01		
		Shrink-swell	0.50				
		Slope	0.01				
639A:							
Wynoose, bench	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	1.00	Too clayey	0.01		
		Shrink-swell	1.00				

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
640A:							
Bluford, bench	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Depth to saturated zone	0.94				
802B:							
Orthents, loamy	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
823B:							
Schuline	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Large stones	0.11
		Shrink-swell	0.50				
		Frost action	0.50				
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	1.00	Large stones	0.11
		Shrink-swell	0.50				
		Frost action	0.50				
908F:							
Hickory	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Frost action	0.50				
		Shrink-swell	0.04				
Kell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	0.50	Slope	1.00	Depth to bedrock	0.10
		Frost action	0.50	Depth to soft bedrock	0.10		
		Depth to hard bedrock	0.10				

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
927D3:							
Blair, severely eroded	50	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Slope	0.96
		Low strength	1.00	Slope	0.96	Depth to saturated zone	0.56
		Slope	0.96	Cutbanks cave	0.10		
		Depth to saturated zone	0.56				
		Shrink-swell	0.50				
Atlas, severely eroded	40	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Slope	0.96
		Low strength	1.00	Slope	0.96	Depth to saturated zone	0.75
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Slope	0.96				
		Depth to saturated zone	0.75				
1108A:							
Bonnie, undrained, frequently flooded	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
		Flooding	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
3072A:							
Sharon, frequently flooded	90	Very limited		Somewhat limited		Very limited	
		Frost action	1.00	Flooding	0.80	Flooding	1.00
		Flooding	1.00	Depth to saturated zone	0.61		
				Cutbanks cave	0.10		
3108A:							
Bonnie, frequently flooded	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
		Flooding	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
3226A:							
Wirt, frequently flooded	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
		Frost action	0.50	Flooding	0.80		

Table 15b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
3336A:							
Wilbur, frequently flooded	90	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
3382A:							
Belknap, frequently flooded	90	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Cutbanks cave	0.10		
3415A:							
Orion, frequently flooded	90	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.19
		Low strength	1.00	Cutbanks cave	0.10		
		Depth to saturated zone	0.19				
3422A:							
Cape, frequently flooded	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
		Flooding	1.00	Cutbanks cave	0.10		
		Low strength	1.00	Too clayey	0.02		

Table 16a.--Sanitary Facilities

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
2A:					
Cisne	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
3A:					
Hoyleton	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
3B2:					
Hoyleton, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.08
4B2:					
Richview, eroded	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.46	Seepage	0.53
				Slope	0.32
4C2:					
Richview, eroded	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.46	Slope	1.00
		Slope	0.01	Seepage	0.53
5C2:					
Blair, eroded	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	0.01		
5C3:					
Blair, severely eroded	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	0.01		

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
7C2:					
Atlas, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.01		
7D2:					
Atlas, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.96		
8D2:					
Hickory, eroded	90	Somewhat limited		Very limited	
		Slope	0.96	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
8D3:					
Hickory, severely eroded	90	Somewhat limited		Very limited	
		Slope	0.96	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
8F:					
Hickory	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
8G:					
Hickory	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
10C:					
Plumfield	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.17
		Slope	0.01		
10D:					
Plumfield	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.17
		Slope	0.96		

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
12A:					
Wynoose	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
13A:					
Bluford	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
13B2:					
Bluford, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.32
14B:					
Ava	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.17
		Slow water movement	1.00	Slope	0.08
14B2:					
Ava, eroded	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	0.32
		Slow water movement	1.00	Depth to saturated zone	0.17
14C2:					
Ava, eroded	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	1.00	Depth to saturated zone	0.17
		Slope	0.01		
109A:					
Racoon	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00		

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
287A:					
Chauncey	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00		
301B:					
Grantsburg	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Seepage	0.53
				Slope	0.32
		Slow water movement	1.00	Depth to saturated zone	0.17
301C3:					
Grantsburg, severely eroded	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
				Seepage	0.53
		Slow water movement	1.00	Depth to saturated zone	0.17
		Slope	0.01		
337A:					
Creal	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00		
340D3:					
Zanesville, severely eroded	90	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
				Seepage	0.53
		Slope	0.96	Depth to saturated zone	0.17
		Depth to bedrock	0.52		
				Depth to hard bedrock	0.08
376A:					
Cisne, bench	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
377A:					
Hoyleton, bench	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
377B2:					
Hoyleton, bench, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.08
421G:					
Kell	90	Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
518B:					
Rend	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
				Slope	0.32
		Depth to saturated zone	1.00	Depth to saturated zone	0.19
518B2:					
Rend, eroded	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
				Slope	0.32
		Depth to saturated zone	1.00	Depth to saturated zone	0.19
518C2:					
Rend, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
				Seepage	0.53
		Depth to saturated zone	1.00	Depth to saturated zone	0.19
		Slope	0.01		
533:					
Urban land	85	Not rated		Not rated	
536:					
Dumps, mine	90	Not rated		Not rated	
583B:					
Pike	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.46	Seepage	0.53
				Slope	0.32
583C2:					
Pike, eroded	90	Somewhat limited		Very limited	
		Slow water movement	0.46	Slope	1.00
				Seepage	0.53
		Slope	0.01		

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
639A:					
Wynoose, bench	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
640A:					
Bluford, bench	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
802B:					
Orthents, loamy	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.08
802F:					
Orthents, loamy	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
823B:					
Schuline	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
866:					
Dumps, slurry	90	Not rated		Not rated	
871D:					
Lenzburg, stony	90	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
871G:					
Lenzburg, stony	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
908F:					
Hickory	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.46	Seepage	0.53
Kell	40	Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.81	Slope	1.00
				Seepage	0.53

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
927D3:					
Blair, severely eroded	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00
		Slope	0.96		
Atlas, severely eroded	40	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.96		
1108A:					
Bonnie, undrained, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00		
3072A:					
Sharon, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.71
		Slow water movement	0.46	Seepage	0.53
3108A:					
Bonnie, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00		
3226A:					
Wirt, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.46	Seepage	0.53

Table 16a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
3336A:					
Wilbur, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.46	Seepage	0.53
3382A:					
Belknap, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.72	Seepage	0.28
3415A:					
Orion, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.46	Seepage	0.53
3422A:					
Cape, frequently flooded	90	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Slow water movement	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		

Table 16b.--Sanitary Facilities

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:							
Cisne	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
3A:							
Hoyleton	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.88
						Too clayey	0.50
3B2:							
Hoyleton, eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.88
						Too clayey	0.50
4B2:							
Richview, eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
						Depth to saturated zone	0.09
4C2:							
Richview, eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Slope	0.01	Slope	0.01	Depth to saturated zone	0.09
						Slope	0.01
5C2:							
Blair, eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	0.01	Slope	0.01	Slope	0.01
5C3:							
Blair, severely eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	0.01	Slope	0.01	Slope	0.01
7C2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50	Slope	0.01	Hard to compact	1.00
		Slope	0.01			Too clayey	0.50
						Slope	0.01

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
7D2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.96	Slope	0.96	Hard to compact	1.00
		Too clayey	0.50			Slope	0.96
						Too clayey	0.50
8D2:							
Hickory, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.96	Slope	0.96	Slope	0.96
		Too clayey	0.50			Too clayey	0.50
8D3:							
Hickory, severely eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.96	Slope	0.96	Slope	0.96
		Too clayey	0.50			Too clayey	0.50
8F:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Too clayey	0.50
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Too clayey	0.50
10C:							
Plumfield	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.01	Depth to saturated zone	0.17	Depth to saturated zone	0.44
				Slope	0.01	Slope	0.01
10D:							
Plumfield	90	Somewhat limited		Very limited		Very limited	
		Slope	0.96	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.84	Slope	0.96	Slope	0.96
				Depth to saturated zone	0.17	Depth to saturated zone	0.44
12A:							
Wynoose	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
13A:							
Bluford	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
13B2:							
Bluford, eroded	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
14B:							
Ava	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
						Depth to saturated zone	0.44
14B2:							
Ava, eroded	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
						Depth to saturated zone	0.44
14C2:							
Ava, eroded	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
		Slope	0.01	Slope	0.01	Depth to saturated zone	0.44
						Slope	0.01
109A:							
Racoon	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too clayey	0.50			Too clayey	0.50
287A:							
Chauncey	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00	Ponding	1.00	Too clayey	1.00
		Ponding	1.00			Ponding	1.00
301B:							
Grantsburg	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
						Depth to saturated zone	0.44

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
301C3:							
Grantsburg, severely eroded	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
		Slope	0.01	Slope	0.01	Depth to saturated zone	0.44
						Slope	0.01
337A:							
Creal	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.88
		Too clayey	0.50			Too clayey	0.50
340D3:							
Zanesville, severely eroded	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.96	Slope	0.96	Slope	0.96
		Depth to saturated zone	0.84	Depth to saturated zone	0.17	Too clayey	0.50
		Too clayey	0.50	Depth to bedrock	0.08	Depth to saturated zone	0.44
						Depth to bedrock	0.08
376A:							
Cisne, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
377A:							
Hoyleton, bench	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.88
						Too clayey	0.50
377B2:							
Hoyleton, bench, eroded	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.88
						Too clayey	0.50
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
518B:							
Rend	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
518B2:							
Rend, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
518C2:							
Rend, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
		Slope	0.01	Slope	0.01	Slope	0.01
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
583C2:							
Pike, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.01	Too clayey	0.50
		Slope	0.01			Slope	0.01
639A:							
Wynoose, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
640A:							
Bluford, bench	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
802B:							
Orthents, loamy	90	Not limited		Not limited		Not limited	
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
823B:							
Schuline	90	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
908F:							
Hickory	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Too clayey	0.50
Kell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
927D3:							
Blair, severely eroded	50	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	0.96	Slope	0.96	Slope	0.96
Atlas, severely eroded	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
		Slope	0.96	Slope	0.96	Depth to saturated zone	1.00
		Too clayey	0.50			Slope	0.96
						Too clayey	0.50
1108A:							
Bonnie, undrained, frequently flooded	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Too clayey	0.50				
3072A:							
Sharon, frequently flooded	90	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
3108A:							
Bonnie, frequently flooded	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00		
3226A:							
Wirt, frequently flooded	90	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		

Table 16b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
3336A:							
Wilbur, frequently flooded	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
3382A:							
Belknap, frequently flooded	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
3415A:							
Orion, frequently flooded	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
3422A:							
Cape, frequently flooded	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00

Table 17a.--Construction Materials

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
2A:					
Cisne	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3A:					
Hoyleton	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3B2:					
Hoyleton, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
4B2:					
Richview, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
4C2:					
Richview, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5C2:					
Blair, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5C3:					
Blair, severely eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
7C2:					
Atlas, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
7D2:					
Atlas, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
8D2:					
Hickory, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
8D3:					
Hickory, severely eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
8F:					
Hickory	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
8G:					
Hickory	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
10C:					
Plumfield	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
10D:					
Plumfield	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
12A:					
Wynoose	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13A:					
Bluford	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13B2:					
Bluford, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14B:					
Ava	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14B2:					
Ava, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14C2:					
Ava, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
109A:					
Racoon	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
287A:					
Chauncey	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
301B:					
Grantsburg	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
301C3:					
Grantsburg, severely eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
337A:					
Creal	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
340D3:					
Zanesville, severely eroded	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
376A:					
Cisne, bench	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
377A:					
Hoyleton, bench	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
377B2:					
Hoyleton, bench, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
421G:					
Kell	90	Fair		Poor	
		Bottom layer	0.01	Bottom layer	0.00
		Thickest layer	0.01	Thickest layer	0.00
518B:					
Rend	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
518B2:					
Rend, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
518C2:					
Rend, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
533:					
Urban land	85	Not rated		Not rated	
536:					
Dumps, mine	90	Not rated		Not rated	
583B:					
Pike	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
583C2:					
Pike, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
639A:					
Wynoose, bench	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
640A:					
Bluford, bench	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
802B:					
Orthents, loamy	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
802F:					
Orthents, loamy	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
823B:					
Schuline	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
866:					
Dumps, slurry	90	Not rated		Not rated	
871D:					
Lenzburg, stony	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
871G:					
Lenzburg, stony	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 17a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
908F:					
Hickory	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Kell	40	Fair		Poor	
		Bottom layer	0.01	Bottom layer	0.00
		Thickest layer	0.01	Thickest layer	0.00
927D3:					
Blair, severely eroded	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Atlas, severely eroded	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1108A:					
Bonnie, undrained, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3072A:					
Sharon, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3108A:					
Bonnie, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3226A:					
Wirt, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3336A:					
Wilbur, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3382A:					
Belknap, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3415A:					
Orion, frequently flooded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
3422A:					
Cape, frequently flooded-----------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17b.--Construction Materials

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
2A:							
Cisne	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Wetness	0.00	Wetness	0.00
		Too clayey	0.32	Low strength	0.00	Too clayey	0.20
		Water erosion	0.37	Shrink-swell	0.94	Too acid	0.95
		Too acid	0.46				
3A:							
Hoyleton	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.02	Wetness	0.50	Wetness	0.50
		Too acid	0.50	Shrink-swell	0.60	Too acid	0.88
		Water erosion	0.68				
3B2:							
Hoyleton, eroded	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.18	Wetness	0.50	Wetness	0.50
		Too acid	0.50	Shrink-swell	0.56	Too acid	0.88
		Water erosion	0.90				
4B2:							
Richview, eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.05	Low strength	0.00	Too clayey	0.70
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.88
		Water erosion	0.90				
		Too clayey	0.98				
4C2:							
Richview, eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.05	Low strength	0.00	Too clayey	0.70
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.88
		Water erosion	0.90				
		Too clayey	0.98				
5C2:							
Blair, eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Wetness	0.24
		Too acid	0.54	Wetness	0.24		
		Water erosion	0.99				
5C3:							
Blair, severely eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Wetness	0.24
		Too acid	0.54	Wetness	0.24		
		Water erosion	0.99				

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
7C2:							
Atlas, eroded-------	90	Fair		Poor		Poor	
		Too clayey	0.18	Low strength	0.00	Wetness	0.00
		Low content of organic matter	0.50	Wetness	0.00	Too clayey	0.12
				Shrink-swell	0.12		
		Too acid	0.88				
		Water erosion	0.90				
7D2:							
Atlas, eroded-------	90	Fair		Poor		Poor	
		Too clayey	0.18	Low strength	0.00	Wetness	0.00
		Low content of organic matter	0.50	Wetness	0.00	Slope	0.04
				Shrink-swell	0.12	Too clayey	0.12
		Too acid	0.88				
		Water erosion	0.90				
8D2:							
Hickory, eroded-----	90	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Slope	0.04
				Shrink-swell	0.97	Too clayey	0.58
		Too acid	0.68			Rock fragments	0.97
		Too clayey	0.98				
8D3:							
Hickory, severely eroded-------------	90	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Slope	0.04
				Shrink-swell	0.97	Too clayey	0.58
		Too acid	0.68			Rock fragments	0.97
		Too clayey	0.98				
8F:							
Hickory-------------	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Slope	0.00	Slope	0.00
				Low strength	0.78	Too clayey	0.55
		Too acid	0.26			Rock fragments	0.88
		Too clayey	0.98				
		Water erosion	0.99				
8G:							
Hickory-------------	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Slope	0.00	Slope	0.00
				Low strength	0.78	Too clayey	0.55
		Too acid	0.26			Rock fragments	0.88
		Too clayey	0.98				
		Water erosion	0.99				
10C:							
Plumfield-----------	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Too acid	0.88
				Wetness	0.91	Wetness	0.91
		Too acid	0.50				
		Water erosion	0.90				
		Droughty	0.99				

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
10D:							
Plumfield	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Slope	0.04
		Too acid	0.50	Wetness	0.91	Too acid	0.88
		Water erosion	0.90			Wetness	0.91
		Droughty	0.99				
12A:							
Wynoose	90	Poor		Poor		Poor	
		Too clayey	0.00	Wetness	0.00	Wetness	0.00
		Low content of organic matter	0.05	Low strength	0.00	Too clayey	0.00
		Too acid	0.08	Shrink-swell	0.94	Too acid	0.50
		Water erosion	0.37				
13A:							
Bluford	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.05	Wetness	0.04	Wetness	0.04
		Too acid	0.50	Shrink-swell	0.97	Too acid	0.88
		Water erosion	0.68				
13B2:							
Bluford, eroded	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.05	Wetness	0.04	Wetness	0.04
		Too acid	0.50	Shrink-swell	0.70	Too acid	0.68
		Water erosion	0.90				
14B:							
Ava	90	Fair		Poor		Fair	
		Low content of organic matter	0.24	Low strength	0.00	Too clayey	0.60
		Too acid	0.32	Wetness	0.91	Too acid	0.88
		Water erosion	0.68			Wetness	0.91
		Depth to cemented pan	0.94			Depth to cemented pan	0.94
		Too clayey	0.98				
14B2:							
Ava, eroded	90	Fair		Poor		Fair	
		Too acid	0.32	Low strength	0.00	Depth to cemented pan	0.36
		Depth to cemented pan	0.36	Shrink-swell	0.90	Too clayey	0.64
		Low content of organic matter	0.50	Wetness	0.91	Too acid	0.88
		Droughty	0.89			Wetness	0.91
		Water erosion	0.90				
		Too clayey	0.98				

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
14C2:							
Ava, eroded	90	Fair		Poor		Fair	
		Too acid	0.32	Low strength	0.00	Depth to cemented pan	0.36
		Depth to cemented pan	0.36	Shrink-swell	0.90	Too clayey	0.64
		Low content of organic matter	0.50	Wetness	0.91	Too acid	0.88
		Droughty	0.89			Wetness	0.91
		Water erosion	0.90				
		Too clayey	0.98				
109A:							
Racoon	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Wetness	0.00	Wetness	0.00
		Too acid	0.32	Low strength	0.00		
		Water erosion	0.68	Shrink-swell	0.99		
287A:							
Chauncey	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Wetness	0.00	Wetness	0.00
		Too acid	0.54	Low strength	0.00	Too acid	0.98
		Water erosion	0.90	Shrink-swell	0.83		
301B:							
Grantsburg	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Too acid	0.59
		Too acid	0.12	Shrink-swell	0.89	Wetness	0.91
		Water erosion	0.90	Wetness	0.91	Depth to cemented pan	0.99
		Depth to cemented pan	0.99				
301C3:							
Grantsburg, severely eroded	90	Fair		Fair		Fair	
		Too acid	0.12	Shrink-swell	0.87	Too acid	0.59
		Low content of organic matter	0.18	Wetness	0.91	Depth to cemented pan	0.80
		Depth to cemented pan	0.80			Wetness	0.91
		Droughty	0.88				
		Water erosion	0.90				
337A:							
Creal	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Wetness	0.50
		Too acid	0.32	Wetness	0.50		
		Water erosion	0.68	Shrink-swell	0.99		

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
340D3:							
Zanesville, severely eroded	90	Poor		Fair		Poor	
		Depth to cemented pan	0.00	Wetness	0.91	Depth to cemented pan	0.00
		Low content of organic matter	0.08	Depth to bedrock	0.92	Slope	0.04
		Droughty	0.16			Wetness	0.91
		Too acid	0.54			Too acid	0.98
		Water erosion	0.90				
376A:							
Cisne, bench	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Wetness	0.00	Wetness	0.00
		Too clayey	0.32	Low strength	0.00	Too clayey	0.20
		Water erosion	0.37	Shrink-swell	0.94	Too acid	0.95
		Too acid	0.46				
377A:							
Hoyleton, bench	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.02	Wetness	0.50	Wetness	0.50
		Too acid	0.50	Shrink-swell	0.60	Too acid	0.88
		Water erosion	0.68				
377B2:							
Hoyleton, bench, eroded	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.18	Wetness	0.50	Wetness	0.50
		Too acid	0.50	Shrink-swell	0.56	Too acid	0.88
		Water erosion	0.90				
421G:							
Kell	90	Fair		Poor		Poor	
		Low content of organic matter	0.08	Slope	0.00	Slope	0.00
		Too acid	0.50	Depth to bedrock	0.00	Rock fragments	0.00
		Droughty	0.90	Shrink-swell	0.93	Too acid	0.88
		Depth to bedrock	0.90			Depth to bedrock	0.90
		Water erosion	0.99				
518B:							
Rend	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Wetness	0.89
		Too acid	0.32	Wetness	0.89	Too acid	0.98
		Water erosion	0.37				
518B2:							
Rend, eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Wetness	0.89
		Too acid	0.32	Wetness	0.89	Too acid	0.98
		Water erosion	0.90				

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
518C2:							
Rend, eroded	90	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Wetness	0.89
		Too acid	0.32	Wetness	0.89	Too acid	0.98
		Water erosion	0.90				
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Fair		Fair		Fair	
		Low content of organic matter	0.12	Low strength	0.22	Too clayey	0.57
		Too acid	0.46	Shrink-swell	0.99	Too acid	0.95
		Water erosion	0.90				
		Too clayey	0.98				
583C2:							
Pike, eroded	90	Fair		Fair		Fair	
		Low content of organic matter	0.12	Low strength	0.22	Too clayey	0.57
		Too acid	0.46	Shrink-swell	0.99	Too acid	0.95
		Water erosion	0.90				
		Too clayey	0.98				
639A:							
Wynoose, bench	90	Poor		Poor		Poor	
		Too clayey	0.00	Wetness	0.00	Wetness	0.00
		Low content of organic matter	0.05	Low strength	0.00	Too clayey	0.00
		Too acid	0.08	Shrink-swell	0.94	Too acid	0.50
		Water erosion	0.37				
640A:							
Bluford, bench	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.05	Wetness	0.04	Wetness	0.04
		Too acid	0.50	Shrink-swell	0.97	Too acid	0.88
		Water erosion	0.68				
802B:							
Orthents, loamy	90	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
				Shrink-swell	0.87		
802F:							
Orthents, loamy	85	Fair		Poor		Poor	
		Low content of organic matter	0.18	Slope	0.00	Slope	0.00
				Low strength	0.00		
				Shrink-swell	0.87		

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
823B:							
Schuline	90	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
				Shrink-swell	0.87		
		Water erosion	0.90				
		Carbonate content	0.92				
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Fair		Poor		Poor	
		Low content of organic matter	0.50	Low strength	0.00	Slope	0.00
				Shrink-swell	0.87	Hard to reclaim (rock fragments)	0.59
		Too clayey	0.98				
		Water erosion	0.99			Too clayey	0.64
						Rock fragments	0.98
871G:							
Lenzburg, stony	90	Fair		Poor		Poor	
		Low content of organic matter	0.50	Slope	0.00	Slope	0.00
				Low strength	0.00	Hard to reclaim (rock fragments)	0.59
		Too clayey	0.98	Shrink-swell	0.87		
		Water erosion	0.99			Too clayey	0.64
						Rock fragments	0.98
908F:							
Hickory	50	Fair		Poor		Poor	
		Low content of organic matter	0.12	Slope	0.00	Slope	0.00
				Low strength	0.78	Too clayey	0.55
		Too acid	0.32			Rock fragments	0.88
		Too clayey	0.98				
		Water erosion	0.99				
Kell	40	Poor		Poor		Poor	
		Low content of organic matter	0.00	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.88
		Droughty	0.90			Depth to bedrock	0.90
		Depth to bedrock	0.90				
		Water erosion	0.99				
927D3:							
Blair, severely eroded	50	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Slope	0.04
				Wetness	0.24	Wetness	0.24
		Too acid	0.54	Shrink-swell	0.87		
		Water erosion	0.99				
Atlas, severely eroded	40	Fair		Poor		Fair	
		Too clayey	0.18	Low strength	0.00	Slope	0.04
		Low content of organic matter	0.18	Shrink-swell	0.12	Too clayey	0.11
				Wetness	0.14	Wetness	0.14
		Too acid	0.92				

Table 17b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
1108A:							
Bonnie, undrained, frequently flooded	90	Fair		Poor		Poor	
		Too acid	0.50	Wetness	0.00	Wetness	0.00
		Low content of organic matter	0.50	Low strength	0.00	Too acid	0.88
		Water erosion	0.68				
3072A:							
Sharon, frequently flooded	90	Fair		Good		Fair	
		Low content of organic matter	0.24			Too acid	0.88
		Too acid	0.32				
		Water erosion	0.68				
3108A:							
Bonnie, frequently flooded	90	Fair		Poor		Poor	
		Too acid	0.50	Wetness	0.00	Wetness	0.00
		Low content of organic matter	0.50	Low strength	0.00	Too acid	0.88
		Water erosion	0.68				
3226A:							
Wirt, frequently flooded	90	Fair		Good		Good	
		Low content of organic matter	0.18				
		Water erosion	0.68				
3336A:							
Wilbur, frequently flooded	90	Fair		Fair		Fair	
		Low content of organic matter	0.50	Wetness	0.32	Wetness	0.32
		Water erosion	0.68				
3382A:							
Belknap, frequently flooded	90	Fair		Fair		Fair	
		Too acid	0.46	Wetness	0.04	Wetness	0.04
		Water erosion	0.68			Too acid	0.95
3415A:							
Orion, frequently flooded	90	Fair		Poor		Fair	
		Water erosion	0.68	Low strength	0.00	Wetness	0.53
				Wetness	0.53		
3422A:							
Cape, frequently flooded	90	Poor		Poor		Poor	
		Too clayey	0.00	Wetness	0.00	Wetness	0.00
		Too acid	0.50	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Shrink-swell	0.28	Too acid	0.59

Table 18a.--Water Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:							
Cisne	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.33		
3A:							
Hoyleton	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
				Piping	0.01		
3B2:							
Hoyleton, eroded	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
4B2:							
Richview, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Seepage	0.72	Depth to saturated zone	0.43	Slow refill	0.28
		Slope	0.08			Depth to saturated zone	0.25
				Piping	0.12		
						Cutbanks cave	0.10
4C2:							
Richview, eroded	90	Very limited		Somewhat limited		Somewhat limited	
		Slope	1.00	Depth to saturated zone	0.43	Slow refill	0.28
		Seepage	0.72			Depth to saturated zone	0.25
				Piping	0.14		
						Cutbanks cave	0.10
5C2:							
Blair, eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Depth to saturated zone	1.00	Slow refill	0.96
		Seepage	0.04			Cutbanks cave	0.10
				Piping	0.05		
5C3:							
Blair, severely eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Depth to saturated zone	1.00	Slow refill	0.96
		Seepage	0.04			Cutbanks cave	0.10
				Piping	0.03		
7C2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00	Depth to water	1.00
				Hard to pack	0.83		

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
7D2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00	Depth to water	1.00
				Hard to pack	0.83		
8D2:							
Hickory, eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.19	Depth to water	1.00
		Seepage	0.72				
8D3:							
Hickory, severely eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.09	Depth to water	1.00
		Seepage	0.72				
8F:							
Hickory	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.96	Depth to water	1.00
		Seepage	0.72				
8G:							
Hickory	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.96	Depth to water	1.00
		Seepage	0.72				
10C:							
Plumfield	90	Very limited		Somewhat limited		Very limited	
		Depth to cemented pan	1.00	Piping	0.87	Depth to water	1.00
		Slope	1.00	Depth to saturated zone	0.84		
		Seepage	0.04				
10D:							
Plumfield	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.87	Depth to water	1.00
		Depth to cemented pan	1.00	Depth to saturated zone	0.84		
		Seepage	0.04				
12A:							
Wynoose	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.17		
13A:							
Bluford	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.38		
13B2:							
Bluford, eroded	90	Somewhat limited		Very limited		Very limited	
		Slope	0.08	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.15		

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
14B:							
Ava	90	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.66	Piping	1.00	Depth to water	1.00
		Seepage	0.04	Depth to saturated zone	0.84		
				Thin layer	0.66		
14B2:							
Ava, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.91	Thin layer	0.91	Depth to water	1.00
		Slope	0.08	Depth to saturated zone	0.84		
		Seepage	0.04	Piping	0.31		
14C2:							
Ava, eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Depth to cemented pan	0.91	Depth to saturated zone	0.84		
		Seepage	0.04	Piping	0.31		
109A:							
Racoon	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
						Cutbanks cave	0.10
				Ponding	1.00		
				Piping	0.51		
287A:							
Chauncey	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
						Cutbanks cave	0.10
				Ponding	1.00		
				Piping	0.23		
301B:							
Grantsburg	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Depth to saturated zone	0.84	Depth to water	1.00
		Depth to cemented pan	0.56				
				Piping	0.60		
		Slope	0.08	Thin layer	0.56		
301C3:							
Grantsburg, severely eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Depth to saturated zone	0.84	Depth to water	1.00
		Depth to cemented pan	0.77	Thin layer	0.77		
		Seepage	0.04	Piping	0.39		
337A:							
Creal	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
						Cutbanks cave	0.10
				Piping	0.81		

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
340D3:							
Zanesville, severely eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to cemented pan	1.00	Piping	0.90		
		Seepage	0.54	Depth to saturated zone	0.84		
		Depth to bedrock	0.02				
376A:							
Cisne, bench	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.33		
377A:							
Hoyleton, bench	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
				Piping	0.01		
377B2:							
Hoyleton, bench, eroded	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Seepage	0.72	Thin layer	0.70		
		Depth to bedrock	0.04				
518B:							
Rend	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Depth to saturated zone	0.86	Depth to water	1.00
		Slope	0.08				
				Piping	0.64		
518B2:							
Rend, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Depth to saturated zone	0.86	Depth to water	1.00
		Slope	0.08				
				Piping	0.61		
518C2:							
Rend, eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Seepage	0.72				
				Piping	0.61		
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
583B:							
Pike	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.41	Depth to water	1.00
		Slope	0.08				
583C2:							
Pike, eroded	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.39	Depth to water	1.00
		Seepage	0.72				
639A:							
Wynoose, bench	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.17		
640A:							
Bluford, bench	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.38		
802B:							
Orthents, loamy	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Piping	0.18	Depth to water	1.00
802F:							
Orthents, loamy	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.18	Depth to water	1.00
		Seepage	0.04				
823B:							
Schuline	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.08	Piping	0.58	Depth to water	1.00
		Seepage	0.04				
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.11	Depth to water	1.00
		Seepage	0.04				
871G:							
Lenzburg, stony	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.11	Depth to water	1.00
		Seepage	0.04				
908F:							
Hickory	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.96	Depth to water	1.00
		Seepage	0.72				
Kell	40	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	0.72				
		Depth to bedrock	0.69				

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
927D3:							
Blair, severely eroded	50	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Depth to saturated zone	1.00	Slow refill	0.96
		Seepage	0.04	Piping	0.49	Cutbanks cave	0.10
Atlas, severely eroded	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00	Depth to water	1.00
				Hard to pack	0.57		
1108A:							
Bonnie, undrained, frequently flooded	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.98		
3072A:							
Sharon, frequently flooded	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Piping	1.00	Depth to saturated zone	0.81
						Slow refill	0.28
						Cutbanks cave	0.10
3108A:							
Bonnie, frequently flooded	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.98		
3226A:							
Wirt, frequently flooded	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Piping	1.00	Depth to water	1.00
3336A:							
Wilbur, frequently flooded	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
				Piping	1.00	Cutbanks cave	0.10
3382A:							
Belknap, frequently flooded	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.54	Depth to saturated zone	1.00	Slow refill	0.46
				Piping	1.00	Cutbanks cave	0.10

Table 18a.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3415A:							
Orion, frequently flooded-----------	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Piping	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
						Depth to saturated zone	0.01
3422A:							
Cape, frequently flooded-----------	90	Not limited		Very limited		Very limited	
				Ponding	1.00	Slow refill	1.00
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Hard to pack	0.82		

Table 18b.--Water Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:							
Cisne	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
3A:							
Hoyleton	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
3B2:							
Hoyleton, eroded	90	Somewhat limited		Very limited		Very limited	
		Slope	0.16	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	0.16		
4B2:							
Richview, eroded	90	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.37	Water erosion	1.00	Depth to saturated zone	0.95
				Slope	0.37		
4C2:							
Richview, eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.95
				Slope	1.00		
5C2:							
Blair, eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	1.00		
5C3:							
Blair, severely eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	1.00		
7C2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	1.00		

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
7D2:							
Atlas, eroded	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	1.00
				Slope	1.00	Slope	0.96
				Depth to saturated zone	1.00		
8D2:							
Hickory, eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Slope	1.00	Slope	0.96
				Water erosion	0.88		
8D3:							
Hickory, severely eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Slope	1.00	Slope	0.96
				Water erosion	0.50		
8F:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
				Slope	1.00		
8G:							
Hickory	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
				Slope	1.00		
10C:							
Plumfield	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.99
				Depth to saturated zone	1.00		
				Slope	1.00		
10D:							
Plumfield	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.99
				Slope	1.00	Slope	0.96
				Depth to saturated zone	1.00		
12A:							
Wynoose	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Ponding	1.00
				Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Too clayey	0.01
13A:							
Bluford	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
13B2: Bluford, eroded	90	Somewhat limited Slope	 0.37	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 0.37	Very limited Depth to saturated zone Too clayey	 1.00 0.01
14B: Ava	90	Somewhat limited Slope	 0.16	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 0.16	Somewhat limited Depth to saturated zone	 0.99
14B2: Ava, eroded	90	Somewhat limited Slope	 0.37	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 0.37	Somewhat limited Depth to saturated zone	 0.99
14C2: Ava, eroded	90	Very limited Slope	 1.00	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 1.00	Somewhat limited Depth to saturated zone	 0.99
109A: Racoon	90	Not limited		Very limited Water erosion Ponding Depth to saturated zone	 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	 1.00 1.00
287A: Chauncey	90	Not limited		Very limited Water erosion Ponding Depth to saturated zone	 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Too clayey	 1.00 1.00 0.01
301B: Grantsburg	90	Somewhat limited Slope	 0.37	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 0.37	Somewhat limited Depth to saturated zone	 0.99
301C3: Grantsburg, severely eroded	90	Very limited Slope	 1.00	Very limited Water erosion Depth to saturated zone Slope	 1.00 1.00 1.00	Somewhat limited Depth to saturated zone	 0.99

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
337A:							
Creal	90	Somewhat limited		Very limited		Very limited	
		Slope	0.04	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	0.04		
340D3:							
Zanesville, severely eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.99
		Depth to hard bedrock	0.08	Slope	1.00	Slope	0.96
				Depth to saturated zone	1.00	Depth to hard bedrock	0.08
				Depth to hard bedrock	0.08		
376A:							
Cisne, bench	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
377A:							
Hoyleton, bench	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
377B2:							
Hoyleton, bench, eroded	90	Somewhat limited		Very limited		Very limited	
		Slope	0.16	Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
				Slope	0.16		
421G:							
Kell	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Depth to soft bedrock	0.10	Slope	1.00	Depth to soft bedrock	0.10
				Depth to soft bedrock	0.10		
518B:							
Rend	90	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.37	Water erosion	1.00	Depth to saturated zone	0.99
				Depth to saturated zone	1.00		
				Slope	0.37		
518B2:							
Rend, eroded	90	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.37	Water erosion	1.00	Depth to saturated zone	0.99
				Depth to saturated zone	1.00		
				Slope	0.37		

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
518C2:							
Rend, eroded	90	Very limited		Very limited		Somewhat limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.99
				Depth to saturated zone	1.00		
				Slope	1.00		
533:							
Urban land	85	Not rated		Not rated		Not rated	
536:							
Dumps, mine	90	Not rated		Not rated		Not rated	
583B:							
Pike	90	Somewhat limited		Very limited		Not limited	
		Slope	0.37	Water erosion	1.00		
				Slope	0.37		
583C2:							
Pike, eroded	90	Very limited		Very limited		Not limited	
		Slope	1.00	Water erosion	1.00		
				Slope	1.00		
639A:							
Wynoose, bench	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Ponding	1.00
				Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Too clayey	0.01
640A:							
Bluford, bench	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
802B:							
Orthents, loamy	90	Somewhat limited		Somewhat limited		Not limited	
		Slope	0.16	Water erosion	0.88		
				Slope	0.16		
802F:							
Orthents, loamy	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Water erosion	0.88		
823B:							
Schuline	90	Somewhat limited		Very limited		Not limited	
		Slope	0.37	Water erosion	1.00		
				Slope	0.37		
866:							
Dumps, slurry	90	Not rated		Not rated		Not rated	
871D:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Cutbanks cave	1.00
		Content of large stones	0.32	Slope	1.00	Slope	1.00
				Content of large stones	0.32		

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
871G:							
Lenzburg, stony	90	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Content of large stones	0.32	Slope	1.00	Cutbanks cave	1.00
				Content of large stones	0.32		
908F:							
Hickory	50	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
				Slope	1.00		
Kell	40	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Water erosion	1.00	Depth to soft bedrock	1.00
				Slope	1.00		
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
927D3:							
Blair, severely eroded	50	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to saturated zone	1.00
				Slope	1.00		
				Depth to saturated zone	1.00	Slope	0.96
Atlas, severely eroded	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Slope	0.96
				Water erosion	0.88		
1108A:							
Bonnie, undrained, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Ponding	1.00
				Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Flooding	0.70
3072A:							
Sharon, frequently flooded	90	Not limited		Very limited		Somewhat limited	
				Water erosion	1.00	Flooding	0.70
						Depth to saturated zone	0.60
3108A:							
Bonnie, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Ponding	1.00
				Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Flooding	0.70

Table 18b.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
3226A:							
Wirt, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Cutbanks cave	1.00
						Flooding	0.70
3336A:							
Wilbur, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Flooding	0.70
3382A:							
Belknap, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Flooding	0.70
3415A:							
Orion, frequently flooded	90	Not limited		Very limited		Very limited	
				Water erosion	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00	Flooding	0.70
3422A:							
Cape, frequently flooded	90	Not limited		Very limited		Very limited	
				Ponding	1.00	Ponding	1.00
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Water erosion	0.88	Flooding	0.70
						Too clayey	0.02

Table 19.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
2A:												
Cisne-----------	0-8	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	91-100	19-29	2-10
	8-17	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	91-100	19-29	3-11
	17-37	Silty clay loam, silty clay	CL, CH	A-7-6, A-6	0	0	100	100	96-100	93-100	40-57	19-33
	37-60	Silty clay loam, silt loam, clay loam, loam	CL	A-6, A-7-6	0	0	100	92-100	83-100	74-96	29-46	11-25
	60-80	Silt loam, loam, clay loam, silty clay loam	CL	A-6, A-7-6	0	0	97-100	84-100	75-100	65-98	30-46	12-25
3A:												
Hoyleton--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	5-18
	8-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	4-18
	11-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	92-100	44-57	22-33
	39-80	Silty clay loam, silt loam, loam, clay loam	CL	A-7-6, A-6, A-4	0	0	97-100	84-100	75-100	66-100	28-46	10-25
3B2:												
Hoyleton, eroded	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	5-18
	7-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	92-100	44-57	22-33
	39-80	Silt loam, silty clay loam, clay loam, loam	CL	A-6, A-4, A-7-6	0	0	97-100	84-100	75-100	66-100	28-46	10-25
4B2:												
Richview, eroded	0-9	Silt loam	CL	A-4, A-6	0	0	100	100	97-100	93-100	30-40	11-17
	9-37	Silty clay loam, silt loam	CL	A-7-6, A-6	0	0	100	100	96-100	92-100	36-48	17-25
	37-73	Silt loam, loam, clay loam	CL	A-4, A-6, A-7-6	0	0	97-100	84-100	76-100	68-100	24-44	9-25

Table 19.--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	
4C2:												
Richview, eroded	0-9	Silt loam	CL	A-4, A-7-6	0	0	100	100	97-100	93-100	29-41	8-17
	9-36	Silty clay loam, silt loam	CL	A-7-6, A-6	0	0	100	100	96-100	92-100	36-48	17-25
	36-78	Silt loam, loam, clay loam	CL	A-6, A-7-6, A-4	0	0	97-100	84-100	76-100	68-100	26-46	10-25
5C2:												
Blair, eroded---	0-5	Silt loam	CL	A-6	0	0	100	100	95-100	91-99	30-40	13-19
	5-12	Silty clay loam, clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	94-100	89-100	35-47	17-25
	12-71	Silty clay loam, clay loam, silt loam	CL	A-6, A-7-6	0	0	95-100	84-100	78-100	69-96	29-46	12-25
	71-80	Silty clay loam, clay loam, silt loam	CL	A-6, A-4, A-7-6	0	0	95-100	84-100	76-100	63-91	26-46	10-25
5C3:												
Blair, severely eroded---------	0-5	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	96-100	92-100	36-47	17-25
	5-12	Silty clay loam, clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	94-100	89-100	35-47	17-25
	12-71	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6, A-4	0	0	95-100	84-100	79-100	69-95	29-46	12-25
	71-80	Silty clay loam, clay loam, silt loam	CL	A-4, A-6, A-7-6	0	0	95-100	85-100	77-100	65-92	26-46	10-25

Table 19.--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	
7C2:												
Atlas, eroded---	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	92-100	81-90	25-35	5-15
	7-29	Silty clay loam, clay, clay loam	CH	A-7-6	0	0	100	91-100	81-100	72-94	50-70	30-45
	29-60	Silty clay loam, clay, clay loam	CH	A-7-6	0	0	95-100	83-100	76-100	67-100	50-70	30-45
7D2:												
Atlas, eroded---	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	92-100	81-90	25-35	5-15
	7-29	Silty clay loam, clay, clay loam	CH	A-7-6	0	0	100	91-100	81-100	72-94	50-70	30-45
	29-60	Silty clay loam, clay, clay loam	CH	A-7-6	0	0	95-100	83-100	76-100	67-100	50-70	30-45
8D2:												
Hickory, eroded	0-10	Silt loam	CL	A-6, A-4	0	0	98-100	92-100	83-100	67-85	25-40	10-15
	10-46	Clay loam, loam	CL	A-6, A-7-6	0	0-1	94-100	71-100	62-98	49-82	35-45	15-25
	46-58	Clay loam, loam	CL	A-6, A-4	0	0-1	94-100	72-100	61-96	45-77	25-40	10-20
	58-80	Loam, clay loam	SC, CL	A-4, A-6	0	0-1	94-100	72-100	60-96	43-75	25-40	10-20
8D3:												
Hickory, severely eroded	0-8	Clay loam	CL	A-6, A-7-6	0	0	98-100	92-100	81-96	65-79	35-45	15-25
	8-46	Clay loam, loam	CL	A-6, A-7-6	0	0-1	94-100	71-100	61-96	48-79	35-45	15-25
	46-58	Clay loam, loam	CL	A-4, A-6	0	0-1	94-100	72-100	54-92	38-70	25-40	10-20
	58-80	Loam, clay loam	CL, SC	A-4, A-6	0	0-1	94-100	72-100	59-97	43-75	25-40	10-20
8F:												
Hickory---------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	62-85	22-28	3-8
	3-16	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	63-85	22-28	3-8
	16-43	Loam, clay loam	CL	A-6	0	0-1	94-100	72-100	61-100	45-82	32-39	11-18
	43-80	Loam, clay loam	CL, SC	A-6, A-4	0	0-1	94-100	72-100	60-98	42-75	22-34	4-14
8G:												
Hickory---------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	62-85	22-28	3-8
	3-16	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	63-85	22-28	3-8
	16-43	Loam, clay loam	CL	A-6	0	0-1	94-100	72-100	61-100	45-82	32-39	11-18
	43-80	Loam, clay loam	CL, SC	A-6, A-4	0	0-1	94-100	72-100	60-98	42-75	22-34	4-14

Table 19.--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	
10C:												
Plumfield-------	0-5	Silty clay loam	CL	A-6, A-4	0	0	100	100	96-100	93-100	30-40	10-20
	5-12	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	89-99	15-40	5-20
	12-36	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	97-100	86-96	15-40	5-20
	36-60	Silt loam, silty clay loam, loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	85-100	80-100	68-95	15-40	4-20
10D:												
Plumfield-------	0-5	Silty clay loam	CL	A-6, A-4	0	0	100	100	96-100	93-100	30-40	10-20
	5-12	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	89-99	15-40	5-20
	12-36	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	97-100	86-96	15-40	5-20
	36-60	Silt loam, silty clay loam, loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	85-100	80-100	68-95	15-40	4-20
12A:												
Wynoose---------	0-7	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	95-100	91-99	19-29	2-10
	7-20	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	91-99	19-29	2-11
	20-36	Silty clay, silty clay loam	CL, CH	A-7-6	0	0	100	100	96-100	92-100	46-54	25-31
	36-66	Silt loam, clay loam, silty clay loam	CL	A-7-6, A-6	0	0	100	92-100	84-100	76-99	35-46	15-25
	66-80	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6	0	0	97-100	84-100	76-100	66-100	35-46	15-25

Table 19.--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	
13A:												
Bluford	0-7	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	92-99	16-27	1-9
	7-20	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	91-100	21-32	4-14
	20-35	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	93-100	45-57	23-33
	35-60	Silt loam, loam, silty clay loam	CL	A-6, A-7-6	0	0	100	92-100	83-100	75-99	29-46	11-25
13B2:												
Bluford, eroded	0-7	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	96-100	92-99	20-35	5-15
	7-27	Silty clay, silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	93-100	45-57	23-33
	27-60	Silty clay loam, silt loam, loam	CL	A-6, A-7-6	0	0	100	92-100	83-100	75-99	29-46	11-25
14B:												
Ava	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	97-100	92-100	25-32	6-11
	8-18	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	97-100	92-100	25-32	6-12
	18-36	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	96-100	93-100	32-41	11-17
	36-53	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	94-100	88-100	79-99	25-35	6-15
	53-80	Silty clay loam, loam, silt loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	85-100	79-100	69-100	25-35	6-15
14B2:												
Ava, eroded	0-9	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	92-100	24-40	10-18
	9-28	Silty clay loam	CL	A-6, A-4, A-7-6	0	0	100	100	95-100	94-100	29-46	10-21
	28-64	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	90-100	85-100	26-40	10-21
	64-78	Loam, silt loam, clay loam	CL	A-6, A-4	0	0	100	85-100	80-100	72-95	29-40	10-21

Table 19.--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	
14C2:												
Ava, eroded	0-9	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	92-100	24-40	10-18
	9-28	Silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	94-100	29-46	10-21
	28-64	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	90-100	85-100	26-40	10-21
	64-78	Loam, silt loam, clay loam	CL	A-6, A-4	0	0	100	85-100	80-100	72-95	29-40	10-21
109A:												
Racoon	0-6	Silt loam	CL	A-6, A-4	0	0	100	100	97-100	94-100	30-35	10-15
	6-30	Silt loam	CL	A-6, A-4	0	0	100	100	97-100	94-100	30-35	10-15
	30-59	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	93-100	35-45	15-20
	59-80	Silty clay loam, silt loam, loam	CL	A-6, A-4	0	0	100	100	97-100	85-97	30-40	10-20
287A:												
Chauncey	0-12	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	91-98	25-35	7-15
	12-26	Silt loam	CL, CL-ML	A-4	0	0	100	100	96-100	93-100	20-30	5-10
	26-46	Silty clay loam, silty clay	CL, CH	A-6, A-7-6	0	0	100	100	93-100	90-100	40-55	20-35
	46-60	Silty clay loam, silty clay	CL, ML	A-6, A-7-6, A-4	0	0	100	100	93-100	86-99	35-45	10-20
301B:												
Grantsburg	0-11	Silt loam	ML, CL	A-4, A-6	0	0	100	100	93-100	91-100	30-40	7-15
	11-24	Silt loam, silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	10-20
	24-38	Silty clay loam, silt loam	CL, ML	A-4, A-7-6	0	0	100	100	94-100	93-100	35-50	10-25
	38-61	Silt loam, silty clay loam	CL	A-6, A-7-6, A-4	0	0	100	100	94-100	92-100	30-45	10-20
	61-80	Silt loam	ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	30-40	7-15

Table 19.--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	
301C3:												
Grantsburg, severely eroded	0-3	Silt loam, silty clay loam	ML, CL	A-6, A-4	0	0	100	100	94-100	92-100	30-40	7-15
	3-19	Silt loam, silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	93-100	30-45	10-20
	19-33	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7-6	0	0	100	100	94-100	93-100	35-50	10-25
	33-56	Silt loam, silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	94-100	92-100	30-45	10-20
	56-80	Silt loam	ML, CL	A-4, A-6	0	0	100	100	95-100	93-100	30-40	7-15
337A:												
Creal-----------	0-9	Silt loam	ML, CL	A-4, A-6	0	0	100	100	96-100	93-100	30-40	5-15
	9-27	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	93-100	25-35	4-12
	27-55	Silty clay loam	ML, CL	A-7-6, A-4	0	0	100	100	96-100	93-100	40-50	10-41
	55-80	Silt loam, silty clay loam	CL, ML	A-7-6, A-6	0	0	100	100	99-100	93-100	30-41	11-15

Table 19.--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	
340D3:												
Zanesville, severely eroded	0-2	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	83-100	82-100	25-40	4-15
	2-19	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	85-100	82-100	25-40	5-20
	19-37	Silt loam, silty clay loam	CL, CL-ML, ML	A-6, A-4	0	0	91-100	78-100	71-100	67-100	20-40	2-20
	37-55	Channery silt loam, channery silty clay loam, very channery silt loam, channery clay loam, channery sandy clay loam, very channery loam, gravelly loam, gravelly fine sandy loam	CL, GM, SC, SM	A-6, A-2-4	0	0-7	73-100	41-100	37-100	34-100	20-40	2-20
	55-65	Bedrock	---	---	---	---	---	---	---	---	---	---
376A:												
Cisne, bench----	0-8	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	91-100	19-29	2-10
	8-17	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	91-100	19-29	3-11
	17-37	Silty clay loam, silty clay	CL, CH	A-7-6, A-6	0	0	100	100	96-100	93-100	40-57	19-33
	37-60	Silty clay loam, silt loam, clay loam, loam	CL	A-6, A-7-6	0	0	100	92-100	83-100	74-96	29-46	11-25
	60-80	Silt loam, loam, clay loam, silty clay loam	CL	A-6, A-7-6	0	0	97-100	84-100	75-100	65-98	30-46	12-25

Table 19.--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	
377A:												
Hoyleton, bench	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	5-18
	8-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	4-18
	11-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	92-100	44-57	22-33
	39-80	Silty clay loam, silt loam, loam, clay loam	CL	A-7-6, A-6, A-4	0	0	97-100	84-100	75-100	66-100	28-46	10-25
377B2:												
Hoyleton, bench, eroded---------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	94-100	89-100	21-37	5-18
	7-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	92-100	44-57	22-33
	39-80	Silt loam, silty clay loam, clay loam, loam	CL	A-4, A-6, A-7-6	0	0	97-100	84-100	75-100	66-100	28-46	10-25
421G:												
Kell------------	0-3	Silt loam	CL-ML, ML	A-4	0	0-1	94-100	83-100	74-100	64-89	20-35	2-10
	3-7	Silt loam, loam	CL-ML, ML	A-4	0	0-1	94-100	83-100	74-100	64-89	20-35	2-10
	7-13	Silt loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0-1	90-100	69-100	61-100	52-88	25-40	4-18
	13-35	Channery clay loam, silty clay loam, very channery silt loam, very channery loam, silt loam	ML, GM, SM	A-4, A-1-b	0-1	0-7	64-91	29-91	23-91	20-89	20-35	NP-10
	35-60	Bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.--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	
518B:												
Rend	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	97-100	92-100	25-35	5-15
	8-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	97-100	92-100	25-35	5-15
	11-23	Silty clay loam	CL	A-6, A-7-6, A-4	0	0	100	100	96-100	93-100	25-45	10-20
	23-77	Silt loam, silty clay loam, clay loam	CL	A-4, A-6, A-7-6	0	0	100	90-100	85-100	76-100	25-45	10-20
	77-80	Silt loam, silty clay loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	91-100	85-100	72-95	25-40	5-20
518B2:												
Rend, eroded	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	97-100	92-100	25-35	5-15
	8-23	Silty clay loam	CL	A-6, A-4, A-7-6	0	0	100	100	96-100	93-100	25-45	10-20
	23-77	Silt loam, silty clay loam, clay loam	CL	A-6, A-4, A-7-6	0	0	100	90-100	85-100	76-100	25-45	10-20
	77-80	Silt loam, silty clay loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	91-100	85-100	72-95	25-40	5-20
518C2:												
Rend, eroded	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	97-100	92-100	25-35	5-15
	8-23	Silty clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	96-100	93-100	25-45	10-20
	23-77	Silt loam, silty clay loam, clay loam	CL	A-4, A-6, A-7-6	0	0	100	90-100	85-100	76-100	25-45	10-20
	77-80	Silt loam, silty clay loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	91-100	85-100	72-95	25-40	5-20
533.												
Urban land												
536.												
Dumps, mine												

Table 19.--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	
583B:												
Pike	0-8	Silt loam	CL	A-6, A-4	0	0	100	100	97-100	93-100	25-35	8-15
	8-38	Silty clay loam	CL	A-6, A-7-6, A-4	0	0	100	100	97-100	93-100	30-45	10-25
	38-57	Silty clay loam, silt loam	CL	A-4, A-6	0	0	100	100	93-100	77-94	20-35	10-20
	57-99	Loam, clay loam	CL	A-4, A-6	0	0-4	94-100	82-100	73-100	55-92	14-40	10-20
583C2:												
Pike, eroded	0-6	Silt loam	CL	A-6, A-4	0	0	100	100	97-100	93-100	25-35	8-15
	6-38	Silty clay loam	CL	A-6, A-7-6, A-4	0	0	100	100	97-100	93-100	30-45	10-25
	38-57	Silty clay loam, silt loam	CL	A-4, A-6	0	0	100	100	92-100	77-94	20-35	10-20
	57-99	Loam, clay loam	CL	A-4, A-6	0	0-4	94-100	82-100	73-100	55-92	14-40	10-20
639A:												
Wynoose, bench	0-7	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	95-100	91-99	19-29	2-10
	7-20	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	91-99	19-29	2-11
	20-36	Silty clay, silty clay loam	CL, CH	A-7-6	0	0	100	100	96-100	92-100	46-54	25-31
	36-66	Silt loam, clay loam, silty clay loam	CL	A-7-6, A-6	0	0	100	92-100	84-100	76-99	35-46	15-25
	66-80	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6	0	0	97-100	84-100	76-100	66-100	35-46	15-25
640A:												
Bluford, bench	0-7	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	92-100	16-27	1-9
	7-20	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	91-100	21-32	4-14
	20-35	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	93-100	45-57	23-33
	35-60	Silt loam, loam, silty clay loam	CL	A-6, A-7-6	0	0	100	92-100	83-100	75-99	29-46	11-25

Table 19.--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	
802B:												
Orthents, loamy	0-6	Loam, silt loam	CL	A-6, A-4	0	0	96-100	87-100	75-100	61-91	30-35	10-15
	6-60	Loam, clay loam, silt loam, fine sandy loam	CL	A-6	0	0-4	96-100	87-100	75-100	61-91	30-40	15-20
802F:												
Orthents, loamy	0-6	Loam, silt loam	CL	A-6, A-4	0	0	96-100	87-100	75-100	60-90	30-35	10-15
	6-60	Loam, clay loam, silt loam, fine sandy loam	CL	A-6	0	0-4	96-100	87-100	74-100	60-90	30-40	15-20
823B:												
Schuline--------	0-10	Silt loam	CL	A-6, A-4	0	0	100	83-100	75-100	68-94	25-35	10-15
	10-60	Loam, silty clay loam, clay loam, gravelly clay loam	CL	A-6, A-4, A-7-6	0-1	0-4	92-98	72-97	61-97	51-88	30-45	10-20
866.												
Dumps, slurry												
871D:												
Lenzburg, stony	0-3	Gravelly silty clay loam	SC, CL	A-6, A-7-6	0-2	0-12	79-97	53-85	50-85	46-80	35-45	15-25
	3-26	Silty clay loam, silt loam, gravelly loam, gravelly silty clay loam	SC, CL	A-4, A-6, A-7-6	0-4	0-9	80-95	54-90	47-90	39-78	30-45	10-25
	26-60	Silty clay loam, gravelly loam, gravelly silty clay loam, gravelly clay loam, cobbly clay loam	CL	A-6, A-7-6, A-2-4	0-3	3-16	72-97	34-85	30-85	24-82	30-45	10-25

Table 19.--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	
871G:												
Lenzburg, stony	0-3	Gravelly silty clay loam	SC, CL	A-6, A-7-6	0-2	3-12	79-97	53-84	50-84	46-79	35-45	15-25
	3-26	Silty clay loam, silt loam, gravelly loam, gravelly silty clay loam	CL	A-6, A-7-6, A-2-4	0-3	3-16	71-97	33-85	29-85	24-74	30-45	10-25
	26-60	Silty clay loam, gravelly loam, gravelly silty clay loam, gravelly clay loam, cobbly clay loam	CL	A-2-4, A-6, A-7-6	0-3	3-16	72-97	34-85	30-85	24-82	30-45	10-25
908F:												
Hickory----------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	62-85	22-28	3-8
	3-16	Silt loam	CL-ML, CL, ML	A-4	0	0	98-100	91-100	79-100	63-85	22-28	3-8
	16-43	Loam, clay loam	CL	A-6	0	0-1	94-100	72-100	61-100	45-82	32-39	11-18
	43-80	Loam, clay loam	CL, SC	A-6, A-4	0	0-1	94-100	72-100	60-98	42-75	22-34	4-14
Kell-------------	0-3	Silt loam	CL-ML, ML	A-4	0	0-1	94-100	83-100	75-100	64-89	20-35	2-10
	3-7	Silt loam, loam	CL-ML, ML	A-4	0	0-1	94-100	83-100	75-100	64-89	20-35	2-10
	7-13	Silt loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0-1	90-100	69-100	62-100	51-89	25-40	4-18
	13-35	Channery clay loam, silty clay loam, very channery silt loam, very channery loam, silt loam	ML, GM, SM	A-1-b, A-4	0-1	0-7	64-91	29-91	25-91	21-85	20-35	NP-10
	35-60	Bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.--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	
927D3:												
Blair, severely eroded---------	0-5	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	96-100	92-100	36-47	17-25
	5-12	Silty clay loam, clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	94-100	89-100	35-47	17-25
	12-71	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6, A-4	0	0	95-100	84-100	79-100	69-95	29-46	12-25
	71-80	Silty clay loam, clay loam, silt loam	CL	A-4, A-6, A-7-6	0	0	95-100	85-100	77-100	65-92	26-46	10-25
Atlas, severely eroded---------	0-7	Silty clay loam	CH, CL	A-7-6	0	0	100	100	94-100	83-91	45-55	25-35
	7-43	Clay loam, silty clay, silty clay loam	CH, CL	A-7-6	0	0	100	100	87-100	73-88	45-65	25-40
	43-60	Silty clay loam, clay loam, loam	CL, CH	A-7-6, A-6	0	0	100	95-100	87-100	77-100	40-60	20-35
1108A:												
Bonnie, undrained, frequently flooded--------	0-10	Silt loam	CL	A-4, A-6	0	0	100	100	97-100	93-100	27-34	8-12
	10-27	Silt loam	CL	A-4, A-6	0	0	100	100	93-100	88-97	27-34	8-12
	27-80	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	100	86-98	81-93	25-39	8-15
3072A:												
Sharon, frequently flooded--------	0-13	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	94-100	85-95	20-30	2-10
	13-40	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	92-100	83-98	15-30	NP-10
	40-80	Silt loam, loam, sandy loam	CL-ML, CL, ML	A-4	0	0	100	100	92-100	83-98	15-30	NP-10

Table 19.--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	
3108A:												
Bonnie, frequently flooded--------	0-10	Silt loam	CL	A-4, A-6	0	0	100	100	93-100	85-100	27-34	8-12
	10-27	Silt loam	CL	A-4, A-6	0	0	100	100	94-100	85-100	27-34	8-12
	27-80	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	100	91-100	81-100	25-39	8-15
3226A:												
Wirt, frequently flooded--------	0-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	92-100	84-92	22-35	6-12
	13-33	Silt loam, loam, sandy loam	CL-ML, ML, SC-SM	A-4, A-6	0	0	100	100	86-98	69-81	17-30	3-12
	33-60	Stratified sandy loam to fine sandy loam to loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4, A-6	0	0	100	75-100	61-95	32-57	15-30	1-12
3336A:												
Wilbur, frequently flooded--------	0-7	Silt loam	CL, CL-ML	A-4	0	0	100	100	96-100	88-97	20-30	5-10
	7-41	Silt loam	CL, CL-ML	A-4	0	0	100	100	96-100	88-97	20-30	5-10
	41-65	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	100	91-100	75-95	20-35	5-15
3382A:												
Belknap, frequently flooded--------	0-7	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	95-100	89-100	20-30	2-8
	7-59	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	100	95-100	89-100	20-35	NP-12
	59-80	Silt loam, silty clay loam	CL, CL-ML, ML	A-6, A-4	0	0	100	100	95-100	87-100	20-40	3-20
3415A:												
Orion, frequently flooded--------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	93-100	87-97	25-35	4-12
	7-21	Silt loam	CL, CL-ML	A-4	0	0	100	100	90-100	79-89	20-30	4-10
	21-60	Loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	79-97	20-40	4-18

Table 19.--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	
3422A:												
Cape, frequently flooded--------	0-10	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	92-100	35-50	20-30
	10-22	Silty clay loam, silty clay	CH, CL	A-6, A-7-6	0	0	100	100	97-100	94-100	35-50	20-30
	22-80	Silty clay, clay, silty clay loam	CH, CL	A-7-6, A-6	0	0	100	100	92-100	89-100	39-70	30-45

Table 20.--Physical Properties of the 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 estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
2A:														
Cisne	0-8	1-8	72-83	10-20	1.30-1.50	0.6-2	0.21-0.25	0.0-2.9	1.0-3.0	.37	.37	3	5	56
	8-17	1-8	72-87	10-20	1.40-1.60	0.2-0.6	0.17-0.24	0.0-2.9	0.2-1.5	.55	.55			
	17-37	1-8	50-64	35-45	1.30-1.50	0.01-0.2	0.13-0.17	6.0-8.9	0.2-0.5	.37	.37			
	37-60	5-30	38-62	20-35	1.50-1.70	0.06-0.2	0.13-0.18	3.0-5.9	0.0-0.5	.37	.37			
	60-80	5-30	35-63	20-35	1.50-1.70	0.06-0.2	0.15-0.18	3.0-5.9	0.0-0.3	.43	.43			
3A:														
Hoyleton	0-8	1-8	65-87	10-27	1.30-1.50	0.6-2	0.20-0.25	0.0-2.9	1.5-3.5	.37	.37	3	5	56
	8-11	1-8	65-87	12-27	1.30-1.50	0.6-2	0.17-0.22	0.0-2.9	0.3-1.5	.49	.49			
	11-39	1-8	47-64	35-45	1.30-1.60	0.06-0.2	0.12-0.17	6.0-8.9	0.2-0.5	.37	.37			
	39-80	4-30	35-75	19-35	1.40-1.60	0.06-0.2	0.15-0.19	3.0-5.9	0.0-0.3	.43	.43			
3B2:														
Hoyleton, eroded	0-7	1-8	65-87	10-27	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.5-3.0	.37	.37	3	5	56
	7-39	1-8	47-64	35-47	1.30-1.60	0.06-0.2	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	39-80	4-30	35-75	19-35	1.40-1.60	0.06-0.2	0.15-0.18	3.0-5.9	0.0-0.3	.43	.43			
4B2:														
Richview, eroded	0-9	1-8	70-80	17-25	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	1.5-3.0	.37	.37	5	6	48
	9-37	1-8	60-70	25-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	37-73	5-25	40-80	15-35	1.40-1.70	0.6-2	0.14-0.20	0.0-2.9	0.0-0.2	.43	.43			
4C2:														
Richview, eroded	0-9	1-8	70-80	15-25	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	1.5-3.0	.37	.37	5	6	48
	9-36	1-8	60-70	25-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	36-78	5-25	40-80	15-35	1.40-1.70	0.6-2	0.14-0.20	3.0-5.9	0.0-0.2	.43	.43			
5C2:														
Blair, eroded	0-5	1-14	60-74	20-27	1.30-1.55	0.6-2	0.15-0.24	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	5-12	1-25	50-70	25-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.2-0.8	.37	.37			
	12-71	10-25	50-70	18-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.1-0.5	.37	.37			
	71-80	10-35	45-65	15-35	1.35-1.70	0.2-0.6	0.19-0.22	3.0-5.9	0.1-0.3	.37	.37			
5C3:														
Blair, severely eroded	0-5	1-15	60-74	25-35	1.30-1.55	0.6-2	0.15-0.24	3.0-5.9	0.5-1.0	.37	.37	4	6	48
	5-12	1-25	50-70	25-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.2-0.8	.37	.37			
	12-71	10-25	50-70	18-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.1-0.5	.37	.37			
	71-80	10-35	45-65	15-35	1.35-1.70	0.2-0.6	0.19-0.22	3.0-5.9	0.1-0.3	.37	.37			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
7C2:														
Atlas, eroded-------	0-7	5-25	50-70	18-27	1.30-1.50	0.2-0.6	0.20-0.25	0.0-2.9	1.0-3.0	.43	.43	3	6	48
	7-29	10-35	25-60	30-45	1.35-1.55	0.01-0.06	0.07-0.19	6.0-8.9	0.0-1.0	.32	.32			
	29-60	10-40	20-50	25-45	1.35-1.55	0.01-0.06	0.07-0.19	6.0-8.9	0.0-1.0	.32	.32			
7D2:														
Atlas, eroded-------	0-7	5-25	50-70	18-27	1.30-1.50	0.2-0.6	0.20-0.25	0.0-2.9	1.0-3.0	.43	.43	3	6	48
	7-29	10-35	25-60	30-45	1.35-1.55	0.01-0.06	0.07-0.19	6.0-8.9	0.0-1.0	.32	.32			
	29-60	10-40	20-50	25-45	1.35-1.55	0.01-0.06	0.07-0.19	6.0-8.9	0.0-1.0	.32	.32			
8D2:														
Hickory, eroded-----	0-10	15-40	40-60	18-27	1.40-1.65	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32	5	6	48
	10-46	20-45	30-50	24-35	1.45-1.65	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.28	.32			
	46-58	25-49	28-50	15-32	1.50-1.70	0.6-2	0.11-0.19	0.0-2.9	0.0-0.2	.28	.32			
	58-80	30-55	25-50	15-30	1.50-1.75	0.6-2	0.10-0.15	0.0-2.9	0.0-0.2	.28	.32			
8D3:														
Hickory, severely eroded-------------	0-8	20-43	30-50	27-35	1.40-1.65	0.6-2	0.17-0.19	3.0-5.9	0.5-1.0	.24	.24	4	6	48
	8-46	20-45	30-50	24-35	1.45-1.65	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.28	.32			
	46-58	25-49	28-50	15-32	1.50-1.70	0.6-2	0.11-0.19	0.0-2.9	0.0-0.2	.28	.32			
	58-80	30-55	25-50	15-30	1.50-1.75	0.6-2	0.10-0.15	0.0-2.9	0.0-0.2	.28	.32			
8F:														
Hickory-------------	0-3	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	3-16	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.2-1.0	.37	.37			
	16-43	25-50	30-50	15-35	1.50-1.70	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.28	.32			
	43-80	30-55	25-50	15-30	1.55-1.75	0.6-2	0.11-0.19	0.0-2.9	0.1-0.3	.28	.32			
8G:														
Hickory-------------	0-3	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	3-16	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.2-1.0	.37	.37			
	16-43	25-50	30-50	15-35	1.50-1.70	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.28	.32			
	43-80	30-55	25-50	15-30	1.55-1.75	0.6-2	0.11-0.19	0.0-2.9	0.1-0.3	.28	.32			
10C:														
Plumfield-----------	0-5	2-8	60-70	27-35	1.40-1.60	0.2-0.6	0.18-0.21	3.0-5.9	0.1-1.0	.43	.43	2	6	48
	5-12	2-15	55-70	20-30	1.65-1.90	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.5	.43	.43			
	12-36	10-25	55-65	20-30	1.65-1.90	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.2	.43	.43			
	36-60	15-35	45-55	20-35	1.55-1.75	0.06-0.2	0.05-0.08	0.0-2.9	0.0-0.2	.43	.43			
10D:														
Plumfield-----------	0-5	2-8	60-70	27-35	1.40-1.60	0.2-0.6	0.18-0.21	3.0-5.9	0.1-1.0	.43	.43	2	6	48
	5-12	2-15	55-70	20-30	1.65-1.90	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.5	.43	.43			
	12-36	10-25	55-65	20-30	1.65-1.90	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.2	.43	.43			
	36-60	15-35	45-55	20-35	1.55-1.75	0.06-0.2	0.05-0.08	0.0-2.9	0.0-0.2	.43	.43			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
12A:														
Wynoose-------------	0-7	1-8	72-80	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	7-20	1-8	72-80	10-20	1.30-1.50	0.2-0.6	0.18-0.22	0.0-2.9	0.2-1.5	.55	.55			
	20-36	1-8	51-64	35-42	1.30-1.50	0.01-0.06	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	36-66	5-30	39-70	25-35	1.50-1.70	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.3	.37	.37			
	66-80	5-40	39-75	20-35	1.50-1.70	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.3	.43	.43			
13A:														
Bluford-------------	0-7	1-8	74-85	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	7-20	1-8	70-80	12-25	1.35-1.55	0.2-0.6	0.18-0.22	0.0-2.9	0.2-1.5	.49	.49			
	20-35	1-8	50-64	35-45	1.30-1.50	0.06-0.2	0.13-0.17	6.0-8.9	0.2-0.5	.37	.37			
	35-60	5-30	40-64	20-35	1.50-1.70	0.06-0.2	0.13-0.16	3.0-5.9	0.0-0.3	.37	.37			
13B2:														
Bluford, eroded-----	0-7	1-8	74-85	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	7-27	1-8	50-64	35-45	1.30-1.50	0.06-0.2	0.13-0.18	6.0-8.9	0.2-0.5	.37	.37			
	27-60	5-30	40-64	20-35	1.50-1.75	0.06-0.2	0.11-0.17	3.0-5.9	0.0-0.3	.37	.37			
14B:														
Ava-----------------	0-8	1-8	72-83	12-20	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	8-18	1-8	73-83	12-20	1.35-1.55	0.2-0.6	0.12-0.20	0.0-2.9	0.2-1.5	.49	.49			
	18-36	1-8	58-74	25-35	1.35-1.55	0.06-0.6	0.12-0.20	3.0-5.9	0.2-0.5	.37	.37			
	36-53	5-20	50-74	15-30	1.55-1.75	0.01-0.06	0.05-0.10	0.0-2.9	0.0-0.3	.43	.43			
	53-80	5-30	44-74	19-30	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.3	.43	.43			
14B2:														
Ava, eroded---------	0-9	1-8	66-83	13-26	1.40-1.60	0.6-2	0.21-0.24	0.0-2.9	0.5-2.0	.43	.43	4	5	56
	9-28	1-8	58-72	27-34	1.40-1.60	0.2-0.6	0.12-0.20	3.0-5.9	0.2-0.8	.37	.37			
	28-64	5-20	50-75	17-30	1.55-1.80	0.01-0.06	0.05-0.10	0.0-2.9	0.0-0.5	.43	.43			
	64-78	5-30	44-70	20-30	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.2	.43	.43			
14C2:														
Ava, eroded---------	0-9	1-8	66-83	13-26	1.40-1.60	0.6-2	0.21-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	9-28	1-8	58-72	27-34	1.40-1.60	0.2-0.6	0.12-0.20	3.0-5.9	0.2-0.8	.37	.37			
	28-64	5-20	50-75	17-30	1.55-1.80	0.01-0.06	0.05-0.10	0.0-2.9	0.0-0.5	.43	.43			
	64-78	5-30	44-70	20-30	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.2	.43	.43			
109A:														
Racoon--------------	0-6	1-7	69-80	15-24	1.30-1.50	0.2-0.6	0.22-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	6-30	1-7	69-80	15-24	1.35-1.55	0.2-0.6	0.20-0.22	0.0-2.9	0.2-0.8	.49	.49			
	30-59	1-7	60-70	27-35	1.35-1.60	0.06-0.2	0.15-0.20	3.0-5.9	0.1-0.5	.37	.37			
	59-80	5-35	45-70	18-30	1.40-1.65	0.2-0.6	0.15-0.20	0.0-2.9	0.0-0.2	.49	.43			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
287A:														
Chauncey------------	0-12	2-10	70-80	15-22	1.30-1.50	0.6-2	0.22-0.25	0.0-2.9	2.0-4.0	.32	.32	5	5	56
	12-26	2-10	70-80	15-22	1.25-1.50	0.2-0.6	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	26-46	2-15	50-63	35-45	1.35-1.60	0.06-0.2	0.11-0.15	6.0-8.9	0.0-0.5	.37	.37			
	46-60	2-22	50-75	28-40	1.50-1.70	0.06-0.2	0.14-0.18	3.0-5.9	0.0-0.5	.37	.37			
301B:														
Grantsburg----------	0-11	0-5	70-80	12-25	1.10-1.40	0.6-2	0.20-0.25	0.0-2.9	1.0-3.0	.43	.43	4	5	56
	11-24	0-5	65-80	20-30	1.30-1.60	0.6-2	0.10-0.20	0.0-2.9	0.1-0.5	.37	.37			
	24-38	0-5	60-75	25-35	1.50-1.70	0.2-0.6	0.10-0.20	3.0-5.9	0.0-0.2	.37	.37			
	38-61	1-18	62-79	20-32	1.55-1.80	0.01-0.06	0.05-0.10	0.0-2.9	0.0-0.2	.37	.37			
	61-80	1-30	43-79	20-27	1.50-1.70	0.06-0.2	0.10-0.20	0.0-2.9	0.0-0.2	.43	.43			
301C3:														
Grantsburg, severely eroded-------------	0-3	0-5	60-80	20-35	1.10-1.40	0.6-2	0.20-0.25	0.0-2.9	0.5-2.0	.43	.43	3	6	48
	3-19	0-5	65-80	20-30	1.30-1.60	0.6-2	0.10-0.20	0.0-2.9	0.1-0.5	.37	.37			
	19-33	0-5	60-75	25-35	1.50-1.70	0.2-0.6	0.10-0.20	3.0-5.9	0.0-0.2	.37	.37			
	33-56	1-18	62-79	20-32	1.55-1.80	0.01-0.06	0.05-0.10	0.0-2.9	0.0-0.2	.37	.37			
	56-80	1-30	43-79	20-27	1.50-1.70	0.06-0.2	0.10-0.20	0.0-2.9	0.0-0.2	.43	.43			
337A:														
Creal---------------	0-9	1-10	69-80	18-27	1.30-1.50	0.2-0.6	0.22-0.24	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	9-27	1-15	67-80	18-25	1.35-1.60	0.2-0.6	0.18-0.20	0.0-2.9	0.0-0.5	.49	.49			
	27-55	1-12	60-71	28-35	1.35-1.60	0.2-0.6	0.18-0.20	3.0-5.9	0.0-0.2	.37	.37			
	55-80	1-15	55-70	25-35	1.35-1.60	0.2-0.6	0.18-0.20	0.0-2.9	0.0-0.2	.43	.43			
340D3:														
Zanesville, severely eroded-------------	0-2	0-5	60-88	12-35	1.35-1.40	0.6-2	0.19-0.23	0.0-2.9	0.5-1.0	.43	.43	2	6	48
	2-19	0-22	55-75	15-35	1.35-1.45	0.6-2	0.17-0.22	3.0-5.9	0.0-0.5	.37	.37			
	19-37	5-32	50-77	18-33	1.50-1.75	0.06-0.2	0.08-0.12	3.0-5.9	0.0-0.5	.37	.37			
	37-55	5-70	10-70	18-35	1.50-1.70	0.2-2	0.08-0.12	0.0-2.9	0.0-0.5	.24	.28			
	55-65	---	---	---	---	0.01-0.2	---	---	---	---	---			
376A:														
Cisne, bench--------	0-8	1-8	72-83	10-20	1.30-1.50	0.6-2	0.21-0.25	0.0-2.9	1.0-3.0	.37	.37	3	5	56
	8-17	1-8	72-87	10-20	1.40-1.60	0.2-0.6	0.17-0.24	0.0-2.9	0.2-1.5	.55	.55			
	17-37	1-8	50-64	35-45	1.30-1.50	0.01-0.2	0.13-0.17	6.0-8.9	0.2-0.5	.37	.37			
	37-60	5-30	38-62	20-35	1.50-1.70	0.06-0.2	0.13-0.18	3.0-5.9	0.0-0.5	.37	.37			
	60-80	5-30	35-63	20-35	1.50-1.70	0.06-0.2	0.15-0.18	3.0-5.9	0.0-0.3	.43	.43			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
377A:														
Hoyleton, bench	0-8	1-8	65-87	10-27	1.30-1.50	0.6-2	0.20-0.25	0.0-2.9	1.5-3.5	.37	.37	3	5	56
	8-11	1-8	65-87	12-27	1.30-1.50	0.6-2	0.17-0.22	0.0-2.9	0.3-1.5	.49	.49			
	11-39	1-8	47-64	35-45	1.30-1.60	0.06-0.2	0.12-0.17	6.0-8.9	0.2-0.5	.37	.37			
	39-80	4-30	35-75	19-35	1.40-1.60	0.06-0.2	0.15-0.19	3.0-5.9	0.0-0.3	.43	.43			
377B2:														
Hoyleton, bench, eroded	0-7	1-8	65-87	10-27	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.5-3.0	.37	.37	3	5	56
	7-39	1-8	47-64	35-47	1.30-1.60	0.06-0.2	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	39-80	4-30	35-75	19-35	1.40-1.60	0.06-0.2	0.15-0.18	3.0-5.9	0.0-0.3	.43	.43			
421G:														
Kell	0-3	10-30	50-70	15-27	1.25-1.35	0.6-2	0.18-0.22	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	3-7	10-30	48-70	15-27	1.25-1.40	0.6-2	0.18-0.20	0.0-2.9	0.2-1.0	.37	.37			
	7-13	10-25	40-65	22-35	1.35-1.50	0.6-2	0.15-0.18	3.0-5.9	0.2-0.5	.28	.32			
	13-35	10-50	40-60	10-40	1.40-1.55	0.6-2	0.10-0.15	0.0-2.9	0.1-0.3	.28	.32			
	35-60	---	---	---	---	0.01-2	---	---	---	---	---			
518B:														
Rend	0-8	0-8	73-83	12-20	1.30-1.50	0.6-2	0.21-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	8-11	0-8	73-83	12-20	1.30-1.50	0.6-2	0.21-0.24	0.0-2.9	0.2-1.0	.55	.55			
	11-23	0-8	58-74	25-35	1.30-1.50	0.6-2	0.18-0.21	3.0-5.9	0.0-0.5	.37	.37			
	23-77	5-25	50-74	15-30	1.50-1.70	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.2	.43	.43			
	77-80	10-30	44-61	19-30	1.55-1.75	0.2-0.6	0.05-0.10	0.0-2.9	0.0-0.2	.43	.43			
518B2:														
Rend, eroded	0-8	0-8	73-83	12-20	1.30-1.50	0.6-2	0.21-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	8-23	0-8	58-74	25-35	1.30-1.50	0.6-2	0.18-0.21	3.0-5.9	0.0-0.5	.37	.37			
	23-77	5-25	50-74	15-30	1.50-1.70	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.2	.43	.43			
	77-80	10-30	44-61	19-30	1.55-1.75	0.2-0.6	0.05-0.10	0.0-2.9	0.0-0.2	.43	.43			
518C2:														
Rend, eroded	0-8	0-8	73-83	12-20	1.30-1.50	0.6-2	0.21-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	8-23	0-8	58-74	25-35	1.30-1.50	0.6-2	0.18-0.21	3.0-5.9	0.0-0.5	.37	.37			
	23-77	5-25	50-74	15-30	1.50-1.70	0.01-0.06	0.09-0.11	0.0-2.9	0.0-0.2	.43	.43			
	77-80	10-30	44-61	19-30	1.55-1.75	0.2-0.6	0.05-0.10	0.0-2.9	0.0-0.2	.43	.43			
533.														
Urban land														
536.														
Dumps, mine														

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
583B:														
Pike	0-8	1-7	70-80	15-27	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	8-38	1-7	60-71	27-35	1.30-1.45	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
	38-57	10-30	45-65	15-30	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-0.2	.43	.43			
	57-99	15-44	26-60	15-30	1.45-1.70	0.6-2	0.08-0.19	0.0-2.9	0.0-0.2	.43	.43			
583C2:														
Pike, eroded	0-6	1-7	70-80	15-27	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.43	.43	5	6	48
	6-38	1-7	60-71	27-35	1.30-1.45	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
	38-57	10-30	45-65	15-30	1.30-1.60	0.6-2	0.12-0.18	0.0-2.9	0.0-0.2	.43	.43			
	57-99	15-44	26-60	15-30	1.45-1.70	0.6-2	0.08-0.19	0.0-2.9	0.0-0.2	.43	.43			
639A:														
Wynoose, bench	0-7	1-8	72-80	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	7-20	1-8	72-80	10-20	1.30-1.50	0.2-0.6	0.18-0.22	0.0-2.9	0.2-1.5	.55	.55			
	20-36	1-8	51-64	35-42	1.30-1.50	0.01-0.06	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	36-66	5-30	39-70	25-35	1.50-1.70	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.3	.37	.37			
	66-80	5-40	39-75	20-35	1.50-1.70	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.3	.43	.43			
640A:														
Bluford, bench	0-7	1-8	74-85	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	7-20	1-8	70-80	12-25	1.35-1.55	0.2-0.6	0.18-0.22	0.0-2.9	0.2-1.5	.49	.49			
	20-35	1-8	50-64	35-45	1.30-1.50	0.06-0.2	0.13-0.17	6.0-8.9	0.2-0.5	.37	.37			
	35-60	5-30	40-64	20-35	1.50-1.70	0.06-0.2	0.13-0.16	3.0-5.9	0.0-0.3	.37	.37			
802B:														
Orthents, loamy	0-6	10-60	30-60	10-30	1.70-1.75	0.2-0.6	0.18-0.22	0.0-2.9	0.5-1.0	.32	.32	5	6	48
	6-60	10-60	30-60	10-30	1.70-1.80	0.2-0.6	0.16-0.20	0.0-2.9	0.1-0.5	.32	.32			
802F:														
Orthents, loamy	0-6	10-60	30-60	10-30	1.70-1.75	0.2-0.6	0.18-0.22	0.0-2.9	0.5-1.0	.32	.32	5	6	48
	6-60	10-60	30-60	10-30	1.70-1.80	0.2-0.6	0.16-0.20	0.0-2.9	0.1-0.5	.32	.32			
823B:														
Schuline	0-10	5-25	48-75	15-27	1.30-1.50	0.6-2	0.20-0.23	0.0-2.9	0.5-2.0	.32	.32	5	6	48
	10-60	10-42	30-50	20-40	1.40-1.70	0.2-0.6	0.10-0.20	3.0-5.9	0.1-0.5	.43	.43			
866.														
Dumps, slurry														
871D:														
Lenzburg, stony	0-3	5-20	48-60	27-35	1.30-1.60	0.6-2	0.08-0.14	3.0-5.9	0.5-1.5	.28	.32	5	5	56
	3-26	10-40	40-55	20-35	1.30-1.70	0.2-0.6	0.07-0.12	3.0-5.9	0.2-1.0	.37	.43			
	26-60	15-50	30-55	20-45	1.40-1.70	0.2-0.6	0.07-0.12	3.0-5.9	0.2-1.0	.37	.43			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
871G:														
Lenzburg, stony-----	0-3	5-20	48-60	27-35	1.30-1.60	0.6-2	0.08-0.14	3.0-5.9	0.5-1.5	.28	.32	5	5	56
	3-26	10-40	40-55	20-35	1.30-1.70	0.2-0.6	0.07-0.12	3.0-5.9	0.2-1.0	.37	.43			
	26-60	15-50	30-55	20-45	1.40-1.70	0.2-0.6	0.07-0.12	3.0-5.9	0.2-1.0	.37	.43			
908F:														
Hickory-------------	0-3	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	3-16	15-40	40-65	10-20	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.2-1.0	.37	.37			
	16-43	25-50	30-50	15-35	1.50-1.70	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.28	.32			
	43-80	30-55	25-50	15-30	1.55-1.75	0.6-2	0.11-0.19	0.0-2.9	0.1-0.3	.28	.32			
Kell----------------	0-3	10-30	50-70	15-27	1.25-1.35	0.6-2	0.18-0.22	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	3-7	10-30	48-70	15-27	1.25-1.40	0.6-2	0.18-0.20	0.0-2.9	0.2-1.0	.37	.37			
	7-13	10-25	40-65	22-35	1.35-1.50	0.6-2	0.15-0.18	3.0-5.9	0.2-0.5	.28	.32			
	13-35	10-50	40-60	10-40	1.40-1.55	0.6-2	0.10-0.15	0.0-2.9	0.1-0.3	.28	.32			
	35-60	---	---	---	---	0.01-2	---	---	---	---	---			
927D3:														
Blair, severely eroded-------------	0-5	1-15	60-74	25-35	1.30-1.55	0.6-2	0.15-0.24	3.0-5.9	0.5-1.0	.37	.37	4	6	48
	5-12	1-25	50-70	25-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.2-0.8	.37	.37			
	12-71	10-25	50-70	18-35	1.45-1.60	0.2-0.6	0.16-0.21	3.0-5.9	0.1-0.5	.37	.37			
	71-80	10-35	45-65	15-35	1.35-1.70	0.2-0.6	0.19-0.22	3.0-5.9	0.1-0.3	.37	.37			
Atlas, severely eroded-------------	0-7	5-25	40-60	27-35	1.40-1.60	0.06-0.2	0.14-0.19	3.0-5.9	0.5-1.8	.28	.28	2	6	48
	7-43	10-35	25-45	30-45	1.55-1.75	0.01-0.06	0.07-0.19	6.0-8.9	0.1-0.5	.32	.32			
	43-60	15-40	20-50	25-45	1.55-1.75	0.01-0.06	0.07-0.19	6.0-8.9	0.1-0.5	.32	.32			
1108A:														
Bonnie, undrained, frequently flooded	0-10	1-32	50-80	18-27	1.30-1.50	0.6-2	0.22-0.25	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	10-27	1-32	50-80	18-27	1.40-1.60	0.2-0.6	0.21-0.24	0.0-2.9	0.0-1.0	.49	.49			
	27-80	3-42	40-79	18-30	1.40-1.60	0.2-0.6	0.14-0.24	0.0-2.9	0.0-1.0	.32	.32			
3072A:														
Sharon, frequently flooded------------	0-13	1-50	30-79	10-20	1.30-1.50	0.6-2	0.22-0.24	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	13-40	1-50	30-79	5-20	1.35-1.65	0.6-2	0.18-0.22	0.0-2.9	0.2-0.5	.49	.49			
	40-80	1-50	30-79	5-20	1.35-1.65	0.6-2	0.18-0.22	0.0-2.9	0.2-0.5	.49	.49			
3108A:														
Bonnie, frequently flooded------------	0-10	1-32	50-80	18-27	1.30-1.50	0.6-2	0.22-0.25	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	10-27	1-32	50-80	18-27	1.40-1.60	0.2-0.6	0.21-0.24	0.0-2.9	0.0-1.0	.49	.49			
	27-80	3-42	40-79	18-30	1.40-1.60	0.2-0.6	0.14-0.24	0.0-2.9	0.0-1.0	.49	.49			

Table 20.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
3226A:														
Wirt, frequently flooded------------	0-13	2-30	60-80	10-18	1.30-1.55	0.6-2	0.19-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	13-33	12-49	45-70	6-18	1.40-1.55	0.6-2	0.11-0.20	0.0-2.9	0.2-0.8	.49	.49			
	33-60	32-76	20-50	4-18	1.45-1.60	0.6-2	0.07-0.19	0.0-2.9	0.1-0.5	.24	.28			
3336A:														
Wilbur, frequently flooded------------	0-7	5-15	70-80	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	7-41	5-15	70-80	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	0.2-0.8	.49	.49			
	41-65	5-45	45-70	10-26	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.1-0.5	.49	.49			
3382A:														
Belknap, frequently flooded------------	0-7	1-27	65-85	8-18	1.30-1.55	0.2-2	0.22-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	7-59	1-27	65-85	8-25	1.40-1.60	0.2-2	0.20-0.22	0.0-2.9	0.0-2.0	.49	.49			
	59-80	5-27	65-85	8-30	1.35-1.65	0.2-2	0.20-0.22	0.0-2.9	0.0-1.0	.49	.49			
3415A:														
Orion, frequently flooded------------	0-7	5-20	60-85	10-20	1.20-1.30	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	7-21	10-30	50-80	10-20	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.49	.49			
	21-60	10-40	42-80	10-28	1.25-1.45	0.6-2	0.18-0.22	0.0-2.9	3.0-8.0	.32	.32			
3422A:														
Cape, frequently flooded------------	0-10	0-10	40-70	30-60	1.30-1.60	0.06-0.2	0.15-0.19	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	10-22	0-10	35-60	35-60	1.30-1.60	0.06-0.2	0.15-0.19	6.0-8.9	0.5-2.0	.32	.32			
	22-80	0-15	35-60	35-65	1.30-1.60	0.01-0.06	0.10-0.13	6.0-8.9	0.1-1.0	.28	.28			

Table 21.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
2A:							
Cisne----------------	0-8	8.0-21	6.0-16	5.1-7.3	0	1.0-3.0	0
	8-17	6.0-19	4.5-14	4.5-6.5	0	0.2-1.5	0
	17-37	18-30	14-28	4.5-6.0	0	0.2-0.5	0-5
	37-60	12-29	9.0-22	5.1-6.5	0	0.0-0.5	0-5
	60-80	13-28	---	5.6-7.3	0	0.0-0.3	0-10
3A:							
Hoyleton-------------	0-8	11-26	8.0-19	4.5-7.3	0	1.5-3.5	0-1
	8-11	7.0-24	5.0-18	4.5-7.3	0	0.3-1.5	0-1
	11-39	20-37	15-28	4.5-6.5	0	0.2-0.5	0-3
	39-80	15-26	11-20	5.1-7.3	0	0.0-0.3	0-5
3B2:							
Hoyleton, eroded-----	0-7	11-26	8.0-19	4.5-7.3	0	1.5-3.0	0-1
	7-39	20-37	15-28	4.5-6.5	0	0.2-0.5	0-3
	39-80	15-26	11-20	5.1-7.3	0	0.0-0.3	0-5
4B2:							
Richview, eroded-----	0-9	11-26	8.0-19	5.1-7.3	0	1.5-3.0	0
	9-37	15-25	11-19	4.5-6.0	0	0.5-1.5	0
	37-73	10-20	7.5-15	5.1-7.3	0	0.0-0.2	0
4C2:							
Richview, eroded-----	0-9	11-26	8.0-19	5.1-7.3	0	1.5-3.0	0
	9-36	15-25	11-19	4.5-6.0	0	0.5-1.5	0
	36-78	10-20	7.5-15	5.1-7.3	0	0.0-0.2	0
5C2:							
Blair, eroded--------	0-5	17-22	12-17	5.1-7.3	0	1.0-2.0	0
	5-12	17-24	13-18	4.5-6.0	0	0.2-0.8	0
	12-71	14-27	10-36	5.1-7.8	0-5	0.1-0.5	0
	71-80	12-26	---	5.6-7.8	0-10	0.1-0.3	0-3
5C3:							
Blair, severely eroded--------------	0-5	20-27	15-21	5.1-7.3	0	0.5-1.0	0
	5-12	16-24	12-18	4.5-6.0	0	0.2-0.8	0
	12-71	14-27	10-20	5.1-7.8	0-5	0.1-0.5	0
	71-80	12-26	---	5.6-7.8	0-10	0.1-0.3	0-3
7C2:							
Atlas, eroded--------	0-7	14-22	---	4.5-7.3	0	1.0-3.0	0
	7-29	21-29	---	4.5-7.3	0	0.0-1.0	0
	29-60	18-29	---	4.5-7.8	0-5	0.0-1.0	0
7D2:							
Atlas, eroded--------	0-7	14-22	---	4.5-7.3	0	1.0-3.0	0
	7-29	21-29	---	4.5-7.3	0	0.0-1.0	0
	29-60	18-29	---	4.5-7.8	0-5	0.0-1.0	0
8D2:							
Hickory, eroded------	0-10	10-20	8.0-15	4.5-7.3	0	0.5-1.5	0
	10-46	10-19	8.0-14	4.5-6.0	0	0.1-0.5	0
	46-58	10-19	8.0-14	4.5-7.3	0	0.0-0.2	0
	58-80	8.0-15	---	5.6-8.4	0-10	0.0-0.2	0

Table 21.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Organic matter	Sodium adsorption ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
8D3:							
Hickory, severely eroded	0-8	10-20	8.0-15	4.5-7.3	0	0.5-1.0	0
	8-46	10-19	8.0-14	4.5-6.0	0	0.1-0.5	0
	46-58	10-19	8.0-14	4.5-7.3	0	0.0-0.2	0
	58-80	8.0-15	---	5.6-8.4	0-10	0.0-0.2	0
8F:							
Hickory	0-3	10-20	8.0-15	4.5-6.0	0	1.0-3.0	0
	3-16	10-20	8.0-15	4.5-6.0	0	0.2-1.0	0
	16-43	10-19	8.0-14	4.5-7.3	0	0.1-0.5	0
	43-80	8.0-15	---	5.6-8.4	0-10	0.1-0.3	0
8G:							
Hickory	0-3	10-20	8.0-15	4.5-6.0	0	1.0-3.0	0
	3-16	10-20	8.0-15	4.5-6.0	0	0.2-1.0	0
	16-43	10-19	8.0-14	4.5-7.3	0	0.1-0.5	0
	43-80	8.0-15	---	5.6-8.4	0-10	0.1-0.3	0
10C:							
Plumfield	0-5	17-23	13-17	4.5-7.3	0	0.1-1.0	0
	5-12	10-18	8.0-13	4.5-6.5	0	0.0-0.5	0
	12-36	---	10-16	4.5-5.5	0	0.0-0.2	0
	36-60	---	10-18	4.5-5.5	0	0.0-0.2	0
10D:							
Plumfield	0-5	17-23	13-17	4.5-7.3	0	0.1-1.0	0
	5-12	10-18	8.0-13	4.5-6.5	0	0.0-0.5	0
	12-36	---	10-16	4.5-5.5	0	0.0-0.2	0
	36-60	---	10-18	4.5-5.5	0	0.0-0.2	0
12A:							
Wynoose	0-7	8.0-21	6.0-16	5.1-7.3	0	1.0-2.0	0
	7-20	8.0-19	5.0-16	3.6-6.0	0	0.2-1.5	0
	20-36	21-35	18-32	3.6-6.0	0	0.2-0.5	0-5
	36-66	15-29	12-26	3.6-6.0	0	0.0-0.3	0-5
	66-80	15-29	---	5.6-7.8	0	0.0-0.3	0-5
13A:							
Bluford	0-7	7.0-19	---	5.6-7.3	0	1.0-2.0	0
	7-20	8.0-21	5.0-18	3.6-6.0	0	0.2-1.5	0
	20-35	21-38	18-35	3.6-6.0	0	0.2-0.5	0-5
	35-60	12-29	9.0-26	3.6-6.0	0	0.0-0.3	0-5
13B2:							
Bluford, eroded	0-7	7.0-19	---	5.6-7.3	0	1.0-2.0	0
	7-27	21-38	18-35	3.6-6.0	0	0.2-0.5	0-5
	27-80	12-29	9.0-26	3.6-6.0	0	0.0-0.3	0-5
14B:							
Ava	0-8	15-20	11-15	4.5-7.3	0	1.0-2.0	0
	8-18	13-19	10-14	4.5-7.3	0	0.2-1.5	0
	18-36	10-23	7.0-20	4.5-5.5	0	0.2-0.5	0
	36-53	6.0-19	5.0-16	4.5-5.5	0	0.0-0.3	0
	53-80	6.0-19	5.0-16	4.5-6.0	0	0.0-0.3	0-5
14B2:							
Ava, eroded	0-9	15-20	11-15	4.5-7.3	0	0.5-2.0	0
	9-28	10-23	7.0-20	4.0-5.5	0	0.2-0.8	0
	28-64	6.0-19	5.0-16	4.5-5.5	0	0.0-0.5	0
	64-78	6.0-19	5.0-16	4.5-6.0	0	0.0-0.2	0

Table 21.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
14C2:							
Ava, eroded----------	0-9	15-20	11-15	4.5-7.3	0	0.5-2.0	0
	9-28	10-23	7.0-20	4.0-5.5	0	0.2-0.8	0
	28-64	6.0-19	5.0-16	4.5-5.5	0	0.0-0.5	0
	64-78	6.0-19	5.0-16	4.5-6.0	0	0.0-0.2	0
109A:							
Racoon---------------	0-6	10-20	8.0-15	4.5-7.3	0	1.0-2.5	0
	6-30	11-17	8.0-14	4.5-7.3	0	0.2-0.8	0
	30-59	16-22	11-17	4.5-5.5	0	0.1-0.5	0
	59-80	11-17	8.0-14	4.5-7.3	0	0.0-0.2	0
287A:							
Chauncey-------------	0-12	14-21	11-16	4.5-6.5	0	2.0-4.0	0
	12-26	12-19	9.0-14	4.5-6.0	0	0.0-1.0	0
	26-46	20-30	21-27	4.5-6.0	0	0.0-0.5	0
	46-60	13-23	---	5.6-7.3	0	0.0-0.5	0
301B:							
Grantsburg-----------	0-11	9.0-20	7.0-15	3.6-6.5	0	1.0-3.0	0
	11-24	---	10-18	3.6-5.5	0	0.1-0.5	0
	24-38	---	11-20	3.6-5.5	0	0.0-0.2	0
	38-61	---	10-18	3.6-5.5	0	0.0-0.2	0
	61-80	10-20	7.0-15	3.6-6.0	0	0.0-0.2	0
301C3:							
Grantsburg, severely eroded--------------	0-3	9.0-20	7.0-15	3.6-6.5	0	0.5-2.0	0
	3-19	---	10-18	3.6-5.5	0	0.1-0.5	0
	19-33	---	11-20	3.6-5.5	0	0.0-0.2	0
	33-56	---	10-18	3.6-5.5	0	0.0-0.2	0
	56-80	10-20	7.0-15	3.6-6.0	0	0.0-0.2	0
337A:							
Creal----------------	0-9	14-22	10-17	5.1-7.3	0	1.0-3.0	0
	9-27	11-16	8.3-12	3.6-6.5	0	0.0-0.5	0
	27-55	15-22	11-16	4.5-6.5	0	0.0-0.2	0
	55-80	12-17	9.0-13	4.5-7.3	0	0.0-0.2	0
340D3:							
Zanesville, severely eroded--------------	0-2	9.0-18	7.0-14	4.5-6.0	0	0.5-1.0	0
	2-19	11-21	8.0-16	4.5-6.0	0	0.0-0.5	0
	19-37	11-20	8.0-15	4.5-6.0	0	0.0-0.5	0
	37-55	10-20	7.0-14	4.5-6.0	0	0.0-0.5	0
	55-65	---	---	---	---	---	---
376A:							
Cisne, bench---------	0-8	8.0-21	6.0-16	5.1-7.3	0	1.0-3.0	0
	8-17	6.0-19	4.5-14	4.5-6.5	0	0.2-1.5	0
	17-37	18-30	14-28	4.5-6.0	0	0.2-0.5	0-5
	37-60	12-29	9.0-22	5.1-6.5	0	0.0-0.5	0-5
	60-80	13-28	---	5.6-7.3	0	0.0-0.3	0-10
377A:							
Hoyleton, bench------	0-8	11-26	8.0-19	4.5-7.3	0	1.5-3.5	0-1
	8-11	7.0-24	5.0-18	4.5-7.3	0	0.3-1.5	0-1
	11-39	20-37	15-28	4.5-6.5	0	0.2-0.5	0-3
	39-80	15-26	11-20	5.1-7.3	0	0.0-0.3	0-5

Table 21.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
377B2:							
Hoyleton, bench, eroded--------------	0-7	11-26	8.0-19	4.5-7.3	0	1.5-3.0	0-1
	7-39	20-37	15-28	4.5-6.5	0	0.2-0.5	0-3
	39-80	15-26	11-20	5.1-7.3	0	0.0-0.3	0-5
421G:							
Kell-----------------	0-3	10-20	8.0-17	4.5-6.0	0	1.0-4.0	0
	3-7	7.0-15	5.0-11	4.5-6.0	0	0.2-1.0	0
	7-13	13-19	10-16	4.5-6.0	0	0.2-0.5	0
	13-35	7.0-18	5.0-14	4.0-6.0	0	0.1-0.3	0
	35-60	---	---	---	---	---	---
518B:							
Rend-----------------	0-8	10-20	8.0-15	4.5-7.3	0	1.0-2.0	0
	8-11	8.0-18	6.0-14	4.5-5.5	0	0.2-1.0	0
	11-23	12-23	9.0-17	4.5-5.5	0	0.0-0.5	0
	23-77	10-20	8.0-15	4.5-6.5	0	0.0-0.2	0
	77-80	6.0-17	5.0-13	4.5-6.5	0	0.0-0.2	0
518B2:							
Rend, eroded---------	0-8	10-20	8.0-15	4.5-7.3	0	1.0-2.0	0
	8-23	12-23	9.0-17	4.5-5.5	0	0.0-0.5	0
	23-77	10-20	8.0-15	4.5-6.5	0	0.0-0.2	0
	77-80	6.0-17	5.0-13	4.5-6.5	0	0.0-0.2	0
518C2:							
Rend, eroded---------	0-8	10-20	8.0-15	4.5-7.3	0	1.0-2.0	0
	8-23	12-23	9.0-17	4.5-5.5	0	0.0-0.5	0
	23-77	10-20	8.0-15	4.5-6.5	0	0.0-0.2	0
	77-80	6.0-17	5.0-13	4.5-6.5	0	0.0-0.2	0
533.							
Urban land							
536.							
Dumps, mine							
583B:							
Pike-----------------	0-8	10-20	8.0-16	4.5-7.3	0	1.0-3.0	0
	8-38	15-22	11-19	4.5-6.0	0	0.0-0.5	0
	38-57	8.0-17	6.0-13	4.5-6.0	0	0.0-0.2	0
	57-99	8.0-17	6.0-13	4.5-6.0	0	0.0-0.2	0
583C2:							
Pike, eroded---------	0-6	10-20	8.0-16	5.1-7.3	0	1.0-2.0	0
	6-38	15-22	11-19	4.5-6.0	0	0.0-0.5	0
	38-57	8.0-17	6.0-13	4.5-6.0	0	0.0-0.2	0
	57-99	8.0-17	6.0-13	4.5-6.0	0	0.0-0.2	0
639A:							
Wynoose, bench-------	0-7	8.0-21	6.0-16	5.1-7.3	0	1.0-2.5	0
	7-20	8.0-19	5.0-16	3.6-6.0	0	0.2-1.5	0
	20-36	21-35	18-32	3.6-6.0	0	0.2-0.5	0-5
	36-66	15-29	12-26	3.6-6.0	0	0.0-0.3	0-5
	66-80	15-29	---	5.6-7.8	0	0.0-0.3	0-5

Table 21.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
640A:							
Bluford, bench	0-7	7.0-19	---	5.6-7.3	0	1.0-2.0	0
	7-20	8.0-21	5.0-18	3.6-6.0	0	0.2-1.5	0
	20-35	21-38	18-35	3.6-6.0	0	0.2-0.5	0-5
	35-60	12-29	9.0-26	3.6-6.0	0	0.0-0.3	0-5
802B:							
Orthents, loamy	0-6	9.0-12	---	5.6-7.3	0	0.5-1.0	0
	6-60	9.0-20	---	5.6-7.3	0	0.1-0.5	0
802F:							
Orthents, loamy	0-6	9.0-12	---	5.6-7.3	0	0.5-1.0	0
	6-60	9.0-20	---	5.6-7.3	0	0.1-0.5	0
823B:							
Schuline	0-10	10-20	---	5.6-8.4	0-20	0.5-2.0	0
	10-60	14-22	---	7.4-8.4	5-35	0.1-0.5	0
866.							
Dumps, slurry							
871D:							
Lenzburg, stony	0-3	17-29	---	6.6-8.4	0-20	0.5-1.5	0
	3-26	11-23	---	6.6-8.4	0-25	0.2-1.0	0
	26-60	11-23	---	6.6-8.4	0-25	0.2-1.0	0
871G:							
Lenzburg, stony	0-3	17-29	---	6.6-8.4	0-20	0.5-1.5	0
	3-26	11-23	---	6.6-8.4	0-25	0.2-1.0	0
	26-60	11-23	---	6.6-8.4	0-25	0.2-1.0	0
908F:							
Hickory	0-3	10-20	8.0-15	4.5-6.0	0	1.0-3.0	0
	3-16	10-20	8.0-15	4.5-6.0	0	0.2-1.0	0
	16-43	10-19	8.0-14	4.5-7.3	0	0.1-0.5	0
	43-80	8.0-15	---	5.6-8.4	0-10	0.1-0.3	0
Kell	0-3	10-20	8.0-17	4.5-6.0	0	1.0-4.0	0
	3-7	7.0-15	5.0-11	4.5-6.0	0	0.2-1.0	0
	7-13	13-19	10-16	4.5-6.0	0	0.2-0.5	0
	13-35	7.0-18	5.0-14	4.0-6.0	0	0.1-0.3	0
	35-60	---	---	---	---	---	---
927D3:							
Blair, severely eroded	0-5	14-22	11-17	5.1-7.3	0	0.5-1.0	0
	5-12	15-23	11-17	4.5-6.0	0	0.2-0.8	0
	12-71	11-22	8.0-17	5.1-7.8	0-5	0.1-0.5	0
	71-80	12-17	---	5.6-7.8	0-10	0.1-0.3	0-3
Atlas, severely eroded	0-8	20-27	15-20	4.5-7.3	0	0.5-1.8	0
	8-43	18-29	14-22	4.5-7.8	0	0.1-0.5	0
	43-60	12-20	---	6.1-7.8	0-5	0.1-0.5	0
1108A:							
Bonnie, undrained, frequently flooded	0-10	13-20	10-15	4.5-7.3	0	1.0-3.0	0
	10-27	---	8.0-13	4.5-5.5	0	0.0-1.0	0
	27-80	11-16	8.0-13	4.5-7.8	0	0.0-1.0	0

Table 21.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
3072A:							
Sharon, frequently flooded	0-13	7.0-20	5.0-15	4.5-7.3	0	0.5-3.0	0
	13-40	---	2.0-8.0	4.5-5.5	0	0.2-0.5	0
	40-80	3.0-10	2.0-8.0	4.5-7.3	0	0.2-0.5	0
3108A:							
Bonnie, frequently flooded	0-10	13-20	10-15	4.5-7.3	0	1.0-3.0	0
	10-27	---	8.0-13	4.5-5.5	0	0.0-1.0	0
	27-80	11-16	8.0-13	4.5-7.8	0	0.0-1.0	0
3226A:							
Wirt, frequently flooded	0-13	6.0-13	---	5.6-7.3	0	1.0-3.0	0
	13-33	4.0-12	---	5.6-7.3	0	0.2-0.8	0
	33-60	3.0-12	---	5.6-7.3	0	0.1-0.5	0
3336A:							
Wilbur, frequently flooded	0-7	4.0-16	---	5.6-7.3	0	1.0-3.0	0
	7-41	4.0-15	---	5.6-7.8	0	0.2-0.8	0
	41-65	4.0-16	---	5.6-7.8	0	0.1-0.5	0
3382A:							
Belknap, frequently flooded	0-7	7.0-17	5.0-13	4.5-7.3	0	1.0-3.0	0
	7-59	---	4.0-14	4.5-5.5	0	0.0-2.0	0
	59-80	5.0-20	2.0-15	4.5-7.3	0	0.0-1.0	0
3415A:							
Orion, frequently flooded	0-7	7.0-20	---	5.6-7.8	0	1.0-3.0	0
	7-21	7.0-20	---	5.6-7.8	0	1.0-3.0	0
	21-60	10-35	---	5.6-7.8	0	3.0-8.0	0
3422A:							
Cape, frequently flooded	0-10	20-30	15-22	4.5-7.3	0	1.0-3.0	0
	10-22	---	24-40	3.6-5.5	0	0.5-2.0	0
	22-80	---	21-40	3.6-5.5	0	0.1-1.0	0

Table 22.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydrologic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
2A:										
Cisne	D	Jan-Jun	0.0-1.0	1.0-6.0	Perched	---	---	None	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	None
3A:										
Hoyleton	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
3B2:										
Hoyleton, eroded	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
4B2:										
Richview, eroded	C	Jan-Apr	2.0-4.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
4C2:										
Richview, eroded	C	Jan-Apr	2.0-4.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
5C2:										
Blair, eroded	C	Jan-May	1.0-2.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
5C3:										
Blair, severely eroded	C	Jan-May	1.0-2.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
7C2:										
Atlas, eroded	D	Jan-May	0.5-1.5	1.5-6.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
7D2:										
Atlas, eroded	D	Jan-May	0.5-1.5	1.5-6.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
8D2:										
Hickory, eroded	B	---	>6.0	>6.0	---	---	---	---	---	---
8D3:										
Hickory, severely eroded	B	---	>6.0	>6.0	---	---	---	---	---	---
8F:										
Hickory	B	---	>6.0	>6.0	---	---	---	---	---	---
8G:										
Hickory	B	---	>6.0	>6.0	---	---	---	---	---	---
10C:										
Plumfield	D	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
10D:										
Plumfield	D	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
12A:										
Wynoose	D	Jan-Jun	0.0-1.0	1.0-6.0	Perched	0.0-0.5	Brief	Frequent	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	None
13A:										
Bluford	C	Jan-May	0.5-2.0	2.0-3.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
13B2:										
Bluford, eroded	C	Jan-May	0.5-2.0	2.0-3.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
14B:										
Ava	C	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
14B2:										
Ava, eroded	C	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
14C2:										
Ava, eroded	C	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
109A:										
Racoon	C/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-0.5	Brief	Occasional	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	None
287A:										
Chauncey	C	Jan-Jun	0.0-1.0	1.0-6.0	Perched	0.0-0.5	Brief	Frequent	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	None
301B:										
Grantsburg	C	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
301C3:										
Grantsburg, severely eroded	C	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
337A:										
Creal	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
340D3:										
Zanesville, severely eroded	D	Jan-Apr	1.5-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
376A:										
Cisne, bench	D	Jan-Jun	0.0-1.0	1.0-6.0	Perched	---	---	None	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	None
377A:										
Hoyleton, bench	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
377B2:										
Hoyleton, bench, eroded	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
421G:										
Kell	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
518B:										
Rend	C	Jan-Apr	2.0-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
518B2:										
Rend, eroded	C	Jan-Apr	2.0-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
518C2:										
Rend, eroded	C	Jan-Apr	2.0-3.5	3.5-6.0	Perched	---	---	None	---	None
		May-Dec	>6.0	>6.0	---	---	---	None	---	None
533.										
Urban land										
536.										
Dumps, mine										
583B:										
Pike	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
583C2:										
Pike, eroded	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
639A:										
Wynoose, bench	D	Jan-Jun	0.0-1.0	1.0-6.0	Perched	0.0-0.5	Brief	Frequent	---	None
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	None
640A:										
Bluford, bench	C	Jan-May	0.5-2.0	2.0-3.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
802B:										
Orthents, loamy	C	---	>6.0	>6.0	---	---	---	---	---	---
802F:										
Orthents, loamy	C	---	>6.0	>6.0	---	---	---	---	---	---
823B:										
Schuline	C	---	>6.0	>6.0	---	---	---	---	---	---
866.										
Dumps, slurry										
871D:										
Lenzburg, stony	C	---	>6.0	>6.0	---	---	---	---	---	---
871G:										
Lenzburg, stony	C	---	>6.0	>6.0	---	---	---	---	---	---
908F:										
Hickory	B	---	>6.0	>6.0	---	---	---	---	---	---
Kell	C	---	>6.0	>6.0	---	---	---	---	---	---

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
927D3:										
Blair, severely eroded	C	Jan-May	1.0-2.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
Atlas, severely eroded	D	Jan-May	1.0-2.0	2.0-6.0	Perched	---	---	None	---	None
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	None
1108A:										
Bonnie, undrained, frequently flooded	D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-2.0	Long	Frequent	Long	Frequent
		Jul-Dec	0.0-6.0	>6.0	Apparent	---	---	---	---	---
3072A:										
Sharon, frequently flooded	B	Jan-Apr	3.0-6.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	---
3108A:										
Bonnie, frequently flooded	C/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	---
3226A:										
Wirt, frequently flooded	B	Jan-May	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	---
3336A:										
Wilbur, frequently flooded	B	Jan-Apr	1.5-2.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jun-Dec	>6.0	>6.0	---	---	---	None	---	---
3382A:										
Belknap, frequently flooded	B/D	Jan-May	0.5-2.0	>6.0	Apparent	---	---	None	Brief	Frequent
		Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	---
3415A:										
Orion, frequently flooded	C	Jan-May	1.0-3.0	>6.0	Apparent	---	---	None	Brief	Frequent
		Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	---
3422A:										
Cape, frequently flooded	D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	---	---	---

Table 23.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
2A:						
Cisne	Abrupt textural change	15-23	---	High	High	Moderate
3A:						
Hoyleton	---	---	---	Moderate	High	Moderate
3B2:						
Hoyleton, eroded	---	---	---	Moderate	High	Moderate
4B2:						
Richview, eroded	---	---	---	High	High	Moderate
4C2:						
Richview, eroded	---	---	---	High	High	Moderate
5C2:						
Blair, eroded	---	---	---	High	High	Moderate
5C3:						
Blair, severely eroded	---	---	---	High	High	Moderate
7C2:						
Atlas, eroded	---	---	---	High	High	Moderate
7D2:						
Atlas, eroded	---	---	---	High	High	Moderate
8D2:						
Hickory, eroded	---	---	---	Moderate	Moderate	Moderate
8D3:						
Hickory, severely eroded	---	---	---	Moderate	Moderate	Moderate
8F:						
Hickory	---	---	---	Moderate	Moderate	High
8G:						
Hickory	---	---	---	Moderate	Moderate	High
10C:						
Plumfield	Fragipan	5-20	Weakly cemented	High	High	High
10D:						
Plumfield	Fragipan	5-20	Weakly cemented	High	High	High
12A:						
Wynoose	Abrupt textural change	13-23	---	High	High	High
13A:						
Bluford	---	---	---	High	High	High
13B2:						
Bluford, eroded	---	---	---	High	High	High

Table 23.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
14B:						
Ava	Fragipan	25-40	Weakly cemented	High	High	Moderate
14B2:						
Ava, eroded	Fragipan	25-40	Weakly cemented	High	High	Moderate
14C2:						
Ava, eroded	Fragipan	25-40	Weakly cemented	High	High	Moderate
109A:						
Racoon	---	---	---	High	High	Moderate
287A:						
Chauncey	Abrupt textural change	24-36	---	High	High	High
301B:						
Grantsburg	Fragipan	24-40	Weakly cemented	High	High	High
301C3:						
Grantsburg, severely eroded	Fragipan	24-40	Weakly cemented	High	High	High
337A:						
Creal	---	---	---	High	High	Moderate
340D3:						
Zanesville, severely eroded	Fragipan	19-32	Weakly cemented	High	High	Moderate
	Lithic bedrock	40-80	Indurated			
	Paralithic bedrock	40-80	Strongly cemented			
376A:						
Cisne, bench	Abrupt textural change	15-23	---	High	High	Moderate
377A:						
Hoyleton, bench	---	---	---	Moderate	High	Moderate
377B2:						
Hoyleton, bench, eroded	---	---	---	Moderate	High	Moderate
421G:						
Kell	Paralithic bedrock	20-40	Strongly cemented	Moderate	Moderate	Moderate
518B:						
Rend	---	---	---	High	High	Moderate
518B2:						
Rend, eroded	---	---	---	High	High	Moderate
518C2:						
Rend, eroded	---	---	---	High	High	Moderate
533.						
Urban land						
536.						
Dumps, mine						

Table 23.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
583B:						
Pike	---	---	---	High	Low	Moderate
583C2:						
Pike, eroded	---	---	---	High	Low	Moderate
639A:						
Wynoose, bench	Abrupt textural change	13-23	---	High	High	High
640A:						
Bluford, bench	---	---	---	High	High	High
802B:						
Orthents, loamy	---	---	---	Moderate	Moderate	Low
802F:						
Orthents, loamy	---	---	---	Moderate	Moderate	Low
823B:						
Schuline	---	---	---	Moderate	Moderate	Low
866.						
Dumps, slurry						
871D:						
Lenzburg, stony	---	---	---	Moderate	Moderate	Low
871G:						
Lenzburg, stony	---	---	---	Moderate	Moderate	Low
908F:						
Hickory	---	---	---	Moderate	Moderate	High
Kell	Paralithic bedrock	20-40	Strongly cemented	Moderate	Moderate	Moderate
927D3:						
Blair, severely eroded	---	---	---	Moderate	High	Moderate
Atlas, severely eroded	---	---	---	High	High	Moderate
1108A:						
Bonnie, undrained, frequently flooded	---	---	---	High	Moderate	Moderate
3072A:						
Sharon, frequently flooded	---	---	---	High	High	Moderate
3108A:						
Bonnie, frequently flooded	---	---	---	High	High	Moderate
3226A:						
Wirt, frequently flooded	---	---	---	Moderate	Low	Low
3336A:						
Wilbur, frequently flooded	---	---	---	High	High	Low

Table 23.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
3382A:						
Belknap, frequently flooded	---	---	---	High	High	Moderate
3415A:						
Orion, frequently flooded	---	---	---	Moderate	High	Low
3422A:						
Cape, frequently flooded	---	---	---	High	High	High

Table 24.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Atlas	Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs
Ava	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Belknap	Coarse-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts
Blair	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
*Blair	Fine-loamy, mixed, superactive, mesic Aquic Hapludalfs
Bluford	Fine, smectitic, mesic Aeric Fragic Epiaqualfs
Bonnie	Fine-silty, mixed, active, acid, mesic Typic Fluvaquents
Cape	Fine, smectitic, acid, mesic Vertic Endoaquepts
Chauncey	Fine, smectitic, mesic Typic Argialbolls
Cisne	Fine, smectitic, mesic Mollic Albaqualfs
Creal	Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs
Grantsburg	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Hickory	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Hoyleton	Fine, smectitic, mesic Aquollic Hapludalfs
Kell	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Lenzburg	Fine-loamy, mixed, active, calcareous, mesic Haplic Udarents
*Orion	Coarse-loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents
Orthents	Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents
*Pike	Fine-silty, mixed, active, mesic Typic Hapludalfs
Plumfield	Fine-silty, mixed, active, mesic Aquic Fragiudalfs
Racoon	Fine-silty, mixed, superactive, mesic Typic Endoaqualfs
Rend	Fine-silty, mixed, active, mesic Fragic Oxyaquic Hapludalfs
Richview	Fine-silty, mixed, superactive, mesic Mollic Oxyaquic Hapludalfs
Schuline	Fine-loamy, mixed, superactive, calcareous, mesic Alfic Udarents
Sharon	Coarse-silty, mixed, active, mesic Oxyaquic Dystrudepts
Wilbur	Coarse-silty, mixed, superactive, mesic Fluvaquentic Eutrudepts
Wirt	Coarse-loamy, mixed, superactive, mesic Dystric Fluventic Eutrudepts
Wynoose	Fine, smectitic, mesic Typic Albaqualfs
Zanesville	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

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