United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

In cooperation with Illinois
Agricultural Experiment
Station

Soil Survey of Douglas County, Illinois

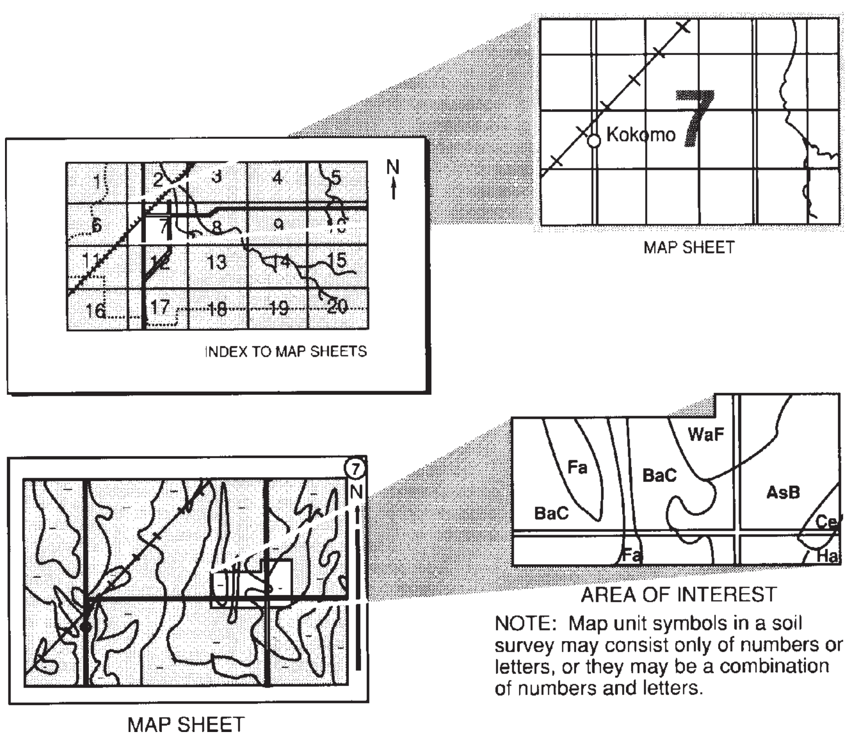
How To Use This Soil Survey

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.



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

National Cooperative Soil Survey

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

Major fieldwork for this survey was completed in 1966. Soil names and descriptions for the update survey were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. The most current information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

Soil maps in this survey may be copied without permission. Original soil survey maps were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. The bar scale on each map sheet indicates the proper map measurements.

Nondiscrimination Statement

Caption for Cover Photo

Fall colors and pasture associated with an area of Sabina soils south of Atwood.

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

Contents

Issued 2006

Numerical Index to Map Units

Foreword

This soil survey contains information that can be used in land-planning programs in Douglas County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, 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.

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Soil Survey of
Douglas County, Illinois

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Illinois Agricultural Experiment Station

Douglas County is in east-central Illinois (fig. 1). It has an area of 268,800 acres, or about 417 square miles. It is bordered on the north by Champaign County, on the northeast by Vermilion County, on the east by Edgar County, on the south by Coles County, and on the west by Moultrie and Piatt Counties. In 2000, the population of Douglas County was 19,922. Tuscola, the county seat and largest town in the county, had a population of 4,448 (U.S. Department of Commerce, 2003).

This soil survey updates previous surveys of Douglas County (Hallbick and Fehrenbacher, 1971; Smith and others, 1929).

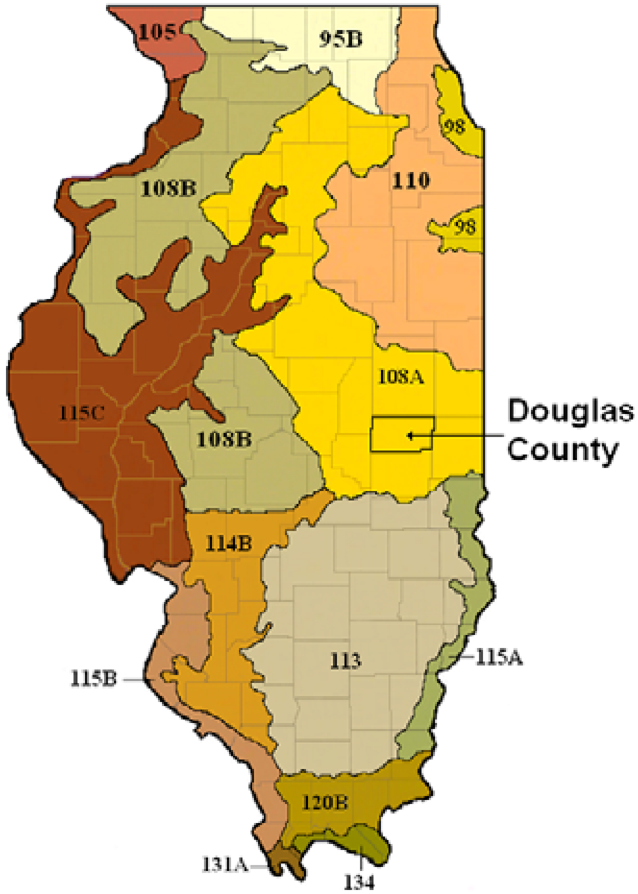
General Nature of the Survey Area

This section provides general information about Douglas County. It describes history and development; physiography, relief, and drainage; natural resources; and climate.

History and Development

Native Americans known as Mound Builders were among the first people known to inhabit the survey area (Kehoe, 1981). The Kickapoo Indians inhabited the area just prior to the arrival of the first European settlers (Golden and Golden, 1990). Other tribes included the Pottawatomie and Winnebago. By the time most European settlers arrived, many of the tribes had moved westward across the Mississippi River.

The early settlers used the rivers and creeks for fishing and for travel lanes. They also favored the timbered areas because of the availability of firewood, the abundance of game, the danger of prairie fires, and the belief that the prairies were in general infertile and unproductive. The prairie served mainly as open grazing land for livestock. After the development of the moldboard plow and the organization of drainage districts



LEGEND

95B—Southern Wisconsin and Northern Illinois Drift Plain
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
120B—Kentucky and Indiana Sandstone and Shale Hills and Valleys, Northwestern Part
131A—Southern Mississippi River Alluvium
134—Southern Mississippi Valley Loess

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

in the late 1800s, grain farming became the major enterprise in the prairie areas (Golden and Golden, 1990).

Douglas County was organized in 1859. Before then it had been part of Coles County. The county was named for Stephen Douglas, then a U.S. Senator from Illinois. The first settlement was established in 1829 near the present site of Camargo. In 1850, the Federal Government passed an act that gave wet areas to the State. Money from the sale of the land was to be used to provide drainage. Most drainage ditches in the county were constructed by 1878. By 1855, the Illinois Central Railroad was operating throughout the county. The advent of the railroad facilitated market opportunities (Hallbick and Fehrenbacher, 1971).

Douglas and Moultrie Counties are well known for their Amish settlements. The first Amish immigrants arrived in the area in 1865 from Pennsylvania (Miller, 1980). The previous year, Bishop Joel Beachy of Maryland and Moses Yoder of Pennsylvania started west to find a location where they could raise a crop without liming the soil. After exploring locations in several states, they selected an area near the present town of Arthur. The Amish are primarily farmers (fig. 2), but other industries include canning, butchering, and carpentry.

Agriculture is the leading industry in Douglas County. In 2002, there were 576 farms, which averaged about 404 acres in size and accounted for 232,690 acres. The market value of agricultural products sold was about $62.5 million. Corn and soybeans are the main crops. In 2002, 108,357 acres was used for corn, 104,025 acres was planted to soybeans, and 3,609 acres was used for forage crops. Some areas in the county are used for broomcorn, popcorn, corn for seed, wheat, silage, or oats. Livestock production in Douglas County in 2002 included 8,863 hogs and pigs, 6,625 meat chickens, 1,666 laying hens, 4,152 cattle and calves (including dairy and meat), and 1,422 horses and ponies (USDA, NASS, 2002).

Some light manufacturing is located in Arcola and Tuscola. Products include brooms, automobile fuses, metal handles, caps and gowns, cabinets, garage doors, specialized building materials, and chemicals used in medicine and in labs. These industries, along with small businesses providing goods and services, account for the employment of a high percentage of the labor force in the county. The cities of Decatur, Champaign, and Mattoon also provide opportunities for employment for Douglas

Figure 2.—Oat shocks are a familiar sight in the western part of the county. Amish farmers grow this crop in areas of Drummer, Milford, and Flanagan soils.

County residents (Illinois Department of Commerce and Economic Development, 2005).

Douglas County has a well developed system of roads. Federal and State highways cross the county, including Interstate 57, U.S. Highways 36 and 45, and State Highways 49, 130, and 133. Several county and township roads also provide important transportation links. Most of the township and county roads are paved and follow section lines. Three railroad mainlines intersect at Tuscola. Tuscola has a small airport that services business and private aircraft.

Physiography, Relief, and Drainage

Douglas County lies entirely within the Bloomington Ridged Plain of the Central Lowland physiographic province (Leighton and others, 1948). The Bloomington Ridged Plain is part of the Wisconsinan till plain that is characterized by a series of end moraines and ground moraines.

Douglas County also lies entirely within the Illinois and Iowa Deep Loess and Drift major land resource area (MLRA 108). An MLRA is a geographic area that is characterized by a particular pattern of soils, climate, water resources, and land use (USDA, 2006).

Douglas County was covered by glaciers during the Pleistocene. Most of the present surface materials and landforms are the result of glacial ice, running water, and windblown deposits of the most recent glacial stage, the Wisconsinan. The glaciers deposited from about 20 feet to more than 200 feet of drift throughout the county (Willman and Frye, 1970). In most areas the drift was covered with as much as 5 feet of windblown silt, called loess. The central part of Douglas County is surrounded by glacial moraines from different ice advances and retreats. The Arcola Moraine lies to the south and west, and the Pesotum and West Ridge Moraines are to the north. A large part of Douglas County was covered by a glacial lake between these moraines (fig. 3).

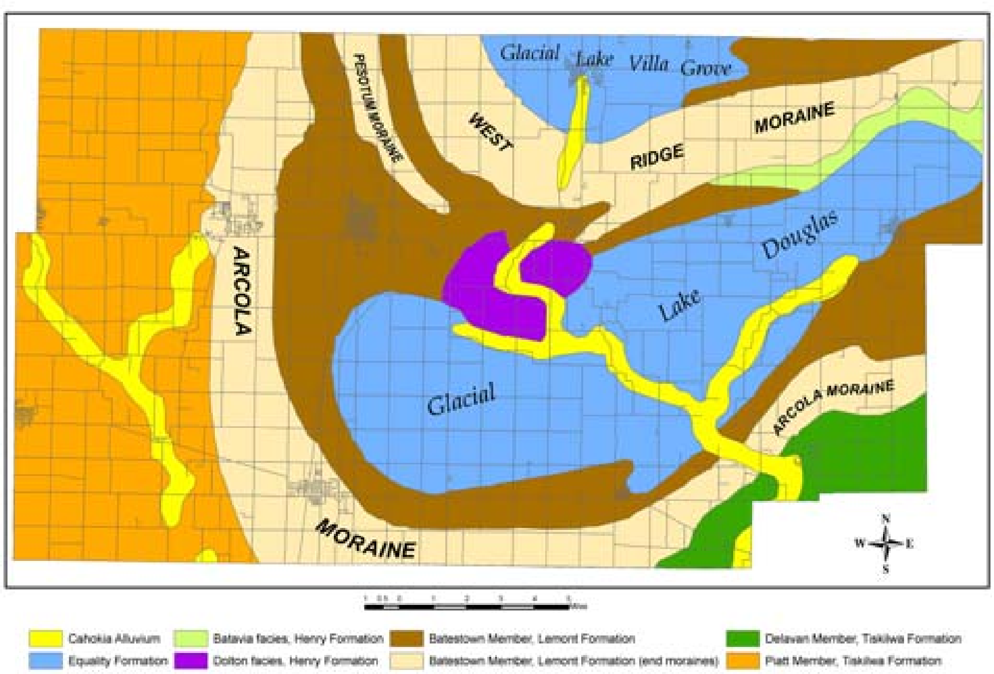


Figure 3.—Quaternary geology in Douglas County, Illinois. Source: Illinois State Geological Survey.

The relief in Douglas County is low on the nearly level and gently sloping, broad uplands. The greatest change in relief is in areas along major drainageways, where stream downcutting has caused 50- to 65-foot drops in elevation from the adjacent uplands (fig. 4). The elevation in the county ranges from about 600 feet to about 720 feet above mean sea level. The highest elevation is near the village of Newman on the West Ridge Moraine. The lowest elevation is where the Embarras River exits the county southwest of Oakland.

The Kaskaskia and Embarras Rivers drain most of the county. The Kaskaskia River ultimately drains into the Mississippi River south of St. Louis. The Embarras flows into the Wabash River, which then joins the Mississippi River at the southern tip of Illinois. The flood plains along these rivers and their tributaries are generally flooded annually, and the soils in these areas often have a high seasonal water table. Because the county has such low relief, ponding occurs on many soils.

Most areas are sufficiently drained for the commonly grown crops. Subsurface tile drains have been installed in most of the fields, and an extensive system of drainage ditches supplements the natural drainage.

Natural Resources

At the time of settlement, about 41,000 acres of the county was forestland (Iverson, 1989). In 2002, about 2,901 acres, or about 0.9 percent of the county, was forestland and pasture forestland (USDA, NASS, 2002). The remaining forestland is typically along the major streams and their tributaries. Much of this land is not tillable because of the slope or the frequency of flooding and is maintained for conservation reasons. It provides important areas of wildlife habitat (fig. 5).

The county has approximately 788 acres of impounded water, and most of this water is in farm ponds. The Kaskaskia and Embarras Rivers provide habitat and opportunities for recreation. The county has another 288 acres of miscellaneous water in the form of settling ponds and wastewater treatment ponds. These areas are not typically considered useful for wildlife habitat or recreation.

The county has an abundant supply of ground water in the sand and gravel deposits in buried valleys and in areas where glacial drift is thick. The municipal water supplies and many rural areas depend on ground-water wells (Illinois Environmental Protection Agency, 2005).

Excavations for sand and gravel along both the Kaskaskia and Embarras Rivers are identified on the soil maps as Pits, gravel.

Gravel, stone, and agricultural lime are quarried from an area just east of Tuscola where limestone bedrock lies near the land surface. This area is identified on the soil maps as Pits, quarries.

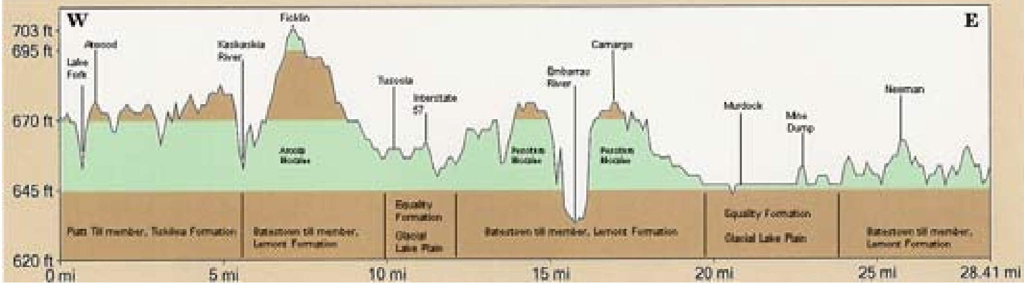


Figure 4.—Cross-section showing elevation of Douglas County, Illinois, from west to east near U.S. Highway 36, with relative geology and geographic reference. Source: 3-D TopoQuads, Copyright 1999. Delorme Yarmouth, ME 04096; NAD 27.

Figure 5.—The forestland in the lower positions along the Kaskaskia River is in an area of Shaffton and Sawmill soils.

Oil and gas fields west of Interstate 57 and in a small area near Murdock have mostly been capped. Natural gas storage areas are located west of Interstate 57 (Illinois State Geological Survey, 2005).

Coal was a considerable resource in Douglas County until 1991, when the shaft and slope mine near Murdock closed. The area is now identified on the soil maps as Orthents, loamy-skeletal, acid, steep (Illinois State Geological Survey, 2005).

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Tuscola 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 29.8 degrees F and the average daily minimum temperature is 21.3 degrees. The lowest temperature on record, which occurred at Tuscola on December 22, 1989, was -26 degrees. In summer, the average temperature is 74.8 degrees and the average daily maximum temperature is 86.6 degrees. The highest temperature, which occurred at Tuscola on July 14, 1954, was 113 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 40.58 inches. Of this total, about 26.35 inches, or 65 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 5.30 inches at Tuscola on August 2, 1978. Thunderstorms occur on about 48 days each year, and most occur between April and August.

The average seasonal snowfall is 22.9 inches. The greatest snow depth at any one time during the period of record was 20 inches recorded on January 10, 1974. On an average, 20 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 15.0 inches recorded on January 31, 1982.

The average relative humidity in midafternoon is about 52 percent in May and June and about 70 percent in December. Humidity is higher at night, and the average at dawn is about 84 percent in most months. The sun shines 70 percent of the time possible in summer and 48 percent in winter. The prevailing wind is from the south in most months, but it is from the northwest in January, February, and March. Average windspeed is highest, around 13 miles per hour, in March.

How This Survey Was Made

This survey was made to provide updated information about the soils and miscellaneous areas in the survey area, which is Major Land Resource Area 108 (fig. 1). Major land resource areas (MLRAs) are geographically associated land resource units that share a common land use, elevation, topography, climate, water, soils, and vegetation (USDA, 1981). Map unit design and the detailed soil descriptions are based on the occurrence of each soil throughout 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.

Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; and the kinds of crops and native plants. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, 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 soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

The soil survey information contained in this report was based on a review of field notes, laboratory data, and other data collected during the previous soil survey of Douglas County (Hallbick and Fehrenbacher, 1971). In addition, data from other soil surveys within MLRA 108 were reviewed. Reviewing data on a regional basis allows for improved consistency in the identification, classification, and interpretations of soils on similar landscapes.

Aerial photographs used in this survey were taken in 1998 and 1999. Soil scientists also studied U.S. Geological Survey topographic maps (enlarged to a scale of 1:12,000) and ortho-photographs to relate land and image features. Specific soil boundaries were drawn on the ortho-photographs. Adjustments of soil boundary lines were made to coincide with the U.S. Geological Survey topographic map contour lines and tonal patterns on aerial photographs.

Formation and Classification of the Soils

This section relates the soils in the survey area to the major factors of soil formation and describes the system of soil classification.

Formation of the Soils

Soil is produced by soil-forming processes acting on materials deposited or accumulated by geologic agencies. The characteristics of the soil are determined by (1) the physical and mineralogical composition of the parent material; (2) the climate under which the soil formed; (3) the plant and animal life on and in the soil; (4) the relief, or lay of the land; and (5) the length of time the forces of soil formation have acted on the parent material (Jenny, 1941).

Climate and plant and animal life are the active factors of soil formation. These factors act directly on the parent material, either in place or after it has been relocated by water, glaciers, or the wind, and slowly change it to a natural body that has genetically related layers, or horizons. Relief can modify the effects of climate and plant and animal life. In sloping areas, for example, erosion can inhibit the processes of soil formation. Wetness can slow these processes in level or depressional areas. The parent material also affects the kind of soil profile that is formed. Finally, time is needed for changing the parent material into a soil profile that has clearly differentiated horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one factor unless the effects of the other factors are known. Many of the processes of soil formation are unknown.

Parent Material

Parent material is the unconsolidated geologic material in which a soil forms. It determines the chemical and mineralogical composition of the soil. Most of the parent material in Douglas County is a direct result of the glaciers and sediments of the Wisconsinan Stage of the Pleistocene Epoch (Willman and Frye, 1970). Although the kinds of parent material are associated with glacial deposits, the properties vary greatly, mostly because of varying modes of deposition. The dominant kinds of parent material in Douglas County are till, loess, outwash, alluvium, colluvium, and lacustrine sediments. These materials were deposited by wind, water, glaciers, or glacial meltwater. In some areas, the materials have been reworked by wind or water after deposition. Many of the soils formed in more than one kind of parent material. For example, some of the soils in Douglas County formed in loess and in the underlying till.

Till is material laid down directly by glaciers with a minimum of water action. It consists of clay, silt, sand, rock fragments, and boulders, all of which are mixed together. The rock fragments have distinct edges and corners, indicating that they have not been subject to intensive abrasion by flowing water. Unweathered till is generally calcareous and very dense. Through processes of weathering and soil formation, calcium carbonate is leached from till, and the material becomes more acid and less dense.

The till nearest the surface in Douglas County was deposited during the Woodfordian Substage of the Wisconsinan Stage, the most recent glaciation to reach Illinois (Willman and Frye, 1970). This glaciation occurred between 22,000 and 12,500 years ago. Most of these surficial till deposits are part of the Batestown Member of the Lemont Formation, but the western edge of Douglas County is identified as the Piatt Member of the Tiskilwa Formation and the southeast corner is identified as the Delavan Member of the Tiskilwa Formation (Hansel and Johnson, 1996).

Most areas of Douglas County are covered by loess of various thicknesses. Dana, Flanagan, and Xenia soils formed in loess and in the underlying till (fig. 6). Soils that formed entirely in till are generally on strongly sloping to very steep side slopes (fig. 7). Senachwine soils are examples.

Loess is material transported and deposited by wind. It consists of uniform, calcareous, silt-sized particles. The meltwaters from the glaciers carried vast quantities of silt, which were deposited in the major river valleys. As these sediments were exposed when the meltwaters subsided, the winds carried the silts and deposited them over much of the land. Most of the soils in the county formed at least partially in loess. The thickness of the loess ranges from nearly zero in areas where slopes are very steep to about 3 to 5 feet in the nearly level areas on uplands. Flanagan soils, for example, formed on uplands in 40 to 60 inches of loess and in the underlying till.

Outwash is stratified material deposited by glacial meltwaters. The size of the particles that constitute outwash varies, depending on the velocity of the moving water. The coarser material was deposited nearer to the ice or in rapidly flowing glacial streams. Most of the outwash deposits were later covered by loess. Areas of outwash in Douglas County occur on stream terraces and in the delta area of Glacial Lake

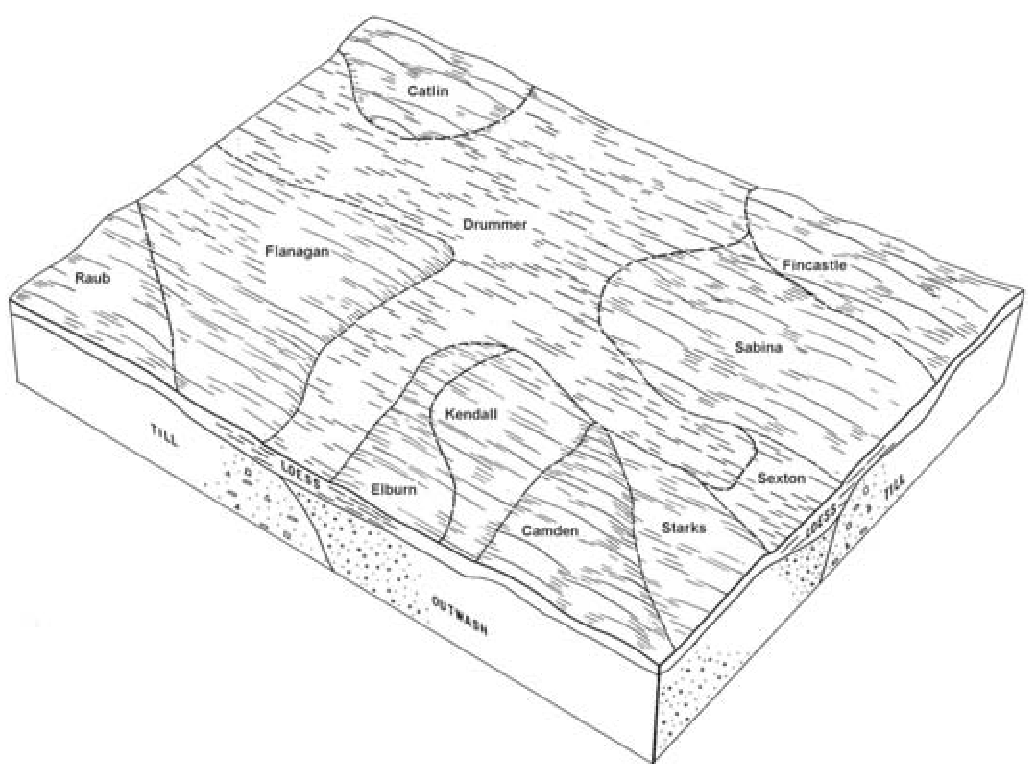


Figure 6.—Typical soils on till plains that are underlain by till or outwash and formed under grass vegetation.

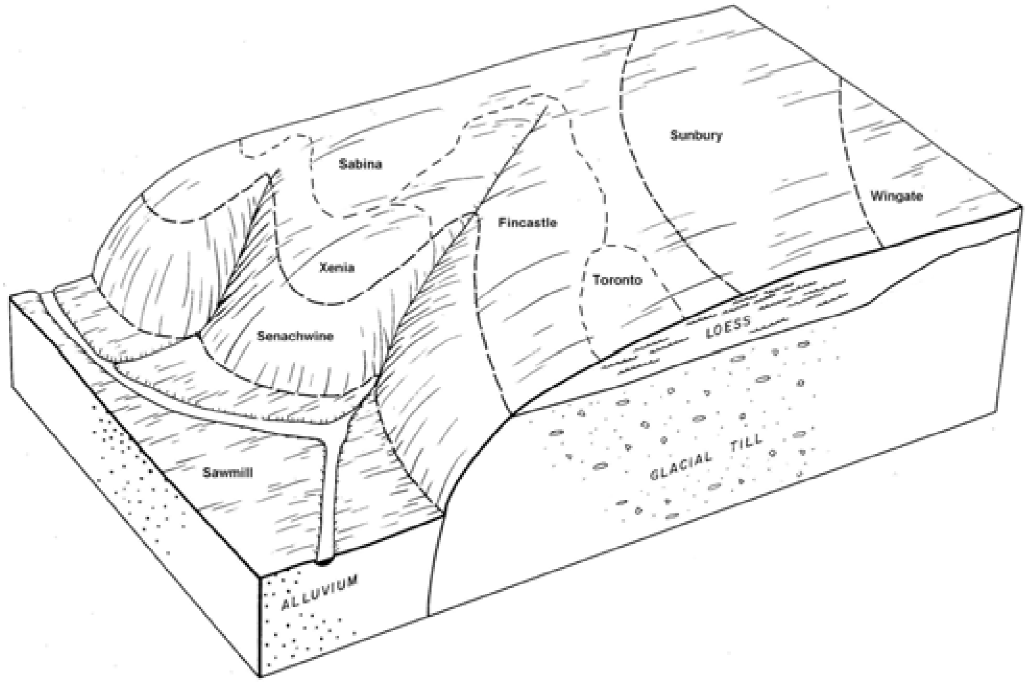


Figure 7.—Typical soils on till plains that formed under mixed hardwoods on the prairie fringe and near the larger streams.

Douglas. Larger areas of these materials are identified on geology maps as the Batavia facies of the Henry Formation or as the Dolton facies of the Henry Formation (Hansel and Johnson, 1996; Lineback, 1979). Many areas of outwash are included with alluvium and till on geology maps. Camden, Martinsville, Sexton, and Starks soils are common on outwash terraces. In some places on the ground moraine, a thin layer of outwash occurs between the loess and the underlying till. Drummer soils, for example, occur on ground moraines in Douglas County. They formed in loess and in the underlying outwash (figs. 6 and 9).

Alluvium is material that was deposited by floodwater along streams. On geology maps, large areas of alluvial material are identified as the Cahokia Formation (Hansel and Johnson, 1996). Alluvial soils consist of mostly silty sediments, but in some places they have more sand or thin layers of loamy and sandy material. Soils that formed in alluvium are generally stratified in both color and texture. Sawmill and Zook soils formed in silty alluvium and have a weakly developed subsoil. Medway and Shaffton soils formed in loamy sediments. The largest areas of alluvial soils are along the Kaskaskia and Embarras Rivers and their tributaries (figs. 7 and 8).

Colluvium is material that is similar to alluvium in composition but is deposited by gravity at the base of slopes or by slopewash into closed depressions. The material is silty or clayey and generally dark in prairie areas. Peotone soils formed in colluvium.

Lacustrine sediments are sediments deposited in lakes. Unique to central Illinois, Douglas County has many soils that formed in the sediments of a large glacial lake that were deposited when meltwaters flowed into a reservoir bounded by the Arcola, Pesotum, and West Ridge end moraines. These sediments are mostly silty and clayey. Large areas of these materials are identified as the Equality Formation (Hansel and Johnson, 1996). Soils that formed in these sediments include Milford, Rutland, and Kernan soils (fig. 9). Near the entry into former Lake Douglas, a delta formed from silty and sandy material. The materials in this area are identified as the Dolton facies of the

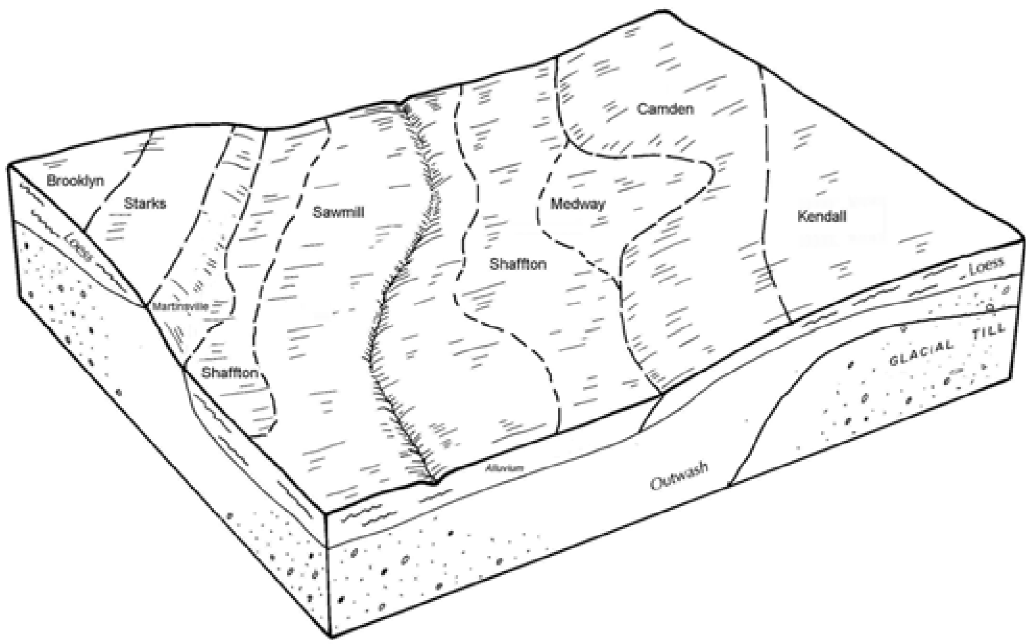


Figure 8.—Typical soils on outwash plains and along major outwash stream valleys.

Henry Formation (Hansel and Johnson, 1996). Sexton, Kendall, and Brooklyn soils formed in these areas.

Climate

Douglas County has a temperate, humid continental climate that is uniform throughout the county. Climatic differences within the county are too small to have caused significant differences among the soils. In some areas of the county, however, the effects of climate are modified locally by relief. The influence of climate becomes more obvious when comparisons are made on a broad regional basis.

Climate affects soil formation through its influence on weathering, plant and animal life, and erosion. Water from rain and melting snow seeps slowly downward through the soil and allows physical and chemical reactions to take place in the parent material. Where water can move downward, it carries clay and dissolved minerals from the surface soil into the subsoil. In soils having limy parent materials, leaching commonly removes calcium carbonates to a depth of 40 inches or more. As a result, these soils are neutral to strongly acid. This acidity promotes other pedogenic processes, such as the biochemical breakdown of minerals and the translocation of clays.

Soil temperature affects soil formation. When soil is frozen, for example, many of the processes of soil formation are slowed or halted. Conversely, warm soil temperatures encourage the microbial metabolism of soil organic matter, the downward translocation of clays, and other processes.

Climate also influences the kind and extent of plant and animal life. The climate in Douglas County has favored tall prairie grasses and deciduous hardwoods. It also has favored the decomposition of dead plants and animals, which provides humus to the soil.

Heavy, untimely rains are destructive when they fall on soils that are bare of vegetation. The raindrops disperse the soil particles, thereby contributing to erosion and the formation of crusts. Early spring rains in these areas can cause extensive erosion when the soils are partially frozen because reduced infiltration results in more water running off the surface.

Plant and Animal Life

Soils are greatly affected by the type of vegetation under which they formed. The chief contribution of vegetation and biological processes to soil formation is the addition of organic material and nitrogen. The amount of organic material in the soil depends primarily on the kind of native plants that grew there. Decayed remains of plants on or below the surface eventually become organic matter, or humus. Roots of the plants provide channels for the downward movement of water through the soil and add organic matter as they decay.

The native vegetation in Douglas County since the Wisconsinan Stage has consisted primarily of tall prairie grasses and, to a lesser extent, deciduous hardwoods. At the time of early settlement, about 84.5 percent of the county supported prairie vegetation (Iverson, 1989). These grasses have many fibrous roots that contribute large amounts of organic matter to the soil, especially where they are concentrated near the surface. Soils that formed under prairie vegetation typically have a thick, black or dark brown surface layer. They generally are in areas of low relief relatively undissected by drainageways. Catlin, Drummer, and Flanagan soils are examples.

About 15.5 percent of the county supported forest vegetation at the time of early settlement (Iverson, 1989). Because the root systems of deciduous hardwoods are less fibrous than those of grasses and are concentrated more at the surface, the organic matter that they contribute to soil is mainly in the form of leaf litter. Consequently, soils that formed under forest vegetation have a thinner and lighter colored surface layer than that of prairie soils. Sabina, Senachwine, and Xenia soils formed under forest vegetation. They are on summits and on backslopes along drainageways.

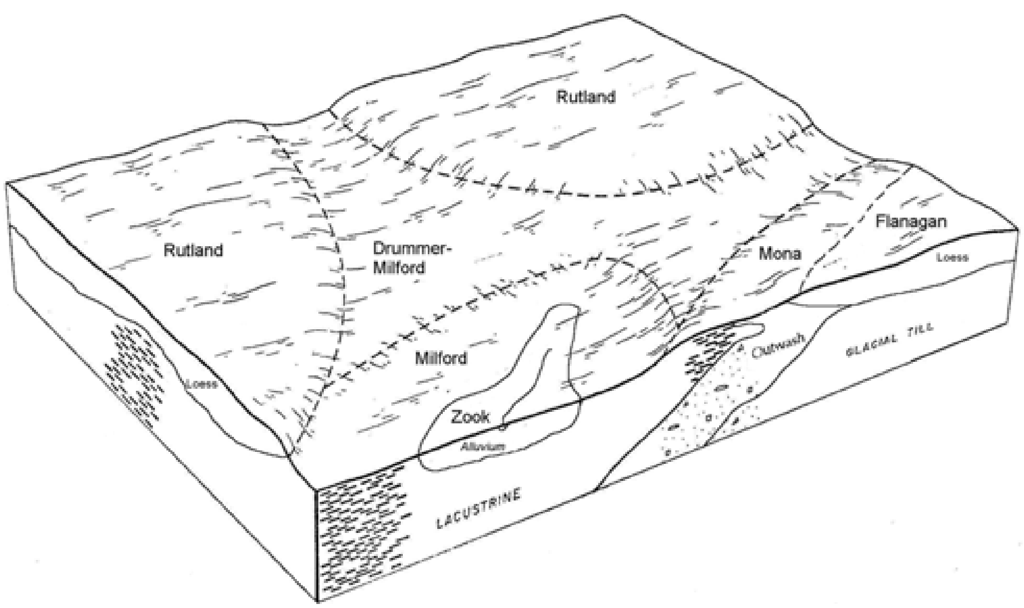


Figure 9.—Typical soils on the Glacial Lake Douglas plain in the central part of Douglas County.

Micro-organisms, earthworms, insects, and burrowing animals have also affected soil formation. Bacteria and fungi help to decompose plant and animal remains and change them into humus. Burrowing animals, such as earthworms, cicadas, and ground squirrels, help to incorporate humus into the soil while creating small channels that influence soil aeration and the percolation of water. Humus is very important in the formation of soil structure and good tilth.

Human activities, such as installing subsurface drains, building levees for flood protection, construction, and the clearing of native forests, have significantly altered the nature of the existing plant and animal communities. These activities have also contributed to the loss of soil material and organic material through accelerated erosion.

Relief

Relief, or local changes in elevation, has markedly affected the soils in Douglas County by influencing runoff, erosion, deposition, and natural drainage. Relief includes landform characteristics, such as position on the landform, slope gradient, slope shape, and slope aspect.

Variations in relief in the county reflect a variety of landforms. The most extensive landforms in the county are end moraines, ground moraines, stream terraces, lake plains, and flood plains.

The presence of a series of end moraines in Douglas County represents successive advances and retreats of the glacial ice front. The end moraines have slopes that are quite variable, commonly ranging from gently sloping to very steep. The Arcola Moraine occurs in the eastern and southern parts of the county, and the Pesotum and West Ridge Moraines occur in the north. Dana, Octagon, and Senachwine soils are examples of soils on end moraines in the county.

Ground moraines of the Wisconsinan Stage, which occur between the end moraines, generally consist of broad, nearly level to gently sloping interfluves. The relief on ground moraines is less variable than the relief on end moraines, and the loess deposits are thicker. Catlin and Flanagan soils are examples of soils on ground moraines.

Outwash stream terraces occur primarily along the Kaskaskia and Embarras Rivers and their tributaries. They are generally nearly level to gently sloping areas that lie above adjacent flood plains. Camden, Martinsville, and Starks soils occur on stream terraces in the county.

Where the parent material is relatively uniform, differences in natural drainage are closely related to landform position, such as summit or backslope, and to slope gradient and shape. Drummer and Camden soils, for example, both formed in loess and in the underlying outwash. Drummer soils are on nearly level, commonly concave toeslopes. Precipitation and runoff from the higher adjacent soils contribute to the ponding of surface water on the poorly drained Drummer soils. The water in the saturated soil pores restricts the circulation of air in the soil. Under these conditions, naturally occurring iron and manganese compounds are chemically reduced. The reduced form of iron appears gray, bluish, or gray-green and leaves the subsoil with a low-chroma grayish color. Also, reduced forms of iron are more soluble than oxidized forms and can be leached readily from the soil. In both cases, the subsoil appears gray. Camden soils, conversely, are well drained and are on gently sloping summits and convex backslopes. Because the water table is lower in Camden soils and some of the rainfall runs off the sloping surface instead of infiltrating, the soil pores contain less water and more air. In these conditions, iron and manganese compounds are well oxidized, giving the subsoil a brownish to reddish color.

Relief also affects the susceptibility to and intensity of both geologic and recent accelerated erosion. Soils on the steeper slopes or in areas where slopes are long are more susceptible to erosion than soils that formed in nearly level or level areas or where slopes are short. Maintaining a partial or complete cover of vegetation or plant residue can significantly reduce the hazard of erosion in sloping areas. For example, Senachwine soils that have slopes of 18 to 60 percent generally support trees, herbaceous plants, and grasses. Because of the vegetative cover, these soils are subject to little or no erosion. Most areas of Senachwine soils that have slopes of 2 to 18 percent are cultivated. Failure to maintain erosion-control systems on these soils has resulted in moderate or severe accelerated erosion of the surface soil. The loss of surface soil material in one place results in deposition and accumulation in another place, affecting both the rate of soil formation and the development and thickness of soil horizons.

Time

To a great extent, time determines the degree of profile development in a soil. The influence of time, however, is modified by wetness, erosion, the deposition of material, and local relief.

The differences among soils resulting from the length of time the parent material has been in place are commonly expressed in the degree of profile development. Sawmill soils have a very weakly expressed profile because they are on low flood plains that periodically receive new alluvial sediments. Consequently, they have not been in place long enough for the development of distinct horizons. Sabina soils, conversely, which occur on ground moraines, exhibit stronger development than the Sawmill soils. They have distinct horizons because the loess and underlying till in which they formed have been in place a much longer time.

In most of the upland soils, enough time has passed to allow the removal of calcium carbonate from the upper 40 inches of the profile through leaching. However, in sloping areas, more rainfall tends to run off the surface rather than infiltrate the soil. Less water available for leaching calcium carbonate results in more calcareous soils. Examples include Octagon and Senachwine soils, which are calcareous within a depth of 40 inches.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998, 1999, and 2003). 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 4 shows the classification of the soils in the county. 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 Mollisol.

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 Udoll (*Ud,* meaning humid, plus *oll,* from Mollisol).

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; 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 Argiudolls (*Argi*, indicating that the soil has an accumulation of clay in the subsoil, plus *udoll*, the suborder of the Mollisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic 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 known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. An example is Aquic Argiudolls.

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, mineral content, cation-exchange capacity, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, smectitic, mesic Aquic Argiudolls.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. The Flanagan series is an example.

Soil Series and Detailed Soil Map Units

In this section, arranged in alphabetical order, each soil series recognized in the survey area is described. Each series description is followed by descriptions of the associated detailed soil map units.

Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

In some instances, the typical pedon for the series is located outside Douglas County. The selection of the typical pedon is based on the range in characteristics of the series as it occurs throughout a particular major land resource area (MLRA). The Drummer series is a common soil in MLRA 108. The typical pedon for the Drummer series is in Champaign County, Illinois. The soil properties of this pedon are representative of the Drummer soils not only in Champaign County but in other counties within MLRA 108, including Douglas County.

The map units 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. More information about each map unit is given under the headings "Use and Management of the Soils" and "Soil Properties."

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Senachwine silt loam, 10 to 18 percent slopes, eroded, is a phase of the Senachwine 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. Drummer-Milford silty clay loams, 0 to 2 percent slopes, is an example.

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

Table 5 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Birkbeck Series

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

Typical Pedon

Birkbeck silt loam, 2 to 5 percent slopes, on a slope of 2 percent, in a sparsely wooded area, at an elevation of 680 feet above mean sea level, in Macon County, Illinois, about 7 miles northeast of Decatur; 1,600 feet east and 750 feet south of the northwest corner of sec. 25, T. 17 N., R. 3 E.; USGS Argenta, Illinois, topographic quadrangle; lat. 39 degrees 54 minutes 25.3 seconds N. and long. 88 degrees 48 minutes 59.7 seconds W.; UTM Zone 16S 0344720E 4418800N; NAD 27:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak thin platy structure parting to moderate very fine granular; friable; slightly acid; abrupt smooth boundary.

E—4 to 9 inches; brown (10YR 4/3) silt loam; moderate very thin platy structure; friable; few distinct dark brown (10YR 3/3) organic coats on faces of peds; few distinct gray (10YR 6/1) (dry) silt coats on faces of peds; very strongly acid; clear smooth boundary.

Bt1—9 to 13 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine subangular blocky structure parting to moderate very fine granular; friable; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; common distinct light gray (10YR 7/1) (dry) silt coats on faces of peds; few fine irregular weakly cemented iron-manganese oxide accumulations throughout; strongly acid; clear smooth boundary.

Bt2—13 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and very fine subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds; common fine irregular weakly cemented iron-manganese oxide accumulations throughout; strongly acid; clear smooth boundary.

Bt3—24 to 29 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds; common fine irregular weakly cemented iron-manganese oxide accumulations throughout; strongly acid; clear smooth boundary.

Bt4—29 to 42 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds; few fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine distinct light yellowish brown (2.5Y 6/4) masses of iron and manganese accumulation in the matrix; common medium irregular weakly cemented iron-manganese oxide accumulations throughout; strongly acid; gradual smooth boundary.

Bt5—42 to 54 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and coarse subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds; few fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine distinct light yellowish brown (2.5Y 6/4) masses of iron and manganese accumulation and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common medium irregular weakly cemented iron-manganese oxide accumulations throughout; slightly acid; clear smooth boundary.

2Bt6—54 to 60 inches; dark yellowish brown (10YR 4/4) loam; weak coarse subangular blocky structure; friable; few distinct brown (7.5YR 4/4) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organo-clay films in pores; common fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common medium distinct light yellowish brown (2.5Y 6/4) masses of iron and manganese accumulation and common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine irregular weakly cemented iron-manganese oxide accumulations throughout; neutral; gradual smooth boundary.

2C—60 to 68 inches; light olive brown (2.5Y 5/4) loam; massive; firm; few distinct very dark grayish brown (10YR 3/2) organo-clay films in pores; common fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine faint light yellowish brown (2.5Y 6/4) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine irregular weakly cemented iron-manganese oxide accumulations throughout; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the loess: 40 to 60 inches
Depth to carbonates: 40 to 70 inches
Depth to the base of the argillic horizon: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 to 5
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Bt and/or 2BC horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—loam, clay loam, silty clay loam, or silt loam
Content of rock fragments—0 to 15 percent by volume
Reaction—slightly acid to slightly alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—loam or clay loam
Content of rock fragments—0 to 15 percent by volume
Reaction—slightly alkaline or moderately alkaline

233B—Birkbeck silt loam, 2 to 5 percent slopes

Setting

Landform: Ground moraines, end moraines
Position on the landform: Summits and backslopes

Map Unit Composition

Birkbeck and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have more sand in the substratum
- Soils that have a darker surface layer
- Soils that have more clay in the subsoil
- Soils that have a water table at a depth of 1 to 2 feet

Dissimilar soils:
- Soils that are severely eroded
- Poorly drained soils in swales
- The somewhat poorly drained Sabina soils in the less sloping areas
- The moderately well drained Catlin soils that have a thick dark surface layer

Properties and Qualities of the Birkbeck Soil

Parent material: Loess over till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow or moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and 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

Blackberry Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

Typical Pedon

Blackberry silt loam, 2 to 5 percent slopes, at an elevation of about 748 feet above mean sea level, in Champaign County, Illinois; about 25 feet north and 450 feet west of the southeast corner of sec. 19, T. 21 N., R. 7 E.; USGS Foosland topographic quadrangle; lat. 40 degrees 15 minutes 10 seconds N. and long. 88 degrees 26 minutes 36 seconds W.; UTM Zone 16T 0377248E 4456602N; NAD 27:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

A—10 to 16 inches; dark brown (10YR 3/3) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; neutral; clear smooth boundary.

BA—16 to 20 inches; brown (10YR 4/3) silty clay loam; weak very fine subangular blocky structure; friable; many faint dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; clear smooth boundary.

Bt1—20 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—24 to 34 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine irregular black (10YR 2/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

Bt3—34 to 47 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium and coarse prismatic structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine irregular black (10YR 2/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

2BCt—47 to 62 inches; yellowish brown (10YR 5/4), stratified silt loam and loam; weak coarse subangular blocky structure; friable; very few faint brown (10YR 4/3) and grayish brown (10YR 5/2) clay films lining pores and on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine irregular black (10YR 2/1) very weakly cemented iron-manganese oxide nodules throughout; slightly acid; gradual smooth boundary.

2C—62 to 70 inches; light olive brown (2.5Y 5/4), stratified silt loam, loam, and sandy loam; massive; friable; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine irregular black (10YR 2/1) very weakly cemented iron-manganese oxide nodules throughout; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 45 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam
Reaction—strongly acid to neutral

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—stratified silt loam and loam with layers of clay loam, silty clay loam, silt loam, loam, sandy loam, or sandy clay loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to moderately alkaline

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—stratified silt loam, loam, or sandy loam with layers of clay loam or loamy sand
Content of rock fragments—0 to 15 percent
Reaction—moderately acid to moderately alkaline

679B—Blackberry silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains, stream terraces
Position on the landform: Summits and backslopes

Map Unit Composition

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

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a water table at a depth of 1 to 2 feet
- Soils that are deeper to the underlying loamy material
- Soils that are moderately eroded

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Blackberry Soil

Parent material: Loess over stratified loamy outwash
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: 3.0 to 5.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: 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: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Brenton Series

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

Typical Pedon

Brenton silt loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 768 feet above mean sea level, in McLean County, Illinois; 525 feet east and 1,620 feet south of the northwest corner of sec. 15, T. 22 N., R. 6 E; USGS Bellflower, Illinois, topographic quadrangle; lat. 40 degrees 21 minutes 52.8 seconds N. and long. 88 degrees 30 minutes 54.8 seconds W.; UTM Zone 16T 0371340E 4469120N; NAD 27:

Ap1—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate medium granular structure; friable; many very fine roots throughout; moderately acid; abrupt smooth boundary.

Ap2—8 to 14 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine subangular blocky structure parting to moderate medium granular; friable; common very fine roots throughout; few very fine tubular pores; moderately acid; abrupt smooth boundary.

Bt1—14 to 17 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common very fine roots along faces of peds; few very fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent iron-manganese concretions and stains throughout; moderately acid; clear smooth boundary.

Bt2—17 to 22 inches; olive brown (2.5Y 4/4) silty clay loam; weak fine prismatic structure parting to moderate medium angular blocky; friable; common very fine and few fine roots along faces of peds; few very fine and fine tubular pores; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; few fine distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine prominent iron-manganese concretions and stains throughout; moderately acid; clear smooth boundary.

Bt3—22 to 28 inches; olive brown (2.5Y 4/4) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium angular blocky; friable; common very fine and few fine roots along faces of peds; few very fine and fine tubular pores; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions and faint yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; few fine prominent iron-manganese oxide concretions and stains throughout; moderately acid; clear smooth boundary.

Bt4—28 to 33 inches; light olive brown (2.5Y 5/4) silty clay loam; moderate medium prismatic structure parting to strong medium subangular blocky; friable; common very fine and few fine roots along faces of peds; few very fine tubular pores; few distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; few fine prominent iron-manganese oxide concretions and stains throughout; moderately acid; clear smooth boundary.

2Bt5—33 to 45 inches; olive brown (2.5Y 4/4), stratified loam and fine sandy loam; moderate medium and coarse subangular blocky structure; friable; few very fine roots along faces of peds; few very fine tubular pores; many distinct very dark grayish brown (2.5Y 3/2) organo-clay films lining root channels and common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; few fine distinct grayish brown (2.5Y 5/2) iron depletions and common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine prominent iron-manganese oxide concretions and stains throughout; slightly acid; clear smooth boundary.

2BC—45 to 54 inches; light olive brown (2.5Y 5/6) and light brownish gray (2.5Y 6/2) loam; weak medium subangular blocky structure; friable; few very fine roots along faces of peds; few very fine tubular pores; many distinct very dark grayish brown (2.5Y 3/2) organo-clay films lining root channels and pores; common fine prominent iron-manganese oxide concretions and stains throughout; neutral; clear smooth boundary.

2Cg1—54 to 69 inches; gray (2.5Y 6/1) silt loam; weak thick and very thick platy rock structure; very friable; few very fine roots throughout; many very fine horizontal tubular pores between plates and few very fine vertical tubular pores through plates; many very dark grayish brown (2.5Y 3/2) organo-clay films lining root channels and pores; common fine and medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common very fine and fine prominent black (10YR 2/1) masses of iron-manganese oxide concretions and stains throughout; slightly effervescent; neutral; clear smooth boundary.

2Cg2—69 to 80 inches; gray (2.5Y 6/1) silt; massive; very friable; few very fine roots throughout; few very fine tubular pores; common fine and medium prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 24 to 40 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

2Bt and 2BCt horizons:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—stratified loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments—0 to 5 percent by volume
Reaction—moderately acid to slightly alkaline

2C horizon:
Hue—2.5Y, 10YR, or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—silt loam or silt; typically with strata of sandy loam and loam

Content of rock fragments—0 to 15 percent by volume
Reaction—neutral to moderately alkaline

149A—Brenton silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Summits and footslopes

Map Unit Composition

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

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that are subject to very rare flooding

Dissimilar soils:
- The poorly drained Drummer soils in swales
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Brenton Soil

Parent material: Loess over stratified loamy outwash
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 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Brooklyn Series

Taxonomic classification: Fine, smectitic, mesic Mollic Albaqualfs

Typical Pedon

Brooklyn silt loam, 0 to 2 percent slopes, on a slope of 0.5 percent, in a cultivated field, at an elevation of 679 feet above mean sea level, in Douglas County, Illinois; 200 feet east and 1,430 feet south of the northwest corner of sec. 8, T. 16 N., R. 14 W.; USGS

Newman, Illinois, topographic quadrangle; lat. 39 degrees 51 minutes 40 seconds N. and long. 87 degrees 58 minutes 28.2 seconds W.; UTM Zone 16S 0416646E 4412587N; NAD 27:

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; neutral; abrupt smooth boundary.

Eg—9 to 14 inches; gray (2.5Y 6/1) silt loam; weak medium platy structure parting to moderate fine granular; friable; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; neutral; abrupt smooth boundary.

Btg1—14 to 20 inches; light brownish gray (2.5Y 6/2) silty clay; moderate fine prismatic structure parting to moderate fine angular blocky; firm; many distinct dark gray (10YR 4/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; neutral; clear smooth boundary.

Btg2—20 to 31 inches; gray (2.5Y 6/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; many prominent black (N 2.5/0) organo-clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; gradual smooth boundary.

Btg3—31 to 40 inches; gray (2.5Y 6/1) silty clay loam; moderate coarse prismatic structure parting to moderate coarse angular blocky; firm; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; few prominent black (N 2.5/0) organo-clay films lining pores and root channels; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; neutral; abrupt smooth boundary.

2Btg4—40 to 46 inches; gray (2.5Y 5/1) clay loam; weak coarse prismatic structure; firm; few distinct dark gray (2.5Y 4/1) clay films on faces of peds; few distinct black (2.5Y 2.5/1) organo-clay films lining pores and root channels; many medium prominent strong brown (7.5YR 4/6) masses of iron accumulation in the matrix; common medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 5 percent gravel; neutral; abrupt smooth boundary.

2Bt—46 to 52 inches; 40 percent strong brown (7.5YR 4/6), 40 percent dark brown (10YR 3/3), and 20 percent gray (2.5Y 5/1) gravelly clay loam; weak coarse subangular blocky structure; firm; few distinct dark gray (2.5Y 4/1) clay films on faces of peds; few distinct black (2.5Y 2.5/1) organo-clay films lining pores and root channels; common medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 20 percent gravel; neutral; abrupt smooth boundary.

2BCt—52 to 62 inches; 50 percent yellowish brown (10YR 5/6), 30 percent light yellowish brown (2.5Y 6/3), and 20 percent gray (2.5Y 6/1) clay loam with thin strata of silt loam; massive; firm; very few distinct black (2.5Y 2.5/1) and very few distinct dark brown (7.5YR 3/2) organo-clay films lining pores and root channels; many medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 5 percent gravel; neutral; gradual smooth boundary.

2C—62 to 73 inches; 60 percent yellowish brown (10YR 5/6) and 40 percent gray (2.5Y 5/1) loam with thin strata of sandy loam; massive; firm; many medium irregular black (7.5YR 2.5/1) iron-manganese masses throughout; 7 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

3Cd—73 to 80 inches; light olive brown (2.5Y 5/4) loam; few medium prominent red (2.5YR 4/8) mottles; massive; very firm; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and few fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; 10 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 36 to 55 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: 40 to 72 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon:
Hue—2.5Y or 10YR
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay or silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Btg horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—3 to 6
Chroma—1 to 6
Texture—stratified clay loam, sandy clay loam, sandy loam, or silt loam
Content of rock fragments—2 to 20 percent
Reaction—strongly acid to slightly alkaline

2Cg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 to 8
Texture—stratified clay loam, loam, sandy loam, or sandy clay loam
Content of rock fragments—2 to 15 percent
Reaction—neutral or slightly alkaline

3Cd horizon (where present):
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 to 8
Texture—loam
Content of rock fragments—2 to 15 percent
Reaction—slightly alkaline or moderately alkaline

136A—Brooklyn silt loam, 0 to 2 percent slopes

Setting

Landform: Depressions, outwash plains, stream terraces
Position on the landform: Toeslopes

Map Unit Composition

Brooklyn and similar soils: 93 percent
Dissimilar soils: 7 percent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have a thicker dark surface horizon
- Soils that have less clay in the subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- The poorly drained Drummer soils on toeslopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Brooklyn Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow to moderate
Depth to restrictive feature: 60 to 99 inches to dense material
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.0 to 4.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Surface runoff class: Negligible or 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

Camden Series

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

Typical Pedon

Camden silt loam, 2 to 5 percent slopes, on a slope of 3 percent, in a cultivated field, at an elevation of 720 feet above mean sea level, in Champaign County, Illinois, about 6 miles northeast of Penfield; 30 feet north and 100 feet west of the southeast corner of sec. 6, T. 22 N., R. 14 W.; USGS Rankin, Illinois, topographic quadrangle; lat. 40 degrees 23 minutes 06 seconds N. and long. 87 degrees 58 minutes 16 seconds W.; UTM Zone 16T 0417571E 4470732N; NAD 27:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and very fine granular structure; friable; neutral; abrupt smooth boundary.

E—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate thin platy structure; friable; few distinct light brownish gray (10YR 6/2) (dry) silt coats on faces of peds; neutral; abrupt smooth boundary.

Bt1—14 to 18 inches; yellowish brown (10YR 5/4) silt loam; weak very fine subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct light brownish gray (10YR 6/2) (dry) silt coats on faces of peds; neutral; clear smooth boundary.

Bt2—18 to 22 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct light brownish gray (10YR 6/2) (dry) silt coats on faces of peds; slightly acid; clear smooth boundary.

Bt3—22 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

Bt4—28 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; common fine and medium irregular black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 3 percent (by volume) chert pebbles; moderately acid; clear smooth boundary.

2Bt5—35 to 52 inches; yellowish brown (10YR 5/6) loam; moderate coarse prismatic structure parting to weak medium subangular blocky; friable; common distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; common fine and medium irregular black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 5 percent (by volume) chert and quartz pebbles; moderately acid; clear smooth boundary.

2Bt6—52 to 62 inches; brown (10YR 4/3) and yellowish brown (10YR 5/4) sandy loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; few faint brown (10YR 4/3) clay bridges between sand grains; few fine faint brown (10YR 5/3) masses of iron and manganese accumulation in the matrix; few fine rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 5 percent (by volume) chert and quartz pebbles; moderately acid; clear smooth boundary.

2C—62 to 80 inches; yellowish brown (10YR 5/4 and 5/6), stratified sandy loam, loam, and sandy clay loam; massive; very friable; moderately acid.

Range in Characteristics

Thickness of the loess: 24 to 40 inches

Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: 30 to 65 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—slightly acid or neutral

E or BE horizon (where present):
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

2Bt and 2BC horizons:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—loam, clay loam, silt loam, silty clay loam, or sandy clay loam
Content of rock fragments—0 to 10 percent by volume
Reaction—strongly acid to neutral

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—stratified sandy loam, loam, sandy clay loam, or silt loam
Content of rock fragments—0 to 10 percent by volume
Reaction—moderately acid to moderately alkaline

134B—Camden silt loam, 2 to 5 percent slopes

Setting

Landform: Stream terraces, outwash plains
Position on the landform: Summits and backslopes

Map Unit Composition

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

Similar soils:
- Soils that have more sand in the subsoil
- Soils that are eroded

- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are severely eroded
- The somewhat poorly drained Kendall soils on toeslopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils on toeslopes

Properties and Qualities of the Camden Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate or moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.4 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
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and 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

Catlin Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

Typical Pedon

Catlin silt loam, 2 to 5 percent slopes, on a slope of 3 percent, in a cultivated field, at an elevation of 791 feet above mean sea level, in McLean County, Illinois; 330 feet east and 70 feet south of the northwest corner of sec. 11, T. 23 N., R. 1 E.; USGS Bloomington West, Illinois, topographic quadrangle; lat. 40 degrees 28 minutes 22.3 seconds N. and long. 89 degrees 04 minutes 34.5 seconds W.; UTM Zone 16T 0323989E 4482099N; NAD 27:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium subangular blocky structure; friable: neutral; clear smooth boundary.

AB—11 to 16 inches; dark brown (10YR 3/3) silty clay loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; friable; neutral; abrupt smooth boundary.

Bt1—16 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam: strong fine and medium angular blocky structure; friable; common distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; few fine prominent stains of iron-manganese oxide throughout; slightly acid; clear smooth boundary.

Bt2—26 to 41 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak medium and coarse subangular blocky structure; friable; common distinct brown (10YR

4/3) and dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine prominent grayish brown (10YR 5/2) iron depletions in the matrix; few fine prominent stains of iron-manganese oxide throughout; neutral; clear smooth boundary.

2Bt3—41 to 45 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; friable; very few faint very dark grayish brown (10YR 3/2) organo-clay films lining root channels; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine prominent stains of iron-manganese oxide throughout; 2 percent fine gravel; very slightly effervescent; moderately alkaline; clear smooth boundary.

2C—45 to 60 inches; light olive brown (2.5Y 5/4) loam; massive; firm; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation and common fine and medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; few fine prominent stains of iron-manganese oxide throughout; few fine prominent masses of calcium carbonate throughout; 2 percent fine gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to the base of the argillic horizon: 45 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

AB or BA horizon (where present):
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—2 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, silty clay loam, or silt loam
Content of rock fragments—0 to 10 percent by volume
Reaction—slightly acid to moderately alkaline

2BC or 2C horizon:
Hue—10YR or 2.5Y

Value—4 or 5
Chroma—3 or 4
Texture—loam, clay loam, or silt loam
Content of rock fragments—0 to 10 percent by volume
Reaction—neutral to moderately alkaline

171B—Catlin silt loam, 2 to 5 percent slopes

Setting

Landform: Ground moraines
Position on the landform: Summits and shoulders

Map Unit Composition

Catlin and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have a substratum of sandy loam
- Soils that have more clay in the subsoil
- Soils that have a water table at a depth of 1 to 2 feet

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Catlin Soil

Parent material: Loess over till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.5 to 4.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: None
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: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Clare Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

Typical Pedon

Clare silt loam, 2 to 5 percent slopes, at an elevation of about 700 feet above mean sea level, in Champaign County, Illinois; about 66 feet south and 1,700 feet west of the northeast corner of sec. 34, T. 19 N., R. 9 E.; USGS Urbana topographic quadrangle; lat. 40 degrees 04 minutes 09 seconds N. and long. 88 degrees 10 minutes 05 seconds W.; UTM Zone 16T 400392E 4435878N; NAD 27:

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

A—8 to 14 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly acid; clear smooth boundary.

Bt1—14 to 19 inches; brown (10YR 4/3) silty clay loam; moderate medium and fine subangular blocky structure; firm; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—19 to 27 inches; brown (10YR 4/3) silty clay loam; moderate medium and fine subangular blocky structure; firm; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; moderately acid; clear smooth boundary.

Bt3—27 to 36 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; firm; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; few fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; slightly acid; abrupt smooth boundary.

2Bt4—36 to 44 inches; brown (10YR 4/3) clay loam; weak medium subangular blocky structure; firm; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; many medium faint grayish brown (10YR 5/2) and brown (10YR 5/3) iron depletions in the matrix; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many fine and medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; slightly acid; abrupt smooth boundary.

2BCt—44 to 50 inches; light olive brown (2.5Y 5/4) and olive brown (2.5Y 4/4), stratified loam and sandy loam; weak medium angular blocky and subangular blocky structure; friable; few distinct brown (10YR 4/3) clay films lining pores; few fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; many fine and medium rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

2C—50 to 60 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4), stratified loam and sandy loam; massive; friable; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 20 to 40 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 40 to 70 inches

Ap, A, or AB horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

Bt or BA horizon:
Hue—7.5YR or 10YR

Value—3 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

2Bt or 2BC horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—loam, sandy loam, clay loam, silty clay loam, silt loam, or sandy clay loam or stratified with these textures
Content of rock fragments—1 to 10 percent
Reaction—moderately acid to slightly alkaline

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—stratified sandy loam, loam, or silt loam; thin strata of coarser material
Content of rock fragments—2 to 15 percent
Reaction—slightly acid to moderately alkaline

663B—Clare silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains, stream terraces
Position on the landform: Summits and backslopes

Map Unit Composition

Clare and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that have a thinner dark surface layer
- Soils that are eroded

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Clare Soil

Parent material: Loess over stratified loamy outwash
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 10.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.5 to 4.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: None
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

Dana Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

Typical Pedon

Dana silt loam, 2 to 5 percent slopes, at an elevation of about 706 feet above mean sea level, in Edgar County, Illinois; about 1,810 feet north and 750 feet east of the southwest corner of sec. 10, T. 16 N., R. 14 W.; USGS Newman topographic quadrangle; lat. 39 degrees 51 minutes 21 seconds N. and long. 87 degrees 56 minutes 05 seconds W.; UTM Zone 16S 0420042E 4411965N; NAD 27:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 4/3) dry; moderate fine granular structure; friable; common very fine and fine roots throughout; moderately acid; clear smooth boundary.

Bt1—11 to 15 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine and fine roots throughout; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—15 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine prismatic structure parting to moderate fine angular blocky; firm; common very fine and fine roots between peds; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt3—25 to 32 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common very fine and fine roots between peds; common medium vesicular and tubular pores; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; many distinct brown (10YR 4/3) clay films on faces of peds; common fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

2Bt4—32 to 38 inches; brown (10YR 5/3) clay loam; moderate medium prismatic structure; firm; few very fine and fine roots between peds; common medium vesicular and tubular pores; few distinct very dark grayish brown (10YR 3/2) organo-clay films along root channels and pores; many distinct brown (10YR 4/3) clay films on faces of peds; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 3 percent fine and medium gravel; neutral; clear smooth boundary.

2Bt5—38 to 53 inches; brown (10YR 5/3) clay loam; moderate coarse prismatic structure; firm; few very fine and fine roots between peds; common medium and coarse vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organo-clay films along root channels and pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct gray (10YR 6/1) iron depletions in the matrix; many medium distinct dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation in the matrix; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 7 percent fine and medium gravel; neutral; clear smooth boundary.

2Bt6—53 to 58 inches; brown (10YR 5/3) clay loam; weak coarse angular blocky structure; firm; few very fine and fine roots between peds; common medium and coarse vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organo-clay films along root channels and pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct gray (10YR 6/1) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 7 percent fine and medium gravel; neutral; clear smooth boundary.

2C—58 to 80 inches; pale brown (10YR 6/3) loam; massive; firm; few fine and medium vesicular and tubular pores; common medium distinct gray (10YR 6/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium irregular brown (10YR 4/3) extremely weakly cemented iron-manganese oxide masses on horizontal fracture planes; few fine to coarse rounded yellowish red (5YR 5/8) weakly cemented iron oxide nodules throughout; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; common medium rounded and irregular white (10YR 8/1) weakly cemented calcium carbonate nodules throughout; 7 percent fine and medium gravel; violently effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 22 to 40 inches
Depth to carbonates: 40 to 60 inches
Depth to the base of the argillic horizon: 32 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—typically none
Reaction—moderately acid to neutral

BA horizon (where present):
Hue—10YR
Value—4
Chroma—3
Texture—silt loam or silty clay loam
Content of rock fragments—typically none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam
Content of rock fragments—typically none
Reaction—strongly acid to neutral

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—clay loam
Content of rock fragments—1 to 7 percent
Reaction—moderately acid to neutral

2BC horizon (where present):
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—loam or clay loam
Content of rock fragments—1 to 15 percent
Reaction—neutral to moderately alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—loam or clay loam
Content of rock fragments—1 to 15 percent
Reaction—slightly alkaline or moderately alkaline

56B—Dana silt loam, 2 to 5 percent slopes

Setting

Landform: Ground moraines, end moraines
Position on the landform: Backslopes and summits

Map Unit Composition

Dana and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that are moderately eroded
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that have less than 22 inches of loess over the till
- Soils that have slopes of less than 2 percent
- Soils that have slopes of more than 5 percent
- Soils that have a water table at a depth of 1 to 2 feet

Dissimilar soils:
- Soils that are severely eroded
- The poorly drained Drummer soils in swales

Properties and Qualities of the Dana Soil

Parent material: Loess over till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately 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: 3.0 to 5.0 percent
Shrink-swell potential: Moderate

Depth and months of the highest perched seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: None
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

Drummer Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Drummer silty clay loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 715 feet above mean sea level, in Champaign County, Illinois; on the University of Illinois South Farm 1 mile south of Urbana; 1,600 feet east and 300 feet north of the southwest corner of sec. 19, T. 19 N., R. 9 E.; USGS Urbana, Illinois, topographic quadrangle; lat. 40 degrees 05 minutes 04 seconds N. and long. 88 degrees 13 minutes 58 seconds W.; UTM Zone 16T 0394896E 4437648N; NAD 27:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; firm; many fine roots; moderately acid; clear smooth boundary.

A—7 to 14 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure parting to weak fine granular; firm; many fine and medium roots; slightly acid; clear smooth boundary.

BA—14 to 19 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate fine and medium subangular blocky structure; firm; many fine and medium roots; few fine faint very dark grayish brown (2.5Y 3/2) masses of iron and manganese accumulation in the matrix; slightly acid; gradual smooth boundary.

Bg—19 to 25 inches; dark gray (10YR 4/1) silty clay loam; moderate fine prismatic structure parting to moderate fine angular blocky; firm; many fine roots; common fine distinct and prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation in the matrix; many worm holes; neutral; gradual smooth boundary.

Btg1—25 to 32 inches; grayish brown (2.5Y 5/2) silty clay loam; weak fine and medium prismatic structure parting to moderate fine angular blocky; firm; many fine roots; common distinct dark gray (N 4/0) clay films on faces of peds; many medium distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; neutral; gradual wavy boundary.

Btg2—32 to 41 inches; gray (N 5/0) silty clay loam; weak medium prismatic structure parting to weak medium angular blocky; firm; few fine roots; few distinct dark gray (N 4/0) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; neutral; clear wavy boundary.

2Btg3—41 to 47 inches; gray (N 5/0) loam; weak coarse subangular blocky structure; friable; few fine roots; few distinct dark gray (10YR 4/1) clay films on faces of peds;

common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt wavy boundary.

2Cg—47 to 60 inches; dark gray (10YR 4/1), stratified loam and sandy loam; massive; friable; many medium prominent olive brown (2.5Y 4/4) masses of iron and manganese accumulation in the matrix; many medium distinct gray (N 5/0) iron depletions in the matrix; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: 40 to 65 inches
Depth to the base of the cambic horizon: 40 to 65 inches

Ap or A horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

Bg and Btg horizons:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

2Btg or 2BCg horizon:
Hue—7.5YR, 10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—loam or silt loam
Content of rock fragments—0 to 7 percent
Reaction—slightly acid to slightly alkaline

2Cg horizon:
Hue—7.5YR, 10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 8
Texture—loam, sandy loam, sandy clay loam, or clay loam; strata of silt loam or silty clay loam
Content of rock fragments—0 to 15 percent
Reaction—neutral to moderately alkaline

152A—Drummer silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Toeslopes

Map Unit Composition

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

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have a loamy surface layer or subsoil
- Soils that have carbonates within a depth of 40 inches
- Soils that have a thicker dark surface soil and more clay in the subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The somewhat poorly drained Brenton soils in the slightly higher landscape positions

Properties and Qualities of the Drummer Soil

Parent material: Loess over stratified loamy outwash
Drainage class: 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 9.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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 drained
Hydric soil status: Hydric

722A—Drummer-Milford silty clay loams, 0 to 2 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Toeslopes

Map Unit Composition

Drummer and similar soils: 60 percent
Milford and similar soils: 35 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that are somewhat poorly drained; on rises
- Soils that have a thin dark surface layer
- Soils that have carbonates within a depth of 40 inches
- Soils that have a thicker dark surface soil and more clay in the subsoil
- Soils that have a loamy surface layer or subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that have a thin, light-colored surface layer
- The somewhat poorly drained Brenton soils in the slightly higher landscape positions
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Drummer Soil

Parent material: Loess over stratified loamy outwash
Drainage class: 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 9.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: 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

Properties and Qualities of the Milford Soil

Parent material: Loess over silty and clayey lacustrine deposits
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderate
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: 4.5 to 6.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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: Moderate

Interpretive Groups

Land capability classification: Drummer—2w; Milford—2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Drummer—hydric; Milford—hydric

Elburn Series

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

Typical Pedon

Elburn silt loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 617 feet above mean sea level, in Christian County, Illinois; 2,716 feet north and 1,300 feet west of the southeast corner of sec. 36, T. 14 N., R. 1 E.; USGS Assumption, Illinois, topographic quadrangle; lat. 39 degrees 37 minutes 04.7 seconds N. and long. 89 degrees 01 minute 45.8 seconds W.; UTM Zone 16T 0325797E 4387107N; NAD 27:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; few very fine roots; many very dark gray (10YR 3/1) organic coats on faces of peds; slightly acid; abrupt smooth boundary.

A—6 to 16 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few very fine roots; many very dark gray (10YR 3/1) organic coats on faces of peds; neutral; clear smooth boundary.

Bt1—16 to 21 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; many distinct very dark gray (10YR 3/1) organo-clay films and dark gray (10YR 4/1) clay films on faces of peds; few fine prominent yellowish brown (10YR 5/8) masses of iron and few fine faint brown (10YR 5/3) masses of iron and manganese accumulation in the matrix; few fine prominent iron-manganese oxide concretions throughout; slightly acid; clear smooth boundary.

Bt2—21 to 28 inches; brown (10YR 5/3) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organo-clay films and common faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions and few fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; few fine prominent iron-manganese oxide concretions throughout; neutral; clear smooth boundary.

Bt3—28 to 36 inches; brown (10YR 5/3) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organo-clay films and dark gray (10YR 4/1) clay films on faces of peds; common fine faint grayish brown (10YR 5/2) iron depletions and common fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; few fine prominent iron-manganese oxide concretions throughout; neutral; clear smooth boundary.

Bt4—36 to 43 inches; light olive brown (2.5Y 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; few prominent very dark gray (10YR 3/1) organo-clay films and few distinct brown (10YR 5/3) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) masses of iron in the matrix; few fine prominent iron-manganese oxide concretions throughout; slightly alkaline; clear smooth boundary.

Btg1—43 to 49 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse subangular blocky structure; friable; few very fine roots; few distinct very dark gray (10YR 3/1) organo-clay films and dark grayish brown (10YR 4/2) clay films on faces of peds; many medium prominent brownish yellow (10YR 6/8) and few fine prominent yellowish brown (10YR 5/8) masses of iron in the matrix; few fine prominent iron-manganese oxide concretions throughout; slightly alkaline; clear smooth boundary.

2Btg2—49 to 58 inches; grayish brown (2.5Y 5/2), stratified silt loam, loam, and sandy loam; weak coarse subangular blocky structure; friable; few very fine roots; few distinct very dark grayish brown (10YR 3/2) organo-clay films and dark grayish brown (10YR 4/2) clay films lining pores; common medium prominent brownish yellow (10YR 6/8) and few fine prominent yellowish brown (10YR 5/8) masses of iron in the matrix; few very fine iron-manganese oxide concretions throughout; slightly alkaline; clear smooth boundary.

2Cg—58 to 62 inches; grayish brown (2.5Y 5/2), stratified sandy loam and loamy sand; massive; very friable; common medium prominent yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) masses of iron in the matrix; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

2Bt horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—2 to 6
Texture—stratified silt loam, sandy loam, loam, and clay loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

2C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—2 to 6
Texture—stratified sandy loam, loamy sand, clay loam, and loam
Content of rock fragments—0 to 10 percent by volume
Reaction—slightly acid to moderately alkaline

198A—Elburn silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces
Position on the landform: Summits and footslopes

Map Unit Composition

Elburn and similar soils: 93 percent
Dissimilar soils: 7 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a water table at a depth of 2.0 to 3.5 feet

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Elburn Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
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: 3.5 to 5.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Fincastle Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aeric Epiaqualfs
Taxadjunct features: The Fincastle soils in this survey area are slightly deeper to a high water table 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 fine-silty, mixed, superactive, mesic Aquic Hapludalfs.

Typical Pedon

Fincastle silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a cultivated field, at an elevation of 653 feet above mean sea level, in Coles County, Illinois; 100 feet south and 1,800 feet west of the northeast corner of sec. 29, T. 14 N., R. 10 E.; USGS Oakland, Illinois, topographic quadrangle; lat. 39 degrees 38 minutes 13.47 seconds N. and long. 88 degrees 06 minutes 26.45 seconds W.; UTM Zone 16S 0404975E 4387854N; NAD 27:

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; neutral; abrupt smooth boundary.
E—8 to 11 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate medium subangular blocky structure; firm; few fine distinct yellowish brown (10YR 5/4) masses of iron in the matrix; few fine rounded dark masses of iron-manganese oxide accumulation throughout; moderately acid; abrupt smooth boundary.
Bt1—11 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct grayish brown (10YR 5/2) iron

depletions and brown (7.5YR 4/4) masses of iron and manganese oxides in the matrix; moderately acid; clear smooth boundary.

Bt2—18 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions and brown (7.5YR 4/4) masses of iron and manganese oxides in the matrix; few fine rounded dark masses of iron-manganese oxide accumulation throughout; moderately acid; clear smooth boundary.

Bt3—24 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions and common medium distinct yellowish brown (10YR 5/6) masses of iron in the matrix; few fine rounded dark masses of iron-manganese oxide accumulation throughout; moderately acid; clear smooth boundary.

2Bt4—32 to 40 inches; light brownish gray (10YR 6/2) clay loam; moderate medium subangular blocky structure; firm; few distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) masses of iron in the matrix; few fine rounded dark masses of iron-manganese oxide accumulation throughout; slightly acid; clear smooth boundary.

2C—40 to 50 inches; yellowish brown (10YR 5/6) loam; weak coarse subangular blocky structure; firm; common medium prominent grayish brown (10YR 5/2) iron depletions and common faint strong brown (7.5YR 5/6) masses of iron in the matrix; neutral; clear smooth boundary.

2Cd—50 to 60 inches; yellowish brown (10YR 5/6) loam; massive; firm; common medium prominent grayish brown (10YR 5/2) iron depletions and common faint strong brown (7.5YR 5/6) masses of iron in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 22 to 40 inches
Depth to carbonates: 35 to 60 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E or BE horizon (where present):
Hue—10YR
Value—4 to 6
Chroma—2 or 3
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam

Content of rock fragments—none
Reaction—strongly acid to slightly acid

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture of the fine-earth fraction—clay loam, loam, or silty clay loam
Content of rock fragments—0 to 7 percent by volume
Reaction—moderately acid to slightly alkaline

2BC or 2C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture of the fine-earth fraction—clay loam or loam
Content of rock fragments—0 to 8 percent
Reaction—neutral to moderately alkaline

2Cd horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture of the fine-earth fraction—loam or silt loam
Content of rock fragments—2 to 14 percent by volume
Reaction—slightly alkaline or moderately alkaline

496A—Fincastle silt loam, 0 to 2 percent slopes

Setting

Landform: End moraines, ground moraines
Position on the landform: Summits

Map Unit Composition

Fincastle and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that are shallower to densic material
- Soils that have a thin layer of outwash between the loess and the till
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have more clay in the subsoil
- Soils that have a darker surface layer

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Fincastle Soil

Parent material: Loess 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: 40 to 70 inches to dense material
Available water capacity: About 10.0 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 the highest perched seasonal high water table: 1.0 foot, January through May
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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Flanagan Series

Taxonomic classification: Fine, smectitic, mesic Aquic Argiudolls

Typical Pedon

Flanagan silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a grass border of the University of Illinois experimental plots, at an elevation of 730 feet above mean sea level, in Champaign County, Illinois; about 1 mile south of Champaign on the University of Illinois South Farm; 1,607 feet east and 1,405 feet north of the southwest corner of sec. 19, T. 19 N., R. 9 E.; USGS Urbana, Illinois, topographic quadrangle; lat. 40 degrees 05 minutes 14 seconds N. and long. 88 degrees 13 minutes 57 seconds W.; UTM Zone 16T 0394924E 4437956N; NAD 27:

A1—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate medium granular structure; friable; slightly acid; gradual smooth boundary.
A2—8 to 15 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; slightly acid; clear smooth boundary.
A3—15 to 18 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly acid; clear smooth boundary.
Bt1—18 to 23 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few fine faint brown (10YR 4/3) masses of iron and manganese accumulation in the matrix; moderately acid; clear smooth boundary.
Bt2—23 to 32 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; common fine faint brown (10YR 5/3 and 4/3) masses of iron and manganese accumulation in the matrix; moderately acid; clear smooth boundary.
Bt3—32 to 38 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; common fine faint light yellowish brown (10YR 6/4) masses of iron and manganese accumulation and common fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; slightly acid; clear smooth boundary.

Bt4—38 to 45 inches; 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (10YR 6/2), and 30 percent brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; slightly acid; gradual smooth boundary.

2Bt5—45 to 49 inches; 35 percent yellowish brown (10YR 5/4), 35 percent light olive brown (2.5Y 5/4), and 30 percent light brownish gray (10YR 6/2) silt loam; weak coarse subangular blocky structure; firm; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; 5 percent fine gravel; neutral; abrupt smooth boundary.

2Cd—49 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; common fine and medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium prominent white (10YR 8/1) rounded weakly cemented calcium carbonate nodules throughout; 5 percent fine gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 45 to 60 inches
Depth to carbonates: 45 to 65 inches
Depth to the base of the argillic horizon: 45 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 6
Texture—silty clay loam, silt loam, or silty clay
Content of rock fragments—none
Reaction—moderately acid to neutral

2Bt or 2BCt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—loam, clay loam, silt loam, or silty clay loam
Content of rock fragments—1 to 15 percent
Reaction—slightly acid to slightly alkaline

2C or 2Cd horizons:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam or clay loam
Content of rock fragments—1 to 15 percent by volume
Reaction—slightly alkaline or moderately alkaline

154A—Flanagan silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines
Position on the landform: Summits

Map Unit Composition

Flanagan and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have a substratum of sandy loam
- Soils that have slightly thicker loess over the till
- Soils that have a water table at a depth of 2.0 to 3.5 feet

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Flanagan Soil

Parent material: Loess 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 9.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Harpster Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Calciaquolls

Typical Pedon

Harpster silty clay loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 740 feet above mean sea level, in Ford County, Illinois; 855 feet south and 70 feet west of the northeast corner of sec. 20, T. 23 N., R. 7 E.; USGS Gibson City West, Illinois, topographic quadrangle; lat. 40 degrees 26 minutes 24 seconds N. and long. 88 degrees 25 minutes 23 seconds W.; UTM Zone 16T 0379306E 4477356N; NAD 27:

Apk—0 to 9 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common very fine roots; many snail shells; strongly effervescent (20 percent calcium carbonate); moderately alkaline; abrupt smooth boundary.

Ak—9 to 18 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak fine and medium granular structure; firm; common very fine roots; many snail shells; strongly effervescent (18 percent calcium carbonate); moderately alkaline; clear smooth boundary.

Bg1—18 to 25 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium angular blocky structure; firm; common very fine roots; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; common fine distinct light olive brown (2.5Y 5/4) masses of iron and manganese accumulation in the matrix; few snail shells; slightly effervescent (7 percent calcium carbonate); moderately alkaline; gradual smooth boundary.

Bg2—25 to 31 inches; dark gray (5Y 4/1) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium angular blocky; firm; few very fine roots; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine prominent dark yellowish brown (10YR 4/4) and few fine distinct olive (5Y 4/4) masses of iron and manganese accumulation in the matrix; few snail shells; slightly effervescent (5 percent calcium carbonate); slightly alkaline; gradual smooth boundary.

Bg3—31 to 36 inches; dark gray (5Y 4/1) silty clay loam; weak coarse prismatic structure parting to weak medium angular blocky; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; common medium distinct olive (5Y 4/4) masses of iron and manganese accumulation and few fine prominent yellowish brown (10YR 5/6) masses of iron in the matrix; 2 percent gravel; slightly effervescent (2 percent calcium carbonate); slightly alkaline; gradual smooth boundary.

Bg4—36 to 41 inches; 40 percent olive brown (2.5Y 4/4), 35 percent olive yellow (2.5Y 6/6), and 25 percent gray (5Y 5/1) silty clay loam; weak coarse angular blocky structure; firm; few very fine roots; 2 percent gravel; slightly effervescent (2 percent calcium carbonate); slightly alkaline; gradual smooth boundary.

Cg1—41 to 56 inches; 55 percent gray (5Y 5/1), 40 percent light olive brown (2.5Y 5/6), and 5 percent dark yellowish brown (10YR 4/4) silt loam; massive; firm; 1 percent gravel; strongly effervescent (16 percent calcium carbonate); moderately alkaline; clear smooth boundary.

Cg2—56 to 60 inches; gray (10YR 5/1) loam, massive; friable; 5 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the loess or silty colluvium: 36 to 60 inches
Depth to carbonates: 0 to 8 inches
Depth to the base of the cambic horizon: 22 to 46 inches

Apk or Ak horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately alkaline

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N

Value—3 to 6
Chroma—0 to 2
Texture—silty clay loam, silt loam, clay loam, or loam
Content of rock fragments—0 to 3 percent
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—silt loam or loam
Content of rock fragments—0 to 3 percent
Reaction—moderately alkaline

67A—Harpster silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, ground moraines, lake plains
Position on the landform: Toeslopes

Map Unit Composition

Harpster and similar soils: 97 percent
Dissimilar soils: 3 percent

Similar soils:
- Soils that have more clay in the surface layer and subsoil
- Soils that do not have carbonates within a depth of 16 inches
- Soils that have a very thick dark surface layer

Dissimilar soils:
- The very poorly drained Peotone and Milford, undrained, soils in depressions

Properties and Qualities of the Harpster Soil

Parent material: Fine-silty colluvium over glacial drift
Drainage class: 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 12.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 6.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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 drained
Hydric soil status: Hydric

Hartsburg Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Hartsburg silty clay loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 571 feet above mean sea level, in Logan County, Illinois; about 4 miles southwest of Emden, Illinois; 660 feet west and 40 feet north of the southeast corner of sec. 23, T. 21 N., R. 4 W.; USGS New Holland, Illinois, topographic quadrangle; lat. 40 degrees 14 minutes 58 seconds N. and long. 89 degrees 31 minutes 28 seconds W.; UTM Zone 16T 0285283E 4458291N; NAD 27:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

A1—7 to 12 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate medium granular structure; friable; few very fine roots; slightly acid; clear smooth boundary.

A2—12 to 17 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate medium granular structure; firm; few very fine roots; few fine rounded black (7.5YR 2.5/1) weakly cemented iron and manganese oxide concretions with diffuse boundaries along root channels and pores; few fine distinct dark grayish brown (2.5Y 4/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bg—17 to 21 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium subangular blocky structure; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common very dark gray (10YR 3/1) krotovinas; few fine rounded black (7.5YR 2.5/1) weakly cemented iron and manganese oxide concretions with diffuse boundaries lining root channels and pores; common fine prominent yellowish brown (10YR 5/6) masses of iron in the matrix; neutral; clear smooth boundary.

Bkg—21 to 30 inches; gray (5Y 5/1) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (10YR 4/2) and grayish brown (2.5Y 5/2) pressure faces on faces of peds; common very dark gray (10YR 3/1) krotovinas; few fine rounded black (7.5YR 2.5/1) weakly cemented iron and manganese oxide concretions with diffuse boundaries lining root channels and pores; few fine and medium rounded white (10YR 8/1) weakly cemented calcium carbonate concretions throughout; common medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) masses of iron in the matrix; slightly effervescent; slightly alkaline; abrupt wavy boundary.

BCkg—30 to 34 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak coarse subangular blocky structure; firm; many distinct gray (N 5/0) and grayish brown (2.5Y 5/2) linings in pores and root channels; common very dark gray (10YR 3/1) krotovinas; few fine rounded black (7.5YR 2.5/1) weakly cemented iron and manganese oxide concretions with diffuse boundaries lining pores; many medium and coarse rounded white (10YR 8/1) weakly cemented calcium carbonate concretions throughout; many medium prominent yellowish brown (10YR 5/8) masses of iron in the matrix; violently effervescent among concretions, slightly effervescent in the matrix; slightly alkaline; clear wavy boundary.

Cg—34 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; massive; friable; common very dark gray 10YR 3/1) krotovinas; few medium rounded white (10YR 8/1) weakly cemented calcium carbonate concretions throughout; many medium prominent strong brown (7.5YR 5/8) masses of iron with diffuse boundaries lining pores; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the loess: More than 40 inches
Depth to carbonates: 15 to 35 inches
Depth to the base of the cambic horizon: 24 to 50 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—typically none
Reaction—slightly acid to slightly alkaline

Bg and Bkg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 5
Chroma—1 or 2
Texture—silty clay loam or silt loam
Content of rock fragments—typically none
Reaction—neutral to moderately alkaline

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam or loam
Content of rock fragments—0 to 7 percent
Reaction—slightly alkaline or moderately alkaline

244A—Hartsburg silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, ground moraines
Position on the landform: Toeslopes

Map Unit Composition

Hartsburg and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a thicker dark surface layer
- Soils that have more clay in the surface layer and subsoil
- Soils that have carbonates within a depth of 15 inches
- Soils that do not have carbonates within a depth of 35 inches

Dissimilar soils:
- Soils that are moderately well drained; on rises
- The very poorly drained Peotone and Milford, undrained, soils in depressions

Properties and Qualities of the Hartsburg Soil

Parent material: Loess over silty lacustrine deposits
Drainage class: 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 10.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 6.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Surface runoff class: Negligible
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

Harvard Series

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

Typical Pedon

Harvard silt loam, 2 to 5 percent slopes, on a slope of 3 percent, in a cultivated field, at an elevation of 667 feet above mean sea level, in Edgar County, Illinois, about one-half mile west of Brocton; 800 feet north and 2,050 feet east of the southwest corner of sec. 26, T. 15 N., R. 14 W.; USGS Brocton, Illinois, topographic quadrangle; lat. 39 degrees 43 minutes 03.02 seconds N. and long. 87 degrees 56 minutes 25.79 seconds W.; UTM Zone 16S 0419387E 4396617N; NAD 27:

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; few very fine roots; slightly acid; abrupt smooth boundary.
Bt1—9 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine and fine subangular blocky structure; friable; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; abrupt smooth boundary.
Bt2—12 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
Bt3—17 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; abrupt smooth boundary.
2Bt4—26 to 31 inches; dark yellowish brown (10YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; clear smooth boundary.
2BC—31 to 38 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; few distinct brown (10YR 4/3) clay films in pores; moderately acid; gradual wavy boundary.

2C—38 to 65 inches; brownish yellow (10YR 6/6) and dark yellowish brown (10YR 4/6), stratified sandy loam and loamy sand; massive; very friable; few very fine roots; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 24 to 40 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: More than 35 inches

Ap or A horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

2Bt or 2BC horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, loam, sandy clay loam, or sandy loam
Content of rock fragments—0 to 6 percent
Reaction—moderately acid to slightly alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 to 6
Texture—commonly stratified loam, sandy clay loam, very fine sandy loam, and sandy loam and thin bands of loamy sand
Content of rock fragments—0 to 12 percent
Reaction—moderately acid to slightly alkaline

344B—Harvard silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Summits and backslopes

Map Unit Composition

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

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that are eroded
- Soils that have slopes of more than 5 percent
- Soils that have a lighter colored surface layer

Dissimilar soils:
- The somewhat poorly drained Kendall soils on toeslopes
- Soils that are severely eroded
- The poorly drained Brooklyn soils on toeslopes and in swales

Properties and Qualities of the Harvard Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
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

Kendall Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs

Typical Pedon

Kendall silt loam, 0 to 2 percent slopes, in a nearly level area, in a cultivated field, at an elevation of 650 feet above mean sea level, in Douglas County, Illinois; 1,160 feet north and 400 feet west of the center of sec. 36, T. 15 N., R. 10 E.; USGS Oakland, Illinois, topographic quadrangle; lat. 39 degrees 42 minutes 24 seconds N. and long. 88 degrees 02 minutes 17 seconds W.; UTM Zone 16T 0411011E 4395506N; NAD 27:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many very fine and fine roots; few fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; neutral; abrupt smooth boundary.

E—7 to 11 inches; grayish brown (10YR 5/2) silt loam; moderate fine and medium granular structure; friable; many very fine and fine roots; common fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

BE—11 to 14 inches; brown (10YR 5/3) silty clay loam; moderate fine subangular blocky structure; firm; many very fine and fine roots; common fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

Btg1—14 to 25 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine and fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; common fine faint brown (10YR 5/3) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

Btg2—25 to 41 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few very fine and fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; common medium prominent yellowish brown (10YR 5/6) masses of iron in the matrix; moderately acid; clear smooth boundary.

Btg3—41 to 51 inches; 55 percent yellowish brown (10YR 5/6) and 45 percent gray (5Y 5/1) silty clay loam; weak medium prismatic structure parting to weak coarse subangular blocky; firm; few very fine and fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; few medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

2Btg4—51 to 58 inches; 40 percent strong brown (7.5YR 5/6), 30 percent yellowish brown (10YR 5/6), and 30 percent gray (5Y 5/1) loam; weak coarse subangular blocky structure; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds; common fine and medium rounded black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; about 5 percent fine gravel; neutral; clear smooth boundary.

2Cg1—58 to 74 inches; 45 percent yellowish brown (10YR 5/6), 45 percent gray (5Y 5/1), and 10 percent strong brown (7.5YR 5/6), stratified loam, sandy loam, and silt loam; massive; friable; about 5 percent fine gravel; slightly alkaline; abrupt smooth boundary.

2Cg2—74 to 80 inches; 60 percent grayish brown (10YR 5/2), 30 percent gray (10YR 5/1), and 20 percent yellowish brown (10YR 5/6), stratified gravelly loam, gravelly sandy loam, and silt loam; massive; friable; about 16 percent gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the loess: 40 to 60 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: More than 40 inches

Ap or A horizon:
Hue—10YR
Value—2 to 5; 2 or 3 in horizons less than 7 inches thick
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E or Eg horizon:
Hue—10YR or 2.5Y

Value—4 to 7
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

BE or BEg horizon (where present):
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Btg horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

2Btg or 2BC horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—loam, clay loam, silt loam, or sandy loam
Content of rock fragments—less than 15 percent
Reaction—strongly acid to slightly alkaline

2C horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—stratified silt loam, loam, sandy loam, clay loam, silty clay loam, or sandy clay loam or the gravelly analogs of these textures
Content of rock fragments—less than 15 percent
Reaction—neutral to moderately alkaline

242A—Kendall silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces
Position on the landform: Summits and footslopes

Map Unit Composition

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

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have less than 40 inches of loess over the loamy outwash
- Soils that are subject to very rare flooding

Dissimilar soils:
- The poorly drained Drummer and Brooklyn soils in swales

- The well drained Camden and Martinsville soils on sideslopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Kendall Soil

Parent material: Loess over stratified loamy outwash
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 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 0.5 foot, January through May
Ponding: None
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: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

Kernan Series

Taxonomic classification: Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs
Taxadjunct features: The Kernan soils in this survey area have less expansive clay 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 fine, smectitic, mesic Aeric Epiaqualfs.

Typical Pedon

Kernan silt loam, 2 to 5 percent slopes, on a slope of 3 percent, in a pasture, at an elevation of 632 feet above mean sea level, in La Salle County, Illinois, about 1 mile south of North Utica, Illinois; 1,400 feet north and 120 feet west of the southeast corner of sec. 21, T. 33 N., R. 2 E.; USGS Starved Rock, Illinois, topographic quadrangle; lat. 41 degrees 18 minutes 45 seconds N. and long. 88 degrees 59 minutes 29 seconds W.; UTM Zone 16T 0333306E 4575149N; NAD 27:

Ap—0 to 5 inches; dark gray (10YR 4/1) silt loam, gray (10YR 6/1) dry; weak medium granular structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.
E—5 to 12 inches; light brownish gray (10YR 6/2) silt loam, very pale brown (10YR 8/2) dry; moderate medium platy structure; friable; common very fine and fine roots; neutral; abrupt wavy boundary.
Btg—12 to 20 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium angular blocky structure; friable; common fine roots; very few faint light brownish gray (10YR 6/2) silt coats on faces of peds; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few fine black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; common fine

and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly acid; gradual wavy boundary.

Bt1—20 to 29 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium prismatic structure; friable; common very fine and fine roots; very few distinct very dark grayish brown (10YR 3/2) organo-clay films along root channels and pores; common faint dark grayish brown (10YR 4/2) clay films on faces of peds and along pores; common medium brown (7.5YR 4/4) very weakly cemented iron-manganese oxide concretions throughout; few fine black (10YR 2/1) very weakly cemented iron-manganese oxide concretions throughout; common medium and coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; strongly acid; gradual wavy boundary.

Bt2—29 to 36 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine and fine roots; very few distinct very dark gray (10YR 3/1) organo-clay films along root channels and pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds and along pores; common medium brown (7.5YR 4/4) very weakly cemented iron-manganese oxide concretions throughout; common medium black (10YR 2/1) very weakly cemented iron-manganese oxide concretions throughout; many medium distinct brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; common medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; moderately acid; clear wavy boundary.

2Btg—36 to 40 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; firm; few very fine and fine roots; few distinct very dark gray (10YR 3/1) organo-clay films along root channels and pores; common distinct dark gray (10YR 4/1) clay films on faces of peds; common medium brown (7.5YR 4/4) very weakly cemented iron-manganese oxide concretions throughout; common medium black (10YR 2/1) very weakly cemented iron-manganese oxide concretions throughout; many medium prominent yellowish brown (10YR 5/6) masses of iron in the matrix; 4 percent gravel; neutral; gradual wavy boundary.

2BC—40 to 43 inches; 60 percent light olive brown (2.5Y 5/3) and 40 percent olive gray (5Y 5/2) silty clay loam; weak medium and coarse subangular blocky structure; firm; few medium strong brown (7.5YR 5/6) very weakly cemented iron and manganese oxide concretions throughout; few fine medium black (10YR 2/1) very weakly cemented iron-manganese oxide concretions throughout; common medium prominent brownish yellow (10YR 6/6) masses of iron in the matrix; 2 percent gravel; slightly alkaline; clear wavy boundary.

2Cd—43 to 60 inches; 90 percent brown (10YR 5/3) and 10 percent olive gray (5Y 5/2) silty clay; massive; very firm; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common medium very pale brown (10YR 8/2) soft carbonate masses; common medium distinct yellowish brown (10YR 5/6) masses of iron in the matrix; 1 percent gravel; very strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 35 to 55 inches
Depth to carbonates: 35 to 55 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5; 3 in horizons less than 7 inches thick
Chroma—2 or 3
Texture—silt loam

Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—strongly acid to neutral

2Btg or 2BC horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or silty clay loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

2Cd horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or clay
Content of rock fragments—none
Reaction—slightly alkaline or moderately alkaline

554A—Kernan silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains, lake plains
Position on the landform: Summits

Map Unit Composition

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

Similar soils:
- Soils that have a darker surface layer
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have less than 35 inches of loess over lacustrine sediments

Dissimilar soils:
- The poorly drained Milford soils in swales

Properties and Qualities of the Kernan Soil

Parent material: Loess over silty and clayey lacustrine deposits and/or clayey till
Drainage class: Somewhat poorly drained

Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 40 to 60 inches to dense material
Available water capacity: About 8.9 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 the highest perched seasonal high water table: 0.5 foot, January through May
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: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

554B—Kernan silt loam, 2 to 5 percent slopes

Setting

Landform: Till plains, lake plains
Position on the landform: Shoulders and summits

Map Unit Composition

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

Similar soils:
- Soils that have a darker surface layer
- Soils that have a thinner subsoil
- Soils that are eroded
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have less than 35 inches of loess over the till

Dissimilar soils:
- The poorly drained Milford soils in swales

Properties and Qualities of the Kernan Soil

Parent material: Loess over silty and clayey lacustrine deposits and/or clayey till
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: 40 to 60 inches to dense material
Available water capacity: About 8.9 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 the highest perched seasonal high water table: 0.5 foot, January through May
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: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

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

Martinsville Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Martinsville silt loam, 2 to 5 percent slopes, at an elevation of about 695 feet above mean sea level, in Champaign County, Illinois; about 250 feet south and 1,430 feet east of the northwest corner of sec. 36, T. 21 N., R. 7 E.; USGS Rising, Illinois, topographic quadrangle; lat. 40 degrees 14 minutes 14 seconds N. and long. 88 degrees 21 minutes 37 seconds W.; UTM Zone 16T 0384285E 4454764N; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak very fine and fine granular structure; friable; common very fine roots; moderately acid; abrupt smooth boundary.

BE—9 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate fine angular blocky structure; friable; common very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt1—12 to 19 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium prismatic structure parting to strong fine angular blocky; firm; common very fine roots; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; common distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; moderately acid; clear smooth boundary.

Bt2—19 to 28 inches; strong brown (7.5YR 4/6) clay loam; weak medium prismatic structure parting to strong medium angular blocky; firm; many very fine roots; many distinct dark brown (7.5YR 3/4) clay films on faces of peds and in pores; few fine faint yellowish brown (10YR 5/6) masses of iron in the matrix; few fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

Bt3—28 to 36 inches; strong brown (7.5YR 4/6) sandy clay loam; moderate medium and coarse angular blocky structure; firm; common very fine roots; many distinct dark brown (7.5YR 3/4) clay films on faces of peds and in pores; few fine faint yellowish brown (10YR 5/6) masses of iron in the matrix; few fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

Bt4—36 to 45 inches; yellowish brown (10YR 5/4) sandy clay loam; weak coarse angular blocky structure; firm; few very fine roots; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; common fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; abrupt smooth boundary.

Bt5—45 to 57 inches; yellowish brown (10YR 5/4), stratified silt loam; weak coarse angular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; common fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; abrupt smooth boundary.

BCt—57 to 69 inches; yellowish brown (10YR 5/4), stratified silt loam, loam, and sandy loam; weak coarse angular blocky structure; friable; few distinct brown (10YR 4/3) clay films on vertical faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron in the matrix; common fine faint pale brown (10YR 6/3) iron depletions in the matrix; common fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

BC—69 to 80 inches; light yellowish brown (10YR 6/4), stratified loam and sandy loam; massive; friable; slightly acid.

Range in Characteristics

Thickness of the loess: Less than 20 inches
Depth to carbonates: 40 to 80 inches
Depth to the base of the argillic horizon: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5; 3 in A horizons less than 6 inches thick
Chroma—2 to 6
Texture—silt loam or loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E or BE horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—3 to 6
Texture—loam, clay loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to neutral

BCt, BC, C, or 2C horizon:
Hue—10YR
Value—3 to 6
Chroma—3 to 6
Texture—fine sandy loam, sandy loam, loam, or silt loam; stratified in some pedons
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to moderately alkaline

570B—Martinsville silt loam, 2 to 5 percent slopes

Setting

Landform: Stream terraces, outwash plains
Position on the landform: Summits and backslopes

Map Unit Composition

Martinsville and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that are eroded
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that have more than 18 inches of loess over the outwash
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are severely eroded
- The somewhat poorly drained Kendall and Starks soils on toeslopes and in swales
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales

Properties and Qualities of the Martinsville Soil

Parent material: Thin loess over loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate or moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and 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

570C2—Martinsville loam, 5 to 10 percent slopes, eroded

Setting

Landform: Stream terraces, outwash plains
Position on the landform: Backslopes

Map Unit Composition

Martinsville and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are severely eroded
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales
- The poorly drained Sawmill soils on flood plains
- The somewhat poorly drained Kendall and Starks soils on toeslopes and in swales

Properties and Qualities of the Martinsville Soil

Parent material: Loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate or moderately rapid
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: 1.0 to 2.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
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: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

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

570D2—Martinsville loam, 10 to 18 percent slopes, eroded

Setting

Landform: Stream terraces, outwash plains
Position on the landform: Backslopes

Map Unit Composition

Martinsville and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have less sand in the substratum
- Soils that have a water table at a depth of 3.5 to 6.0 feet
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are severely eroded
- Soils that are underlain by till or lacustrine material within a depth of 40 inches
- The somewhat poorly drained Kendall and Starks soils on toeslopes and in swales
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Martinsville Soil

Parent material: Loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate or moderately rapid
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: 1.0 to 2.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
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

Medway Series

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluvaquentic Hapludolls

Typical Pedon

Medway loam, 0 to 2 percent slopes, occasionally flooded, on a slope of 1 percent, in a cultivated field, at an elevation of 528 feet above mean sea level, in Shelby County, Illinois, about 1.5 miles northeast of Cowden; 940 feet north and 1,100 feet west of the southeast corner of sec. 35, T. 10 N., R. 3 E.; USGS Fancher, Illinois, topographic quadrangle; lat. 39 degrees 15 minutes 45.1 seconds N. and long. 88 degrees 49 minutes 40.6 seconds W.; UTM Zone 16S 0342292E 4347294N; NAD 27:

Ap—0 to 7 inches; black (10YR 2/1) loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

A—7 to 18 inches; very dark gray (10YR 3/1) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common fine and very fine roots; many distinct black (10YR 2/1) organic coats on faces of peds; neutral; clear smooth boundary.

Bw1—18 to 22 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; common very fine roots; common distinct very dark gray (10YR

3/1) organic coats on faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bw2—22 to 33 inches; brown (10YR 4/3) loam; weak coarse subangular blocky structure; friable; common very fine roots; common faint dark brown (10YR 3/3) coats on vertical faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions; common fine distinct dark yellowish brown (10YR 4/6) and few fine faint dark yellowish brown (10YR 3/4) masses of iron and manganese accumulation in the matrix; common medium and few coarse rounded iron-manganese oxide concretions throughout; neutral; clear smooth boundary.

Bw3—33 to 44 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; few very fine roots; common faint brown (10YR 4/3) coats on vertical faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium and few coarse rounded iron-manganese oxide concretions throughout; 2 percent fine gravel; neutral; clear smooth boundary.

C1—44 to 56 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; massive; friable; common faint brown (10YR 4/3) coats on cleavage planes; few fine distinct dark yellowish brown (10YR 4/6) masses of iron and manganese oxides in the matrix; common medium rounded iron-manganese oxide concretions throughout; neutral; clear smooth boundary.

C2—56 to 60 inches; dark yellowish brown (10YR 4/4) loam that has thin strata of sandy loam; massive; friable; common faint brown (10YR 4/3) coats on cleavage planes; common medium distinct grayish brown (10YR 5/2) iron depletions; common medium distinct dark yellowish brown (10YR 4/6) and common fine distinct dark yellowish brown (10YR 3/6) masses of iron and manganese accumulation in the matrix; few fine and medium rounded iron-manganese oxide concretions throughout; 2 percent fine gravel; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: More than 30 inches
Depth to the base of the cambic horizon: More than 28 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—loam or silt loam
Content of rock fragments—0 to 5 percent
Reaction—slightly acid to slightly alkaline

BC or C horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 4
Texture—stratified sandy loam, loam, gravelly sandy loam, or clay loam
Content of rock fragments—0 to 20 percent
Reaction—slightly acid to moderately alkaline

8682A—Medway loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flood-plain steps, stream terraces

Map Unit Composition

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

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have more development in the subsoil
- Soils that have a thinner dark surface layer
- Soils that are flooded more frequently than once every 2 years

Dissimilar soils:
- The well drained Camden and Martinsville soils on rises
- Soils that remain wet or ponded for extended periods; in swales
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Medway Soil

Parent material: Loamy 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 8.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: Low
Depth and months of the highest apparent seasonal high water table: 1.5 feet, February through April
Ponding: None
Frequency and most likely period of flooding: Occasional, November through June
Potential for frost action: Moderate
Hazard of corrosion: Moderate 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
Hydric soil status: Not hydric

Milford Series

Taxonomic classification: Fine, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Milford silty clay loam, in an area of Drummer-Milford silty clay loams, 0 to 2 percent slopes, in a cultivated field, at an elevation of 646 feet above mean sea level, in Moultrie County, Illinois; 1,170 feet north and 1,605 feet west of the southeast corner of sec. 20, T. 13 N., R. 6 E.; USGS Sullivan, Illinois, topographic quadrangle; lat. 39

degrees 33 minutes 10.7 seconds N. and long. 88 degrees 33 minutes 09.7 seconds W.; UTM Zone 16S 0366596E 4379086N; NAD 27:

Ap—0 to 9 inches; black (2.5Y 2.5/1) silty clay loam; moderate fine subangular blocky structure parting to moderate fine granular; friable; common very fine and fine roots throughout; slightly acid; abrupt smooth boundary.

A—9 to 14 inches; very dark gray (2.5Y 3/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots throughout; many distinct black (2.5Y 2.5/1) organo-clay films on vertical faces of peds; common fine and medium faint dark gray (2.5Y 4/1) iron depletions in the matrix; neutral; clear wavy boundary.

Btg1—14 to 25 inches; gray (10YR 5/1) silty clay; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots throughout; many distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine and medium prominent yellowish brown (10YR 5/6) masses of iron and few medium distinct yellowish brown (10YR 5/4) masses of iron and manganese oxides in the matrix; neutral; clear wavy boundary.

Btg2—25 to 45 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots throughout and on faces of peds; many distinct gray (2.5Y 5/1) clay films, common distinct dark gray (10YR 4/1) clay films, and few distinct very dark gray (10YR 3/1) organo-clay films on faces of peds; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron in the matrix; neutral; clear wavy boundary.

2Btg3—45 to 75 inches; 85 percent grayish brown (10YR 5/2) and 15 percent yellowish brown (10YR 5/6), stratified silt loam; weak coarse prismatic structure; firm; few very fine and fine roots throughout; common distinct gray (10YR 5/1) clay films on faces of peds and few prominent black (2.5Y 2.5/1) organo-clay films lining root channels and pores; few fine prominent black (2.5Y 2.5/1) masses of iron-manganese oxides in the matrix; slightly alkaline; abrupt wavy boundary.

2BCg—75 to 93 inches; gray (2.5Y 6/1) silt loam; weak very coarse prismatic structure; firm; few very fine roots throughout; many prominent black (2.5Y 2.5/1) organo-clay films lining root channels and pores; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the loess or silty lacustrine deposits: 40 to 60 inches
Depth to carbonates: More than 60 inches
Depth to the base of the cambic horizon: More than 36 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 to 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay or silty clay loam
Content of rock fragments—0 to 1 percent
Reaction—slightly acid to slightly alkaline

2Btg and 2BCg horizons:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silt loam or clay loam
Content of rock fragments—0 to 5 percent
Reaction—slightly acid to moderately alkaline

69A—Milford silty clay loam, 0 to 2 percent slopes

Setting

Landform: Lake plains
Position on the landform: Toeslopes

Map Unit Composition

Milford and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have more sand in the subsoil
- Soils that have a thin dark surface layer
- Soils that have carbonates within a depth of 40 inches
- Soils that have less clay in the subsoil
- Soils that have a thicker dark surface soil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Milford Soil

Parent material: Silty and clayey lacustrine deposits
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 6.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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: Moderate

Interpretive Groups

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

722A—Drummer-Milford silty clay loams, 0 to 2 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Toeslopes

Map Unit Composition

Drummer and similar soils: 60 percent
Milford and similar soils: 35 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that are somewhat poorly drained; on rises
- Soils that have a thin dark surface layer
- Soils that have carbonates within a depth of 40 inches
- Soils that have a thicker dark surface soil and more clay in the subsoil
- Soils that have a loamy surface layer or subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that have a thin, light-colored surface layer
- The somewhat poorly drained Brenton soils in the slightly higher landscape positions
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Drummer Soil

Parent material: Loess over stratified loamy outwash
Drainage class: 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 9.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: 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

Properties and Qualities of the Milford Soil

Parent material: Loess over silty and clayey lacustrine deposits
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderate
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: 4.5 to 6.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May

Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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: Moderate

Interpretive Groups

Land capability classification: Drummer—2w; Milford—2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Drummer—hydric; Milford—hydric

747A—Milford silty clay loams, 0 to 2 percent slopes

Setting

Landform: Depressions

Map Unit Composition

Milford, undrained, and similar soils: 55 percent
Milford, drained, and similar soils: 40 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a dense layer of silty clay below a depth of 60 inches
- Soils that have a surface layer of silt loam
- Soils that have more sand in the subsoil
- Soils that have carbonates within a depth of 40 inches
- Soils that have a thicker dark surface soil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that have more than 20 inches of muck overlying the mineral soil
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Undrained Milford Soil

Parent material: Silty and clayey lacustrine deposits
Drainage class: Very poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Very slow to moderate
Depth to restrictive feature: 40 to 80 inches to dense material
Available water capacity: About 10.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 5.0 to 15.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface (all year)
Ponding depth: Up to 0.5 foot (all year)
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Surface runoff class: Negligible
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Negligible

Properties and Qualities of the Drained Milford Soil

Parent material: Lacustrine deposits
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 6.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Flooding: None
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: Moderate

Interpretive Groups

Land capability classification: Milford, undrained—5w; Milford, drained—2w
Prime farmland category: Not prime farmland
Hydric soil status: Milford, undrained—hydric; Milford, drained—hydric

Millbrook Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Udollic Endoaqualfs
Taxadjunct features: The Millbrook soils in this survey area are better drained 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 fine-silty, mixed, superactive, mesic Aquollic Hapludalfs.

Typical Pedon

Millbrook silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a cultivated field, at an elevation of about 660 feet above mean sea level, in Champaign County, Illinois; 55 feet north and 2,240 feet west of the southeast corner of sec. 36, T. 17 N., R. 9 E.; USGS Villa Grove NW, Illinois, topographic quadrangle; lat. 39 degrees 52 minutes 49 seconds N. and long. 88 degrees 07 minutes 51 seconds W.; UTM Zone 16S 0403300E 4414871N; NAD 27:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; few fine rounded black (7.5YR 2.5/1) very weakly cemented manganese oxide nodules throughout; neutral; abrupt smooth boundary.

E—7 to 14 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium platy structure parting to moderate medium granular; friable; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine rounded black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; many fine faint brown (10YR 4/3) masses of iron and manganese and few fine prominent yellowish brown (10YR 5/6) masses of iron in the matrix; neutral; clear smooth boundary.

Bt—14 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds and in pores; few medium irregular black (7.5YR 2.5/1) very weakly cemented manganese oxide nodules throughout; few fine distinct yellowish brown (10YR 5/8) masses of iron in the matrix; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

Btg1—21 to 35 inches; 70 percent gray (10YR 5/1) and 30 percent yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds and in pores; common medium irregular black (7.5YR 2.5/1) very weakly cemented manganese oxide nodules throughout; moderately acid; clear smooth boundary.

2Btg2—35 to 44 inches; gray (10YR 5/1) clay loam; moderate medium prismatic structure; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organo-clay films in pores; few medium irregular black (7.5YR 2.5/1) very weakly cemented manganese oxide nodules throughout; many coarse prominent yellowish brown (10YR 5/6) masses of iron in the matrix; slightly acid; clear smooth boundary.

2BCg—44 to 55 inches; 60 percent gray (10YR 5/1) and 40 percent yellowish brown (10YR 5/4), stratified clay loam and sandy loam; weak medium prismatic structure; friable; few medium irregular black (7.5YR 2.5/1) manganese oxide coats on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses of iron in the matrix; 10 percent fine gravel in the clay loam strata; neutral; clear smooth boundary.

2Cg1—55 to 73 inches; 60 percent gray (10YR 5/1) and 40 percent yellowish brown (10YR 5/4) sandy loam stratified with thin lenses of coarse sand; massive; very friable; 5 percent fine gravel; neutral; abrupt smooth boundary.

2Cg2—73 to 80 inches; 60 percent pale brown (10YR 6/3) and 40 percent light brownish gray (10YR 6/2) sandy loam; massive; very friable; 5 percent fine gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 24 to 40 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR
Value—4 to 6
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—silty clay loam or silt loam

Content of rock fragments—none
Reaction—strongly acid to neutral

2Btg or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—sandy loam, sandy clay loam, loam, or clay loam; typically with thin strata of sand or silt loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to slightly alkaline

2Cg horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture—stratified sandy loam, loam, clay loam, sandy clay loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—neutral to moderately alkaline

219A—Millbrook silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, outwash terraces
Position on the landform: Footslopes and summits

Map Unit Composition

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

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have slopes of more than 2 percent
- Soils that are subject to very rare flooding
- Soils that have more than 40 inches of loess over the loamy outwash

Dissimilar soils:
- The poorly drained Drummer soils in swales
- The poorly drained Brooklyn soils on toeslopes
- The well drained Camden and Harvard soils on side slopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Millbrook Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderate
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 3.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

MW—Miscellaneous water

- This map unit consists of manmade areas that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Mona Series

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Oxyaquic Argiudolls
Taxadjunct features: The Mona soils in this survey area have a lighter colored surface layer 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 fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs.

Typical Pedon

Mona loam, 5 to 10 percent slopes, severely eroded, on a slope of 6 percent, in a cultivated field, at an elevation of 633 feet above mean sea level, in Douglas County, Illinois; about 950 feet east and 900 feet south of the northwest corner of sec. 17, T. 15 N., R. 9 E.; USGS Villa Grove, Illinois, topographic quadrangle; lat. 39 degrees 45 minutes 03.7 seconds N. and long. 88 degrees 13 minutes 45.2 seconds W.; UTM Zone 16S 0394689E 4400636N; NAD 27:

Ap—0 to 8 inches; mixed very dark grayish brown (10YR 3/2) and brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; moderately acid; abrupt smooth boundary.
Bt1—8 to 20 inches; brown (10YR 4/3) clay loam; moderate fine and medium subangular blocky structure; firm; common distinct brown (10YR 4/3) clay films on faces of peds; neutral; clear smooth boundary.
Bt2—20 to 26 inches; dark grayish brown (10YR 4/2) sandy clay loam; weak coarse subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; many coarse distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; few iron-manganese concretions throughout; neutral; abrupt smooth boundary.
2BC—26 to 31 inches; light olive brown (2.5Y 5/4) silty clay loam; weak coarse angular blocky structure; firm; many coarse faint yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; few iron-manganese concretions throughout; neutral; clear smooth boundary.
2Cg—31 to 46 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse angular blocky structure; very firm; common medium faint olive gray (5Y 5/2) iron depletions in the matrix; common fine carbonate concretions throughout; slightly alkaline; abrupt smooth boundary.
3Cd—46 to 60 inches; olive brown (2.5Y 4/4), gray (5Y 5/1), and gray (5Y 6/1) silty clay; massive; very firm; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the dark surface layer: 0 to 4 inches
Thickness of the loess or silty lacustrine deposits: 0 to 24 inches
Depth to carbonates: 26 to 54 inches
Depth to the base of the argillic horizon: 30 to 54 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—loam or clay loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to slightly alkaline

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—2 or 3
Texture—clay loam or sandy clay loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to neutral

2BC, 2C, or 2Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or clay loam
Content of rock fragments—0 to 10 percent
Reaction—neutral to moderately alkaline

3Cd horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or clay
Content of rock fragments—none
Reaction—slightly alkaline or moderately alkaline

448C3—Mona loam, 5 to 10 percent slopes, severely eroded

Setting

Landform: Ground moraines, lake plains
Position on the landform: Backslopes

Map Unit Composition

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

Similar soils:
- Soils that have a thicker dark surface layer
- Soils that have a subsoil of clay
- Soils that have a surface layer of silt loam, clay loam, or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- The poorly drained Milford soils in swales
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The somewhat poorly drained Kernan and Rutland soils on shoulders and summits in positions higher than those of the Mona soil

Properties and Qualities of the Mona Soil

Parent material: Outwash over silty and clayey lacustrine deposits and/or clayey till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 30 to 54 inches to dense material
Available water capacity: About 5.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.5 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 2.0 feet, February through April
Ponding: None
Flooding: None
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: Moderate
Hazard of corrosion: High 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: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Octagon Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Mollic Oxyaquic Hapludalfs

Typical Pedon

Octagon silt loam, 5 to 10 percent slopes, eroded, on a slope of 5 percent, in a cultivated field, at an elevation of 676 feet above mean sea level, in Douglas County, Illinois; 455 feet north and 2,161 feet east of the southwest corner of sec. 22, T. 16 N., R. 10 E.; USGS Murdock, Illinois, topographic quadrangle; lat. 39 degrees 49 minutes 21.1 seconds N. and long. 88 degrees 03 minutes 28.7 seconds W.; UTM Zone 16S 0409456E 4408385N; NAD 27:

Ap—0 to 8 inches; 80 percent very dark grayish brown (10YR 3/2) silt loam mixed with 20 percent dark yellowish brown (10YR 4/4) silty clay loam; brown (10YR 5/3) dry; moderate fine granular structure; friable; many roots; neutral; abrupt smooth boundary.
Bt1—8 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine and fine subangular blocky structure; firm; few roots; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
Bt2—12 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; firm; few roots; common distinct brown (10YR 4/3) clay films on faces of peds; few fine pebbles; strongly acid; clear smooth boundary.
Bt3—23 to 33 inches; brown (10YR 5/3) clay loam; weak coarse subangular blocky structure; firm; few roots; common distinct brown (10YR 4/3) clay films on faces of

peds; common medium distinct grayish brown (2.5Y 5/2) iron depletions throughout; few iron-manganese oxide concretions throughout; few small pebbles; moderately acid; clear smooth boundary.

BCt—33 to 37 inches; light olive brown (2.5Y 5/4) clay loam; weak coarse subangular blocky structure; firm; few roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine faint grayish brown (2.5Y 5/2) iron depletions throughout; few iron-manganese oxide concretions throughout; few small pebbles; slightly acid; clear smooth boundary.

C—37 to 47 inches; light olive brown (2.5Y 5/4) loam; massive; friable; few fine faint grayish brown (2.5Y 5/2) iron depletions throughout; few small pebbles; slightly effervescent; slightly alkaline; clear smooth boundary.

Cd—47 to 60 inches; light olive brown (2.5Y 5/4) loam; massive; firm; few fine faint grayish brown (2.5Y 5/2) iron depletions throughout; few small pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 0 to 18 inches
Depth to carbonates: 24 to 40 inches
Depth to the base of the argillic horizon: 27 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—0 to 4 percent
Reaction—moderately acid to neutral

Bt or BCt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, loam, silty clay loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to neutral

C or Cd horizon:
Hue—10YR, 7.5YR, or 2.5Y
Value—5 or 6
Chroma—3 or 4
Texture—loam
Content of rock fragments—2 to 10 percent
Reaction—slightly alkaline or moderately alkaline

656C2—Octagon silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Till plains, ground moraines, end moraines
Position on the landform: Shoulders and backslopes

Map Unit Composition

Octagon and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that are shallow to carbonates
- Soils that are severely eroded
- Soils that have a thicker dark surface layer
- Soils that have a lighter colored surface layer

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Octagon Soil

Parent material: Thin loess over till
Drainage class: Moderately 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: 30 to 60 inches to dense material
Available water capacity: About 7.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 1.5 feet, February through April
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
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

802D—Orthents, loamy, rolling

General Description

- This map unit is in areas where soil material has been excavated and redeposited during sand and gravel mining operations, road construction, dam building, or other activities requiring mass disturbance of earthy material. Typically, the surface layer is clay loam about 10 inches thick. The underlying material to a depth of 60 inches or more is clay loam, silty clay loam, or loam.

Setting

Landform: Ground moraines or stream terraces
Position on the landform: Backslopes

Map Unit Composition

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

Similar soils:
- Soils in areas previously used for landfill
- Soils that are subject to very rare flooding

Dissimilar components:
- The well drained Camden and Martinsville soils in undisturbed areas
- Ponded soils in pits and depressions
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales
- The poorly drained Sawmill soils on flood plains
- Urban land

Properties and Qualities of the Loamy Orthents

Parent material: Earthy cut and fill material
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow to moderate
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 2.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: 3.3 feet, February through April
Flooding: None
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

Interpretive Groups

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

809F—Orthents, loamy-skeletal, acid, steep

General Description

- This map unit consists of soils that have been extensively modified by cutting, filling, and leveling. These soils are near Murdock, Illinois. The area is the site of an inactive coal mine and has been used to stockpile overburden and mine tailings. Typically, the surface layer is gravelly loam about 3 inches thick. The underlying material to a depth of about 60 inches is very channery loam, very channery sandy clay loam, or very channery clay loam.

Setting

Landform: Mine spoil

Map Unit Composition

Orthents, loamy-skeletal, and similar soils: 98 percent
Dissimilar soils: 2 percent

Similar soils:
- Soils that have fewer rock fragments in the subsoil and substratum

Dissimilar soils:
- Ponded soils in pits and depressions
- Soils that are less acid throughout

Properties and Qualities of the Loamy-Skeletal 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 4.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Surface runoff class: High
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

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

Peotone Series

Taxonomic classification: Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Typical Pedon

Peotone silty clay loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 692 feet above mean sea level, in Macon County, Illinois; 310 feet north and 2,435 feet west of the center of sec. 13, T. 14 N., R. 3 E.; USGS Dalton City, Illinois, topographic quadrangle; lat. 39 degrees 39 minutes 40.5 seconds N. and long. 88 degrees 49 minutes 43.3 seconds W.; UTM Zone 16T 0343125E 4391552N; NAD 27:

Ap—0 to 6 inches; black (5Y 2.5/1) silty clay loam, dark gray (10YR 4/1) dry; moderate very fine subangular blocky structure; firm; neutral; clear smooth boundary.

A—6 to 14 inches; black (5Y 2.5/1) silty clay loam, dark gray (10YR 4/1) dry; moderate very fine subangular blocky structure; moderate medium angular blocky compaction zone in the upper 2 inches; firm; neutral; clear smooth boundary.

AB—14 to 22 inches; very dark gray (5Y 3/1) silty clay loam, gray (5Y 5/1) dry; moderate fine angular blocky structure; firm; many faint black (5Y 2.5/1) organic coats on faces of peds; neutral; clear smooth boundary.

BA—22 to 28 inches; very dark gray (5Y 3/1) silty clay loam, gray (5Y 5/1) dry; moderate fine prismatic structure; firm; few medium rounded prominent black (7.5YR 2.5/1) very weakly cemented iron-manganese nodules throughout; neutral; clear smooth boundary.

Bg1—28 to 36 inches; dark gray (5Y 4/1) silty clay loam; weak medium prismatic structure; firm; few fine faint gray (5Y 5/1) iron depletions in the matrix; few medium rounded prominent black (7.5YR 2.5/1) very weakly cemented iron-manganese nodules throughout; neutral; clear smooth boundary.

Bg2—36 to 44 inches; gray (5Y 5/1) silty clay loam; weak medium prismatic structure; firm; common fine prominent light olive brown (2.5Y 5/4) masses of iron and manganese accumulation and yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine and medium rounded prominent black (7.5YR

2.5/1) very weakly cemented iron-manganese nodules throughout; neutral; gradual smooth boundary.

BCg—44 to 60 inches; gray (5Y 5/1) silty clay loam; weak medium prismatic structure; firm; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light yellowish brown (2.5Y 6/4) masses of iron and manganese accumulation in the matrix; krotovinas make up 11 percent of the horizon; violently effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches
Thickness of the loess or clayey colluvial sediment: More than 40 inches
Depth to carbonates: More than 38 inches
Depth to the base of the cambic horizon: More than 38 inches

Ap or A horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 3
Chroma—0 or 1
Texture—silty clay loam
Content of rock fragments—typically none
Reaction—moderately acid to slightly alkaline

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 6
Chroma—0 to 2
Texture—silty clay loam or silty clay
Content of rock fragments—0 to 1 percent
Reaction—slightly acid to slightly alkaline

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

330A—Peotone silty clay loam, 0 to 2 percent slopes

Setting

Landform: Closed depressions
Position on the landform: Toeslopes

Map Unit Composition

Peotone and similar soils: 93 percent
Dissimilar soils: 7 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have a thinner dark surface soil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils on low terraces or flood plains that are subject to more than very rare flooding

- The somewhat poorly drained Flanagan soils in positions above those of the Peotone soil

Properties and Qualities of the Peotone Soil

Parent material: Clayey colluvium
Drainage class: Very 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 8.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through June
Depth and most likely period of ponding: 0.5 foot, January through June
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Surface runoff class: Negligible
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderate

Interpretive Groups

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

864—Pits, quarries

- This map unit consists of areas near Tuscola, Illinois, from which crushed limestone gravel and agricultural lime are being quarried.

865—Pits, gravel

- This map unit consists of nearly level to gently sloping areas from which gravel has been extracted. The pits have nearly vertical sidewalls. Some pits are active, and others have been abandoned. Some contain water.

Plano Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Argiudolls

Typical Pedon

Plano silt loam, 2 to 5 percent slopes, on a slope of 3 percent, in a cultivated field, at an elevation of 785 feet above mean sea level, in Bureau County, Illinois; 145 feet east and 1,450 feet south of the northwest corner of sec. 24, T. 15 N., R. 7 E.; USGS Buda, Illinois, topographic quadrangle; lat. 41 degrees 16 minutes 25.2 seconds N. and long. 89 degrees 38 minutes 39.2 seconds W.; UTM Zone 16T 0278522E 4572298N; NAD 27:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

A—8 to 15 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; slightly acid; clear smooth boundary.

BA—15 to 20 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate fine and medium subangular blocky structure; friable; slightly acid; clear wavy boundary.

Bt1—20 to 27 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; moderately acid; clear wavy boundary.

Bt2—27 to 37 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt3—37 to 45 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

2Bt4—45 to 55 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

2Bt5—55 to 60 inches; yellowish brown (10YR 5/4), stratified clay loam and sandy loam; moderate medium subangular blocky structure; friable; many distinct brown (10YR 4/3) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: 44 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

2Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 6
Texture—clay loam, sandy clay loam, loam, sandy loam, loamy sand, or silt loam

Content of rock fragments—2 to 14 percent
Reaction—moderately acid to slightly alkaline

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—3 to 5
Chroma—3 to 6
Texture—stratified sandy loam, loam, loamy sand, silt loam, and clay loam
Content of rock fragments—5 to 15 percent
Reaction—moderately acid to moderately alkaline

199B—Plano silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains, stream terraces
Position on the landform: Summits and shoulders

Map Unit Composition

Plano and similar soils: 91 percent
Dissimilar soils: 9 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that are eroded
- Soils that have a water table at a depth of 3.5 to 6.0 feet

Dissimilar soils:
- The somewhat poorly drained Elburn soils on toeslopes
- Soils that are severely eroded
- The poorly drained Drummer soils in swales

Properties and Qualities of the Plano Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
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: 3.0 to 5.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

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

Proctor Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Argiudolls

Typical Pedon

Proctor silt loam, 2 to 5 percent slopes, on a slope of 4 percent, in a cultivated field, at an elevation of 682 feet above mean sea level, in Edgar County, Illinois, about 1 mile southwest of Redmon; 1,500 feet west and 100 feet south of the northeast corner of sec. 32, T. 14 N., R. 13 W.; USGS Brocton, Illinois, topographic quadrangle; lat. 39 degrees 37 minutes 43.03 seconds N. and long. 87 degrees 52 minutes 38.90 seconds W.; UTM Zone 16S 0424693E 4386697N; NAD 27:

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; common very fine roots; neutral; clear smooth boundary.

A—9 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine and fine subangular blocky structure parting to moderate very fine granular; friable; common very fine roots; moderately acid; clear smooth boundary.

Bt1—13 to 17 inches; dark yellowish brown (10YR 4/4) silt loam; moderate very fine and fine subangular blocky structure; friable; common very fine roots; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—17 to 25 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; many faint brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

2Bt3—25 to 33 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; about 1 percent fine gravel; moderately acid; clear smooth boundary.

2Bt4—33 to 45 inches; brown (7.5YR 4/4) sandy loam; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds and few distinct very dark grayish brown (10YR 3/2) organo-clay films in root channels and pores; about 1 percent fine gravel; moderately acid; clear smooth boundary.

2BC—45 to 52 inches; brown (7.5YR 4/4) sandy loam stratified with thin lenses of loamy sand; moderate coarse subangular blocky structure; friable; few very fine roots; about 1 percent fine gravel; slightly acid; gradual smooth boundary.

2C—52 to 60 inches; mixed brown (7.5YR 4/4) and yellowish brown (10YR 5/4) sandy loam stratified with thin lenses of loamy sand; massive and single grain; very friable; about 2 percent fine gravel; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 20 to 40 inches
Depth to carbonates: More than 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—3 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—loam, silty clay loam, clay loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to neutral

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—stratified sandy loam, loam, or silt loam
Content of rock fragments—0 to 15 percent
Reaction—neutral or slightly alkaline

148B—Proctor silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Summits and backslopes

Map Unit Composition

Proctor and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have less sand in the substratum
- Soils that are eroded
- Soils that have a silty lacustrine substratum

Dissimilar soils:
- The poorly drained Drummer soils in swales
- The somewhat poorly drained Elburn soils in positions below those of the Proctor soil

Properties and Qualities of the Proctor Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate or moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None

Potential for frost action: High
Hazard of corrosion: Moderate for steel and 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

Raub Series

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

Typical Pedon

Raub silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 680 feet above mean sea level, in Champaign County, Illinois; 2,550 feet north and 1,690 feet east of the southwest corner of sec. 19, T. 20 N., R. 14 W.; USGS Royal, Illinois, topographic quadrangle; lat. 40 degrees 10 minutes 40 seconds N. and long. 87 degrees 59 minutes 18 seconds W.; UTM Zone 16T 0415855E 4447951N; NAD 27:

Ap—0 to 10 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine and very fine subangular blocky structure; friable; slightly acid; clear smooth boundary.

A—10 to 18 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; slightly acid; clear smooth boundary.

Bt1—18 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few distinct very dark gray (10YR 3/1) organo-clay films lining pores; many distinct grayish brown (10YR 4/2) clay films on faces of peds; few fine distinct and prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; moderately acid; abrupt smooth boundary.

Bt2—22 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; strong fine and medium angular blocky structure; firm; many distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct dark grayish brown (10YR 4/2) iron depletions, few fine faint brown (10YR 5/3) masses of iron and manganese accumulation, and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine rounded prominent black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; slightly acid; clear smooth boundary.

2Bt3—32 to 40 inches; yellowish brown (10YR 5/4) clay loam; weak medium subangular blocky structure; firm; common distinct black (10YR 2/1) organo-clay films lining root channels; few coarse prominent light olive gray (5Y 6/2) iron depletions and many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium irregular prominent black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 1 percent fine gravel; neutral; clear smooth boundary.

2BC—40 to 50 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; firm; many medium distinct gray (10YR 5/1) iron depletions and many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine irregular prominent black (7.5YR 2.5/1) very weakly cemented iron-manganese oxide nodules throughout; 1 percent fine gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

2C—50 to 60 inches; yellowish brown (10YR 5/4) and gray (5Y 6/1) loam; massive; firm; common fine distinct and prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 5 percent fine gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 22 to 40 inches
Depth to carbonates: 40 to 70 inches
Depth to the base of the argillic horizon: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—0 to 1 percent
Reaction—strongly acid to slightly acid

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—1 to 10 percent
Reaction—slightly acid or neutral

2BC horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam or loam
Content of rock fragments—1 to 10 percent
Reaction—neutral or slightly alkaline

2C or 2Cd horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—clay loam or loam
Content of rock fragments—3 to 10 percent
Reaction—slightly alkaline or moderately alkaline

481A—Raub silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines
Position on the landform: Footslopes and summits

Map Unit Composition

Raub and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have carbonates above a depth of 40 inches
- Soils that have a water table at a depth of 2.0 to 3.5 feet

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Raub Soil

Parent material: Loess over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Russell Series

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

Typical Pedon

Russell silt loam, 5 to 10 percent slopes, eroded, on a slope of 8 percent, in a cultivated field, at an elevation of 738 feet above mean sea level, in Edgar County, Illinois; 115 feet north and 235 feet west of the center of sec. 18, T. 12 N., R. 13 W.; USGS Westfield East, Illinois, topographic quadrangle; lat. 39 degrees 29 minutes 23.3 seconds N. and long. 87 degrees 53 minutes 48.2 seconds W.; UTM Zone 16T, 0422886E 4371309N; NAD 27:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; mixed with few yellowish brown (10YR 5/4) pockets of subsoil material in the lower part; moderate very fine and fine granular structure; friable; many very fine roots; few fine rounded black (10YR 2/1) very weakly cemented manganese concretions throughout; slightly acid; abrupt smooth boundary.

Bt1—7 to 13 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few fine rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; very strongly acid; clear smooth boundary.

Bt2—13 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; very strongly acid; clear smooth boundary.

Bt3—21 to 27 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots; common distinct light yellowish brown (10YR 6/4) silt coats on faces of peds; common distinct brown (7.5YR 4/4) clay films on faces of peds; few fine rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; very strongly acid; clear smooth boundary.

2Bt4—27 to 36 inches; yellowish brown (10YR 5/4) clay loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; common distinct light yellowish brown (10YR 6/4) silt coats on faces of peds; few distinct brown (7.5YR 4/4) clay films on faces of peds; few fine rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; 2 percent fine gravel; neutral; clear smooth boundary.

2Bt5—36 to 56 inches; strong brown (7.5YR 5/6) clay loam; weak coarse subangular blocky structure; firm; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few distinct dark brown (10YR 3/3) organo-clay films lining root channels and pores; few prominent black (10YR 2/1) iron and manganese coats on faces of peds; few fine and medium rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; 5 percent fine gravel; neutral; gradual smooth boundary.

2Cd—56 to 72 inches; yellowish brown (10YR 5/4) loam; massive; firm; few fine rounded black (10YR 2/1) very weakly cemented manganese oxide concretions throughout; 5 percent fine gravel; very slightly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 20 to 40 inches
Depth to carbonates: 40 to 60 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam

Content of rock fragments—none
Reaction—strongly acid to slightly acid

Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—0 to 10 percent by volume
Reaction—very strongly acid to neutral

2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, loam, or silty clay loam
Content of rock fragments—0 to 10 percent by volume
Reaction—moderately acid to neutral

2BC, 2C, or 2Cd horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—loam or clay loam
Content of rock fragments—0 to 10 percent by volume
Reaction—neutral to moderately alkaline

322C2—Russell silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Ground moraines, end moraines
Position on the landform: Backslopes and shoulders

Map Unit Composition

Russell and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have a dark surface layer
- Soils that have a loamy subsoil
- Soils that have a water table at a depth of 3.5 to 6.0 feet

Dissimilar soils:
- The somewhat poorly drained Fincastle and Toronto soils on toeslopes
- The poorly drained Drummer soils in swales

Properties and Qualities of the Russell Soil

Parent material: Loess over till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 40 to 60 inches to dense material
Available water capacity: About 8.9 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
Ponding: None

Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
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: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Rutland Series

Taxonomic classification: Fine, smectitic, mesic Aquic Argiudolls

Typical Pedon

Rutland silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a cultivated field, at an elevation of 646 feet above mean sea level, in Douglas County, Illinois; 80 feet north and 978 feet east of the southwest corner of sec. 7, T. 15 N., R. 9 E.; USGS Villa Grove, Illinois, topographic quadrangle; lat. 39 degrees 45 minutes 24.38 seconds N. and long. 88 degrees 14 minutes 44.6 seconds W.; UTM Zone 16S, 0393285E 4401294N; NAD 27:

Ap—0 to 10 inches; very dark brown (10YR 2/2) silt loam; weak medium subangular blocky structure parting to moderate fine granular; friable; common fine roots throughout; few distinct black (10YR 2/1) organic coats on faces of peds; moderately acid; abrupt smooth boundary.

AB—10 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate medium subangular blocky structure parting to moderate fine granular; friable; few fine roots throughout; very few distinct black (10YR 2/1) organic coats on faces of peds; slightly acid; clear wavy boundary.

Bt1—14 to 24 inches; olive brown (2.5Y 4/3) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; few fine roots along faces of peds; very few distinct very dark brown (10YR 2/2) organic coats on faces of peds; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bt2—24 to 33 inches; light olive brown (2.5Y 5/3) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; firm; common very fine roots along faces of peds; very few prominent very dark gray (10YR 3/1) organo-clay films on faces of peds; few prominent dark brown (10YR 3/3) organo-clay films on faces of peds; many fine and medium yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bt3—33 to 47 inches; light olive brown (2.5Y 5/4) silty clay loam; moderate coarse prismatic structure parting to weak medium subangular blocky; firm; common very fine and fine roots along faces of peds; few prominent dark grayish brown (10YR 4/2) clay films on faces of peds; very few prominent very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; many fine distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; few fine prominent black

(7.5YR 2.5/1) masses of iron-manganese oxide accumulation throughout; very slightly effervescent on faces of peds; neutral; clear wavy boundary.

2Bt4—47 to 55 inches; light yellowish brown (2.5Y 6/4) silty clay loam; moderate coarse prismatic structure parting to weak coarse subangular blocky; firm; few very fine roots along faces of peds; very few prominent very dark grayish brown (2.5Y 3/2) organo-clay films lining pores; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; common fine and medium distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common fine and medium distinct gray (2.5Y 6/1) iron depletions in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

2BCt—55 to 64 inches; light yellowish brown (2.5Y 6/3) silty clay; weak coarse prismatic structure; platy rock structure; very firm; few fine roots in the upper part; very few distinct gray (2.5Y 6/1) and few grayish brown (2.5Y 5/2) clay films on faces of peds; many fine distinct light olive brown (2.5Y 5/6) masses of iron accumulation and many fine faint light olive brown (2.5Y 5/4) masses of iron and manganese accumulation in the matrix; common fine distinct gray (2.5Y 6/1) iron depletions in the matrix; common prominent light gray (2.5Y 7/2) masses of carbonate accumulation along faces of peds; violently effervescent; moderately alkaline; abrupt wavy boundary.

2Cd1—64 to 78 inches; light olive brown (2.5Y 5/3) silty clay; massive; platy rock structure; very firm; no roots; very few distinct gray (2.5Y 6/1) clay films lining pores; common fine distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common fine and medium distinct gray (2.5Y 6/1) iron depletions in the matrix; common prominent light gray (2.5Y 7/2) masses of carbonate accumulation along faces of peds; violently effervescent; moderately alkaline; clear wavy boundary.

2Cd2—78 to 80 inches; light olive brown (2.5Y 5/4) silty clay loam; massive; slightly platy rock structure; friable; many medium and coarse distinct light olive brown (2.5Y 5/6) and common fine yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct gray (2.5Y 6/1) iron depletions in the matrix; common prominent light gray (2.5Y 7/2) masses of carbonate accumulation on horizontal faces of plates; violently effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the loess: 35 to 55 inches
Depth to carbonates: More than 30 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap, A, or AB horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—moderately acid to neutral

2Bt or 2BC horizon:
Hue—2.5Y or 10YR
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or silty clay loam
Content of rock fragments—none
Reaction—neutral to moderately alkaline

2Cd horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—1 to 6
Texture—silty clay or clay
Content of rock fragments—none
Reaction—slightly alkaline or moderately alkaline

375A—Rutland silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines, lake plains
Position on the landform: Summits and footslopes

Map Unit Composition

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

Similar soils:
- Soils that have a loamy subsoil
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have a lighter colored surface layer

Dissimilar soils:
- The poorly drained Harpster soils in depressions
- The poorly drained Milford and Drummer soils in swales

Properties and Qualities of the Rutland Soil

Parent material: Loess over silty and clayey lacustrine deposits and/or clayey till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 40 to 60 inches to dense material
Available water capacity: About 8.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: None
Potential for frost action: Moderate
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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Sabina Series

Taxonomic classification: Fine, smectitic, mesic Aeric Epiaqualfs

Typical Pedon

Sabina silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a cultivated field, at an elevation of 665 feet above mean sea level, in Douglas County, Illinois, about 2$^3/_4$ miles north and 1 mile west of Ficklin; 1,785 feet north and 36 feet east of the southwest corner of sec. 13, T. 16 N., R. 7 E.; USGS Tuscola, Illinois, topographic quadrangle; lat. 39 degrees 50 minutes 24.6 seconds N. and long. 88 degrees 22 minutes 05 seconds W.; UTM Zone 16S, 0382947E 4410701N; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate very fine granular structure; friable; strongly acid; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) silt loam; moderate fine granular structure; friable; few fine iron-manganese concretions throughout; strongly acid; clear smooth boundary.

BE—12 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine subangular blocky structure; firm; common fine distinct dark grayish brown (2.5Y 4/2) iron depletions and few fine iron-manganese oxide concretions throughout; moderately acid; clear smooth boundary.

Btg1—16 to 25 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; many distinct dark gray (10YR 4/1) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation and few fine iron-manganese oxide concretions throughout; moderately acid; clear smooth boundary.

Btg2—25 to 37 inches; dark grayish brown (2.5Y 4/2) silty clay loam; moderate medium subangular blocky structure; firm; many prominent very dark gray (10YR 3/1) organo-clay films on faces of peds; few fine distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation and few fine iron-manganese oxide concretions throughout; slightly acid; clear smooth boundary.

Bt1—37 to 43 inches; light olive brown (2.5Y 5/4) silty clay loam; weak and moderate medium and coarse subangular blocky structure; firm; common prominent very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation and common medium distinct dark grayish brown (10YR 4/2) iron depletions and few fine iron-manganese oxide concretions throughout; neutral; clear smooth boundary.

2Bt2—43 to 50 inches; variegated yellowish brown (10YR 5/4), light olive brown (2.5Y 5/4), and dark grayish brown (10YR 4/2) clay loam; weak coarse subangular blocky structure; firm; common distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few fine pebbles; neutral; gradual irregular boundary.

2Cd—50 to 80 inches; light olive brown (2.5Y 5/3) loam; massive; very firm; common medium rounded black (7.5YR 2.5/1) moderately cemented iron-manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct gray (10YR 6/1) iron depletions in the matrix; common medium irregular white (10YR 8/1) very weakly cemented calcium carbonate nodules throughout; 7 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 40 to 60 inches
Depth to carbonates: 40 to 75 inches
Depth to the base of the argillic horizon: 44 to 75 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

BE horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—strongly acid or moderately acid

Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Bt or 2BC horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—2 to 4
Texture—clay loam, loam, silty clay loam, or silt loam
Content of rock fragments—0 to 5 percent
Reaction—neutral or slightly alkaline

2Cd horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam, clay loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—slightly alkaline or moderately alkaline

236A—Sabina silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines, till plains
Position on the landform: Summits and footslopes

Map Unit Composition

Sabina and similar soils: 92 percent
Dissimilar soils: 8 percent

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

Dissimilar soils:
- The poorly drained Drummer soils in swales
- The moderately well drained Wingate and Xenia soils in landscape positions similar to those of the Sabina soil
- The moderately well drained Birkbeck soils on slopes in positions above those of the Sabina soil

Properties and Qualities of the Sabina Soil

Parent material: Loess 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: 48 to 80 inches to dense material
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: 0.5 foot, January through May
Ponding: None
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: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

Sawmill Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls

Typical Pedon

Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 535 feet above mean sea level, in Sangamon County, Illinois; about 2 miles west of Rochester, Illinois, on the flood plain along the South Fork of the Sangamon River; 750 feet east and 300 feet south of the northwest corner of sec. 20, T. 15 N., R. 4 W.; USGS New City, Illinois, topographic quadrangle; lat. 39 degrees 44 minutes 34 seconds N. and long. 89 degrees 34 minutes 15 seconds W.; UTM Zone 16S, 0279714E 4402160N; NAD 27:

Ap—0 to 10 inches; very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) silty clay loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; firm; few fine roots; few subrounded pebbles 1 to 3 millimeters in diameter; slightly acid; clear smooth boundary.

A1—10 to 17 inches; black (10YR 2/1) and very dark grayish brown (10YR 3/2) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; firm; few fine roots; few subrounded pebbles 1 to 3 millimeters in diameter; few fine faint rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining root channels and pores; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

A2—17 to 25 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine and medium angular blocky structure; firm; few fine roots; few fine faint rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining root channels and pores; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

AB—25 to 32 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak medium prismatic structure parting to moderate fine subangular blocky; firm; few fine roots; few fine faint rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining root channels and pores; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bg—32 to 40 inches; dark gray (10YR 4/1) silty clay loam; weak medium prismatic structure parting to moderate fine and medium angular blocky; firm; few fine roots; common faint very dark gray (10YR 3/1) organic coats on faces of peds; few fine faint rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining root channels and pores; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Btg1—40 to 49 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to weak medium angular blocky; firm; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine distinct rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining root channels and pores; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation and common fine distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; slightly alkaline; clear smooth boundary.

Btg2—49 to 58 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; few fine prominent rounded black (7.5YR 2.5/1) weakly cemented iron-manganese concretions with diffuse boundaries lining pores; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Cg—58 to 65 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; firm; very dark gray (10YR 3/1) channel linings and fillings; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation lining pores; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches

Depth to carbonates: More than 40 inches
Depth to the base of the cambic horizon: 36 to 60 inches

Ap, A, and AB horizons:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—0 to 2 percent
Reaction—slightly acid to slightly alkaline

Bg and Btg horizons:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—0 to 2 percent
Reaction—slightly acid to slightly alkaline

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam or clay loam; stratified with other textures in some pedons
Content of rock fragments—0 to 2 percent
Reaction—slightly acid to slightly alkaline

1107A—Sawmill silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Sawmill, undrained, and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- Soils that have a dark surface layer less than 24 inches thick
- Soils that have a dark surface layer and subsoil more than 36 inches thick
- Soils that have a loamy subsoil
- Soils that are subject to occasional flooding
- Soils in the slightly higher areas that are subject to shorter periods of flooding or ponding

Dissimilar soils:
- The somewhat poorly drained Shaffton and moderately well drained Medway soils on low terraces or flood-plain steps

Properties and Qualities of the Sawmill Soil

Parent material: Silty alluvium
Drainage class: Very 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 11.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, November through June
Depth and most likely period of ponding: 0.2 foot, November through June
Frequency and most likely period of flooding: Frequent, November through June
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: 5w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

3107A—Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Sawmill and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have more sand throughout
- Soils that are subject to occasional flooding

Dissimilar soils:
- The very poorly drained Sawmill, undrained, soils that are subject to flooding of long duration; on flood plains
- The moderately well drained Medway soils on flood-plain steps or low terraces

Properties and Qualities of the Sawmill Soil

Parent material: Silty alluvium
Drainage class: 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 9.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Months in which flooding is not likely to occur: July, August, September, October
Frequency and most likely period of flooding: Frequent, November through June
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: 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

Senachwine Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Senachwine silt loam, 10 to 18 percent slopes, eroded, at an elevation of 856 feet above mean sea level, in Bureau County, Illinois; about 1,040 feet west and 1,345 feet south of the northeast corner of sec. 21, T. 15 N., R. 8 E.; USGS Wyanet, Illinois, topographic quadrangle; lat. 41 degrees 16 minutes 25.4 seconds N. and long. 89 degrees 34 minutes 18 seconds W.; UTM Zone 16T, 0284602E 4572121N; NAD 27:

Ap—0 to 6 inches; mixed brown (10YR 4/3) and yellowish brown (10YR 5/4) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.
Bt1—6 to 15 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.
2Bt2—15 to 28 inches; brown (7.5YR 5/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many faint brown (7.5YR 4/4) clay films on faces of peds; few fine prominent rounded black (N 2.5/0) weakly cemented iron-manganese concretions throughout; neutral; clear smooth boundary.
2BCt—28 to 34 inches; brown (7.5YR 5/4) loam; weak coarse prismatic structure; firm; few fine roots; common faint brown (7.5YR 4/4) clay films on faces of peds; 5 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.
2C—34 to 60 inches; brown (7.5YR 5/4) loam; massive; firm; 5 percent rock fragments; violently effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 0 to 18 inches
Depth to carbonates: 20 to 40 inches
Depth to the base of the argillic horizon: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—0 to 3 percent
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—2 to 4

Texture—silt loam or loam
Content of rock fragments—0 to 3 percent
Reaction—moderately acid to neutral

Bt or 2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam, clay loam, or loam
Content of rock fragments—1 to 10 percent
Reaction—strongly acid to neutral

BC or 2BC horizon (where present):
Colors—similar to those of the B horizon
Texture—similar to that of the C horizon
Reaction—similar to that of the C horizon

C or 2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6
Chroma—3 or 4
Texture—clay loam or loam
Content of rock fragments—1 to 10 percent
Reaction—slightly alkaline or moderately alkaline

618C2—Senachwine silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Ground moraines, end moraines
Position on the landform: Backslopes

Map Unit Composition

Senachwine and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have carbonates above a depth of 20 inches
- Soils that are severely eroded
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Fincastle soils on toeslopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales
- The poorly drained Sawmill and somewhat poorly drained Shaffton soils on flood plains

Properties and Qualities of the Senachwine Soil

Parent material: Loamy till
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 7.6 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
Ponding: None
Flooding: None
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: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

618D2—Senachwine silt loam, 10 to 18 percent slopes, eroded

Setting

Landform: End moraines, ground moraines
Position on the landform: Backslopes

Map Unit Composition

Senachwine and similar soils: 92 percent
Dissimilar soils: 8 percent

Similar soils:
- Soils that have carbonates above a depth of 20 inches
- Soils that are severely eroded
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Fincastle soils on toeslopes
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Drummer soils in swales
- The poorly drained Sawmill and somewhat poorly drained Shaffton soils on flood plains

Properties and Qualities of the Senachwine Soil

Parent material: Loamy till
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 7.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
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

618F—Senachwine silt loam, 18 to 35 percent slopes

Setting

Landform: End moraines, ground moraines
Position on the landform: Backslopes

Map Unit Composition

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

Similar soils:
- Soils that have carbonates above a depth of 20 inches
- Soils that are eroded
- Soils that have slopes of more than 35 percent
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soil that are somewhat poorly drained; on toeslopes and in swales
- Soils on low terraces or flood plains that are subject to more than very rare flooding
- The poorly drained Sawmill and somewhat poorly drained Shaffton soils on flood plains

Properties and Qualities of the Senachwine 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: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.2 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
Ponding: None
Flooding: None
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: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Sexton Series

Taxonomic classification: Fine, smectitic, mesic Typic Endoaqualfs

Typical Pedon

Sexton silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 675 feet above mean sea level, in Edgar County, Illinois; 150 feet north and 200 feet west of the southeast corner of sec. 18, T. 12 N., R. 13 W.; USGS Westfield East, Illinois, topographic quadrangle; lat. 39 degrees 28 minutes 58.2 seconds N. and long. 87 degrees 53 minutes 13.3 seconds W.; UTM Zone 16S, 0423714E 4370526N; NAD 27:

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate very fine granular structure; friable; few very fine roots; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; neutral; clear smooth boundary.

Eg—8 to 12 inches; light gray (10YR 6/1) silt loam; moderate thin platy structure; friable; few very fine roots; few fine distinct brown (10YR 5/3) and common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation and common fine faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; neutral; abrupt smooth boundary.

Btg/Eg—12 to 16 inches; grayish brown (10YR 5/2) silty clay loam (Btg) and light gray (10YR 7/1) silt loam (Eg); moderate medium subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (10YR 4/2) and common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine faint brown (10YR 4/3) and common fine distinct yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation in the matrix; common medium rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; neutral; clear smooth boundary.

Btg1—16 to 29 inches; gray (10YR 5/1) silty clay; moderate fine and medium prismatic structure; firm; few very fine roots; common distinct dark grayish brown (10YR 4/2) and common faint grayish brown (10YR 5/2) clay films and common distinct light gray (10YR 7/1) silt coats on faces of peds; common fine and medium distinct and prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation and common fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; common fine and medium irregular black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; strongly acid; gradual smooth boundary.

Btg2—29 to 36 inches; gray (10YR 5/1) silty clay loam; moderate medium prismatic structure; firm; few very fine roots; common distinct grayish brown (2.5Y 5/2) clay films and few distinct light gray (10YR 7/1) silt coats on faces of peds; common fine and medium distinct and prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation and common fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; common fine and medium irregular black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; strongly acid; clear smooth boundary.

2Btg3—36 to 45 inches; light brownish gray (10YR 6/2), stratified clay loam; weak coarse prismatic structure; firm; common distinct grayish brown (2.5Y 5/2) clay films in root channels and pores; common fine and medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common fine faint light gray (10YR 6/1) iron depletions in the matrix; common fine and medium irregular black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; moderately acid; gradual smooth boundary.

2BCtg—45 to 60 inches; mixed light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4), stratified sandy loam; massive; firm; few distinct grayish brown (2.5Y

5/2) clay films in root channels and pores; common fine and medium distinct yellowish brown (10YR 5/4 and 5/6) masses of iron and manganese accumulation and common fine faint light gray (10YR 6/1) iron depletions in the matrix; common fine and medium irregular black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; moderately acid; gradual smooth boundary.

2BCt—60 to 78 inches; dark yellowish brown (10YR 4/6) loamy sand with strata of gray (10YR 6/1) sandy loam; weak coarse prismatic structure; very friable; few thin grayish brown (10YR 5/2) clay bridges between sand grains; common fine prominent black (10YR 2/1) masses of iron-manganese oxide nodules throughout; strongly acid; abrupt smooth boundary.

2Cg—78 to 90 inches; 75 percent gray (10YR 6/1) and 25 percent yellowish brown (10YR 5/6) silt loam; massive; firm; few root channels; slightly acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: More than 40 inches

Ap or A horizon:
Hue—10YR
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Eg horizon:
Hue—10YR
Value—5 to 7
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

Bt/Eg horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—1 or 2
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Btg or 2BCg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam, loam, clay loam, or sandy clay loam; stratified in some pedons

Content of rock fragments—0 to 7 percent
Reaction—strongly acid to neutral

2Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture—stratified silt loam, loam, sandy loam, or silty clay loam; thin lenses of loamy sand or sand in some pedons
Content of rock fragments—0 to 7 percent
Reaction—slightly acid to slightly alkaline

208A—Sexton silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains
Position on the landform: Toeslopes

Map Unit Composition

Sexton and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that have a darker surface layer
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Kendall and Starks soils in positions above those of the Sexton soil
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Sexton Soil

Parent material: Loess over stratified loamy outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Moderate or moderately rapid
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: 0.8 to 1.5 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
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

Shaffton Series

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluvaquentic Hapludolls

Typical Pedon

Shaffton silt loam, 0 to 2 percent slopes, frequently flooded, on a slope of 1 percent, in a cultivated field, at an elevation of 627 feet above mean sea level, in Douglas County, Illinois; 1,630 feet east and 360 feet north of the southwest corner of sec. 1, T. 15 N., R. 10 E.; USGS Murdock, Illinois, topographic quadrangle; lat. 39 degrees 46 minutes 10.6 seconds N. and long. 88 degrees 02 minutes 21.1 seconds W.; UTM Zone 16S, 0410994E 440294N; NAD 27:

Ap—0 to 11 inches; black (10YR 2/1) silt loam; moderate very fine granular structure; friable; common very fine and fine roots throughout; few faint black (10YR 2/1) organic coats on faces of peds; slightly alkaline; clear wavy boundary.

BA—11 to 23 inches; brown (10YR 4/3) loam; moderate medium subangular blocky structure parting to moderate very fine granular; friable; common very fine roots throughout; few faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; common fine prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; few fine distinct black (2.5Y 2.5/1) iron-manganese nodules throughout; slightly alkaline; gradual wavy boundary.

Bt1—23 to 34 inches; olive brown (2.5Y 4/4) clay loam; moderate medium prismatic structure; firm; common fine roots throughout; very few distinct very dark grayish brown (10YR 3/2) organic coats and few distinct brown (10YR 4/3) clay films on vertical faces of peds and in root channels; common fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; many medium distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; common fine prominent black (7.5YR 2.5/1) iron-manganese oxide nodules throughout; slightly alkaline; clear wavy boundary.

Bt2—34 to 46 inches; grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) loam; weak medium prismatic structure; firm; few very fine roots throughout; few distinct very dark grayish brown (10YR 3/2) organic coats on vertical faces of peds and in root channels and very few faint brown (10YR 4/3) clay films on vertical faces of peds; many medium and coarse prominent strong brown (7.5YR 5/8) and common coarse strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine prominent strong brown (7.5YR 5/8) iron-manganese nodules throughout; slightly alkaline; clear wavy boundary.

BC—46 to 55 inches; dark grayish brown (2.5Y 4/2) and olive brown (2.5Y 4/3) sandy loam; weak coarse prismatic structure; friable; few very fine roots throughout; very few faint dark grayish brown (10YR 4/2) clay films on vertical faces of peds; trace amounts of fine rounded rock fragments; common coarse prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; common fine distinct black (2.5Y 2.5/1) iron-manganese oxide nodules throughout; neutral; clear wavy boundary.

CB—55 to 62 inches; grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/3) sandy loam; massive; friable; few very fine roots throughout; 1 percent fine rounded rock fragments; common coarse prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

C—62 to 75 inches; grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/3), stratified loamy sand and sandy loam; massive; very friable; 2 percent fine rounded rock fragments; common coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: More than 60 inches
Depth to the base of the cambic horizon: 30 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

Bt or Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam, clay loam, or silt loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

BC or CB horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—sandy loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—stratified sandy loam and loamy sand
Content of rock fragments—0 to 2 percent
Reaction—slightly acid to slightly alkaline

3183A—Shaffton silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Stream terraces, flood-plain steps

Map Unit Composition

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

Similar soils:
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have thick dark surface and subsoil horizons
- Soils that are subject to occasional flooding

Dissimilar soils:
- The well drained Camden and Martinsville soils on terraces in positions above those of the Shaffton soil

- The poorly drained Sawmill soils on flood plains in positions below those of the Shaffton soil
- Soils on side slopes that are subject to rare flooding

Properties and Qualities of the Shaffton Soil

Parent material: Loamy alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: Low
Depth and months of the highest apparent seasonal high water table: 1.0 foot, January through May
Ponding: None
Months in which flooding is not likely to occur: July, August, September, October
Frequency and most likely period of flooding: Frequent, November through June
Potential for frost action: Moderate
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: 3w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Starks Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs

Typical Pedon

Starks silt loam, 0 to 2 percent slopes, on a slope of 1 percent, in a cultivated field, at an elevation of 645 feet above mean sea level, in Edgar County, Illinois; 1,075 feet east and 2,150 feet south of the northwest corner of sec. 10, T. 12 N., R. 12 W.; USGS Paris South, Illinois, topographic quadrangle; lat. 39 degrees 30 minutes 34.08 seconds N. and long. 87 degrees 44 minutes 01.94 seconds W.; UTM Zone 16S, 0436909E 4373363N; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate very fine granular structure in the upper part and moderate thin and medium platy structure in the lower part; friable; common very fine and fine roots; slightly acid; abrupt smooth boundary.
E—9 to 13 inches; brown (10YR 5/3) silt loam; moderate medium platy structure; friable; few very fine roots; common fine faint light brownish gray (10YR 6/2) iron depletions and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; abrupt smooth boundary.
Bt—13 to 21 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few very fine roots; common faint dark yellowish brown (10YR 4/4) clay films and many

faint light brownish gray (10YR 6/2) silt coats on faces of peds; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; very strongly acid; clear smooth boundary.

Btg1—21 to 30 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium and coarse prismatic structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films and common faint light brownish gray (10YR 6/2) silt coats on faces of peds; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; many fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; very strongly acid; clear smooth boundary.

2Btg2—30 to 35 inches; light brownish gray (10YR 6/2) sandy clay loam; moderate coarse prismatic structure; firm; few very fine roots; common distinct brown (10YR 5/3) clay films on faces of peds and few distinct brown (10YR 4/3) clay films in root channels and pores; common coarse distinct yellowish brown (10YR 5/4) and common coarse prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; common fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

2BC—35 to 40 inches; dark yellowish brown (10YR 4/6) sandy loam; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; moderately acid; clear smooth boundary.

2C1—40 to 54 inches; dark yellowish brown (10YR 4/6), stratified sandy loam and sandy clay loam; massive; friable; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; abrupt smooth boundary.

2C2—54 to 60 inches; yellowish brown (10YR 5/4) loam; massive; friable; many medium distinct light brownish gray (10YR 6/2) iron depletions and common fine and medium distinct yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; common fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide throughout; neutral.

Range in Characteristics

Thickness of the loess: 24 to 40 inches
Depth to carbonates: 40 to 70 inches
Depth to the base of the argillic horizon: More than 35 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (where present):
Hue—10YR
Value—5 or 6
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

2Btg or 2BC horizon:
Hue—10YR, 2.5Y, or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—clay loam, loam, or sandy loam
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to slightly alkaline

2C horizon:
Hue—10YR, 2.5Y, or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—stratified sandy loam, loam, silt loam, and clay loam
Content of rock fragments—0 to 15 percent
Reaction—strongly acid to slightly alkaline

132A—Starks silt loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces, outwash plains
Position on the landform: Summits and footslopes

Map Unit Composition

Starks and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a substratum of loamy sand or sand
- Soils that are more than 40 inches deep to loamy outwash
- Soils that are subject to very rare flooding

Dissimilar soils:
- The poorly drained Drummer soils in swales
- The poorly drained Brooklyn and Sexton soils on toeslopes
- The well drained Camden and Martinsville soils on terraces in positions above those of the Starks soil
- Soils on low terraces or flood plains that are subject to more than very rare flooding

Properties and Qualities of the Starks Soil

Parent material: Loess over stratified loamy outwash
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 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate

Depth and months of the highest apparent seasonal high water table: 0.5 foot, January through May
Ponding: None
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: Not hydric

Sunbury Series

Taxonomic classification: Fine, smectitic, mesic Aquollic Hapludalfs

Typical Pedon

Sunbury silt loam, 0 to 2 percent slopes, at an elevation of about 680 feet above mean sea level, in Douglas County, Illinois; about 1,270 feet north and 1,410 feet east of the southwest corner of sec. 19, T. 16 N., R. 7 E.; USGS Atwood, Illinois, topographic quadrangle; lat. 39 degrees 49 minutes 27.4 seconds N. and long. 88 degrees 27 minutes 25.6 seconds W.; UTM Zone 16S, 0375298E 4409059N; NAD 27:

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; common very fine roots throughout; slightly acid; clear smooth boundary.
E—8 to 12 inches; brown (10YR 5/3) silt loam; moderate thin and medium platy structure parting to moderate fine granular; friable; common very fine roots throughout; moderately acid; clear smooth boundary.
BE—12 to 15 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; common very fine and fine roots throughout; many distinct light gray (10YR 7/2) (dry) silt coats on faces of peds; moderately acid; clear smooth boundary.
Bt1—15 to 25 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine and fine roots between peds; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few medium distinct irregular black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; common fine faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.
Bt2—25 to 36 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; common fine roots between peds; many distinct dark grayish brown 10YR 4/2) clay films on faces of peds; common distinct very dark gray (10YR 3/1) organo-clay films on faces of peds; few medium prominent irregular black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; few medium distinct dark gray (10YR 4/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Bt3—36 to 43 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to weak coarse subangular blocky; friable; few very fine and fine roots between peds; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark gray (10YR 3/1) organo-clay films on faces of peds and in pores; common medium distinct rounded and irregular black (7.5YR 2.5/1) iron-manganese oxide nodules throughout; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

2Btg—43 to 47 inches; grayish brown (10YR 5/2) loam; weak coarse subangular blocky structure; firm; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organo-clay films on faces of peds and in pores; few fine and medium distinct irregular black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent fine gravel; slightly alkaline; abrupt smooth boundary.

2C—47 to 72 inches; 50 percent grayish brown (10YR 5/2) and 50 percent yellowish brown (10YR 5/6) loam; massive; firm; common fine and medium prominent rounded white (10YR 8/1) weakly cemented calcium carbonate nodules throughout; few fine and medium distinct irregular black (7.5YR 2.5/1) weakly cemented iron-manganese oxide nodules throughout; 3 percent fine gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 40 to 60 inches
Depth to carbonates: 45 to 60 inches
Depth to the base of the argillic horizon: 45 to 65 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—2 to 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

BE horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6

Chroma—2 to 4
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

2Btg or 2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, clay loam, or silt loam
Content of rock fragments—0 to 5 percent
Reaction—slightly acid to slightly alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 to 8
Texture—loam
Content of rock fragments—0 to 5 percent
Reaction—slightly alkaline or moderately alkaline

234A—Sunbury silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines, till plains
Position on the landform: Summits and footslopes

Map Unit Composition

Sunbury and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have a substratum of sandy loam
- Soils that have a thicker dark surface layer
- Soils that have less clay in the subsoil
- Soils that have a water table at a depth of 2.0 to 3.5 feet

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Sunbury Soil

Parent material: Loess 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 10.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: 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: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

234B—Sunbury silt loam, 2 to 5 percent slopes

Setting

Landform: Ground moraines, till plains
Position on the landform: Summits and footslopes

Map Unit Composition

Sunbury and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that have a thicker dark surface layer
- Soils that have less clay in the subsoil
- Soils that have a water table at a depth of 2.0 to 3.5 feet
- Soils that have a substratum of sandy loam

Dissimilar soils:
- The poorly drained Drummer soils in swales

Properties and Qualities of the Sunbury Soil

Parent material: Loess 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 10.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: High
Depth and months of the highest perched seasonal high water table: 1.0 foot, January through May
Ponding: None
Flooding: None
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

Toronto Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Udollic Epiaqualfs

Typical Pedon

Toronto silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 682 feet above mean sea level, in Edgar County, Illinois; 525 feet south and 2,050 feet east of the northwest corner of sec. 25, T. 14 N., R. 12 W.; USGS Paris North, Illinois, topographic quadrangle; lat. 39 degrees 38 minutes 44.73 seconds N. and long. 87 degrees 41 minutes 48.98 seconds W.; UTM Zone 16S, 0440201E 4388464N; NAD 27:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common very fine roots; common fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; brown (10YR 5/3) silt loam; moderate thin and medium platy structure; friable; common very fine roots; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; strongly acid; abrupt smooth boundary.

Btg1—12 to 16 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; common very fine roots; many faint brown (10YR 5/3) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide throughout; strongly acid; clear smooth boundary.

Btg2—16 to 26 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common very fine roots; many distinct brown (10YR 5/3) clay films on faces of peds; few distinct dark gray (10YR 4/1) clay films in root channels and pores; many faint light brownish gray (2.5Y 6/2) silt coats on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; strongly acid; gradual wavy boundary.

2Btg3—26 to 33 inches; light brownish gray (10YR 6/2) clay loam; moderate coarse prismatic structure; firm; common very fine roots; few distinct dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organo-clay films in root channels and pores; many medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 1 percent fine gravel; slightly acid; gradual wavy boundary.

2Bt—33 to 44 inches; yellowish brown (10YR 5/4) clay loam; weak coarse prismatic structure; firm; few very fine roots; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine and medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 1 percent fine gravel; neutral; gradual wavy boundary.

2BC—44 to 54 inches; yellowish brown (10YR 5/4) loam; weak coarse prismatic structure; firm; few distinct very dark grayish brown (10YR 3/2) organo-clay films in root channels and pores; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine and medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 10 percent fine gravel; neutral; clear wavy boundary.

2C—54 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 10 percent fine gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the dark surface layer: 7 to 10 inches
Thickness of the loess: 22 to 40 inches
Depth to carbonates: 35 to 60 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR or 2.5Y
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid or moderately acid

Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Bt or 2Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—clay loam or loam
Content of rock fragments—1 to 10 percent
Reaction—moderately acid to slightly alkaline

2BC or 2C horizon:
Hue—10YR
Value—5 or 6
Chroma—3 or 4
Texture—loam
Content of rock fragments—2 to 15 percent
Reaction—slightly alkaline or moderately alkaline

353A—Toronto silt loam, 0 to 2 percent slopes

Setting

Landform: Ground moraines
Position on the landform: Summits and toeslopes

Map Unit Composition

Toronto and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have carbonates above a depth of 35 inches
- Soils that have slopes of slightly more than 2 percent

Dissimilar soils:
- The poorly drained Drummer soils in swales
- The moderately well drained Wingate soils on slopes in positions above those of the Toronto soil

Properties and Qualities of the Toronto Soil

Parent material: Loess over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
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: 2.0 to 4.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 0.5 foot, January through May
Ponding: None
Flooding: 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

533—Urban land

- This map unit occurs as areas that are covered by pavement and buildings. Because of extensive land smoothing, the areas are generally nearly level or gently sloping. Most of the paved areas are parking lots adjacent to shopping centers, industrial plants, and other commercial buildings.

W—Water

- This map unit includes streams, lakes, ponds, and estuaries. These areas are covered with water in most years, at least during the period that is warm enough for plants to grow. Many areas are covered throughout the year. Gravel pits and other areas that contain water most of the time are included.

Wingate Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Mollic Oxyaquic Hapludalfs

Typical Pedon

Wingate silt loam, 2 to 5 percent slopes, on a slope of 2 percent, in a cultivated field, at an elevation of 659 feet above mean sea level, in Edgar County, Illinois; 985 feet north and 1,455 feet east of the southwest corner of sec. 25, T. 15 N., R. 12 W.; USGS Paris North, Illinois, topographic quadrangle; lat. 39 degrees 43 minutes 23 seconds N. and long. 87 degrees 42 minutes 07 seconds W.; UTM Zone 16S, 0439839E 4397046N; NAD 27:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure parting to moderate fine granular; friable; many very fine roots; neutral; abrupt smooth boundary.

E—9 to 12 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium platy structure; friable; common very fine roots; neutral; abrupt smooth boundary.

Bt1—12 to 22 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—22 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium angular blocky structure; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

2Bt3—27 to 36 inches; yellowish brown (10YR 5/6) clay loam; moderate coarse subangular blocky structure; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct black (10YR 2/1) iron-manganese oxide coats on faces of peds; common fine and medium irregular black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; few fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; about 2 percent fine gravel; moderately acid; clear smooth boundary.

2Bt4—36 to 52 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 5 percent fine gravel; neutral; gradual smooth boundary.

2C—52 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; few fine rounded black (10YR 2/1) weakly cemented iron-manganese oxide nodules throughout; about 5 percent fine gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the dark surface layer: 7 to 10 inches
Thickness of the loess: 20 to 40 inches
Depth to carbonates: 29 to 65 inches
Depth to the base of the argillic horizon: 29 to 55 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon (where present):
Hue—10YR
Value—4 or 5
Chroma—3
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

2Bt or 2BC horizon:
Hue—10YR or 7.5YR
Value—5 or 6
Chroma—2 to 6
Texture—clay loam or loam
Content of rock fragments—1 to 7 percent
Reaction—moderately acid to slightly alkaline

2C horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 6
Texture—loam
Content of rock fragments—1 to 10 percent
Reaction—neutral to moderately alkaline

348B—Wingate silt loam, 2 to 5 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits and shoulders

Map Unit Composition

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

Similar soils:
- Soils that have a loamy subsoil
- Soils that are eroded

Dissimilar soils:
- The somewhat poorly drained Toronto and Fincastle soils on toeslopes in positions below those of the Wingate soil
- The poorly drained Drummer soils in swales

Properties and Qualities of the Wingate Soil

Parent material: Loess over till

Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately 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: 2.0 to 4.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 1.5 feet, February through April
Ponding: None
Flooding: None
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

Xenia Series

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

Typical Pedon

Xenia silt loam, 2 to 5 percent slopes, at an elevation of about 705 feet above mean sea level, in Champaign County, Illinois; about 390 feet north and 860 feet west of the southeast corner of sec. 34, T. 20 N., R. 9 E.; USGS Thomasboro, Illinois, topographic quadrangle; lat. 40 degrees 08 minutes 35.5 seconds N. and long. 88 degrees 09 minutes 57.1 seconds W.; UTM Zone 16T, 0400688E 4444090N; NAD 27:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine and fine granular structure; friable; neutral; abrupt smooth boundary.

E—4 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium platy structure; friable; many faint light brownish gray (10YR 6/2) silt coats on faces of peds; moderately acid; clear smooth boundary.

BEt—10 to 16 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct light brownish gray (10YR 6/2) silt coats on faces of peds; moderately acid; clear smooth boundary.

Bt1—16 to 23 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct light brownish gray (10YR 6/2) silt coats on faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

Bt2—23 to 37 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and coarse subangular blocky structure; firm; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; many distinct grayish brown (10YR 5/2) silt coats on faces of peds; few medium distinct grayish brown (10YR 5/2) and few medium faint brown (10YR 5/3) iron depletions in the matrix; moderately acid; clear smooth boundary.

2Bt3—37 to 48 inches; brown (10YR 5/3) and light olive brown (2.5Y 5/4) clay loam; weak coarse subangular blocky structure; firm; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

2Bt4—48 to 57 inches; brown (10YR 5/3) and light olive brown (2.5Y 5/4) loam; weak coarse prismatic structure; firm; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds; slightly acid; clear smooth boundary.

2Cd—57 to 72 inches; light olive brown (2.5Y 5/4) loam; massive; firm; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 22 to 40 inches
Depth to carbonates: 40 to 60 inches
Depth to the base of the argillic horizon: 40 to 60 inches

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

E and/or BE horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—0 to 1 percent
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam
Content of rock fragments—0 to 1 percent
Reaction—strongly acid to neutral

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—loam or clay loam
Content of rock fragments—2 to 8 percent
Reaction—moderately acid to neutral

2BC horizon (where present):
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—loam or clay loam
Content of rock fragments—2 to 8 percent
Reaction—neutral or slightly alkaline

2Cd horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 or 4
Texture—loam
Content of rock fragments—2 to 8 percent
Reaction—slightly alkaline or moderately alkaline

291B—Xenia silt loam, 2 to 5 percent slopes

Setting

Landform: Ground moraines, till plains
Position on the landform: Summits and backslopes

Map Unit Composition

Xenia and similar soils: 94 percent
Dissimilar soils: 6 percent

Similar soils:
- Soils that are eroded
- Soils that are more than 40 inches deep to loamy till
- Soils that have a darker surface layer

Dissimilar soils:
- Soil that are severely eroded
- The poorly drained Drummer soils in swales
- The well drained Senachwine and Russell soils in landscape positions similar to those of the Xenia soil

Properties and Qualities of the Xenia Soil

Parent material: Loess over till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 40 to 60 inches to dense material
Available water capacity: About 9.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of the highest perched seasonal high water table: 1.5 feet, January through May
Ponding: None
Flooding: None
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

Zook Series

Taxonomic classification: Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Typical Pedon

Zook silty clay loam, 0 to 2 percent slopes, frequently flooded, about 1 mile northeast of Little York in Warren County, Illinois; 2,640 feet west and 1,200 feet south of the northeast corner of sec. 22, T. 12 N., R. 3 W.; USGS Little York topographic quadrangle; lat. 41 degrees 01 minute 14 seconds N. and long. 90 degrees 43 minutes 03 seconds W.; UTM Zone 15T, 0691914E 4543337N; NAD 27:

Ap—0 to 8 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; slightly acid; clear smooth boundary.

A—8 to 22 inches; very dark gray (N 3/0) silty clay, gray (N 5/0) dry; moderate fine subangular blocky structure; firm; slightly acid; clear smooth boundary.

Bg1—22 to 38 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; weak fine prismatic structure parting to moderate fine subangular and angular blocky; firm; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bg2—38 to 55 inches; dark gray (5Y 4/1) silty clay; weak medium prismatic structure parting to moderate fine subangular and angular blocky; firm; common faint very dark gray (5Y 3/1) organic coats in roots channels and krotovinas; common medium faint olive gray (5Y 5/2) and common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

BCg—55 to 60 inches; olive gray (5Y 5/2) silty clay loam; weak fine and medium subangular blocky structure; firm; common faint gray (5Y 5/1) organic coats in root channels and on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral.

Range in Characteristics

Thickness of the mollic epipedon: More than 36 inches
Depth to carbonates: More than 60 inches
Depth to the base of the cambic horizon: 36 to 75 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

Bg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 5
Chroma—1
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—slightly acid or neutral

BCg or Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 5

Chroma—1
Texture—silty clay, silty clay loam, or silt loam
Content of rock fragments—none
Reaction—slightly acid or neutral

3405A—Zook silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Zook and similar soils: 95 percent
Dissimilar soils: 5 percent

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have less clay
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are subject to rare flooding
- The somewhat poorly drained Shaffton and moderately well drained Medway soils on flood-plain steps and low terraces
- The very poorly drained Sawmill soils in undrained areas

Properties and Qualities of the Zook Soil

Parent material: Silty and clayey alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.0 to 5.0 percent
Shrink-swell potential: High
Depth and months of the highest apparent seasonal high water table: At the surface, January through May
Depth and most likely period of ponding: 0.2 foot, January through May
Months in which flooding is not likely to occur: July, August, September, October
Frequency and most likely period of flooding: Frequent, November through June
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: Moderate

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

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*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

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

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Soil Series and Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 2002, approximately 223,202 acres in Douglas County was used as cropland and 3,001 acres was used as pastureland. The major row crops were corn and soybeans. Wheat and oats were the major small grain crops grown. Corn for grain was grown on about 108,357 acres and had an average yield of 131 bushels per acre. Soybeans were grown on about 104,025 acres and had an average yield of 46 bushels per acre. Wheat was grown on 487 acres and had an average yield of 71 bushels per acre. Oats were grown on 914 acres and had an average yield of 65 bushels per acre. Hay was grown on about 3,424 acres and had an average yield of 2.6 tons per acre. Corn for silage was grown on 736 acres and had an average yield of 15.9 tons per acre. Vegetables were grown on about 131 acres. About 97 percent of the planted acreage was harvested (Illinois Agricultural Statistics Service, 2002).

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

Limitations and Hazards Affecting Cropland

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 6. The main concerns include crusting, excess lime, flooding, high pH, limited available water capacity, low pH, ponding, poor tilth, restricted permeability, water erosion, and wetness.

Crusting occurs when 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 greater than 20 percent and less than or equal to 35 percent. Flowing water or raindrops break down soil structural units, moving clay downward and leaving a concentration of sand and silt particles on the surface layer. Crusts can reduce the rate of water infiltration, increase the runoff rate, inhibit seedling emergence and proper growth, and reduce oxygen diffusion to seedlings. Generally, if the structure in the surface layer is weak, a crust forms during periods of intense rainfall. Camden, Senachwine, Sabina, and Xenia soils are examples of soils that have a low content of organic matter in the surface layer and are susceptible to crusting.

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.

Excess lime is a management concern in areas of Harpster soils. These soils have a calcium carbonate equivalent of 15 percent or more in the surface layer, or they meet the requirements for a calcic horizon at or near the surface. This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer.

Flooding applies to any map unit that is subject to common, occasional, frequent, or very frequent flooding. Flooding occurs on approximately 8,133 acres in the county, or about 3 percent of the total acreage. It usually occurs in unprotected areas along major rivers and their tributaries. Dikes or diversions reduce the extent of crop damage caused by floodwater. In frequently flooded areas, flooding is likely to occur under normal weather conditions; there is more than a 50 percent chance of flooding in any given year, and flooding will likely occur more than 50 times in 100 years. Some soils in Douglas County are subject to occasional flooding. These soils, under normal weather conditions, are expected to have a 5 to 50 percent chance of flooding in any year; 5 to 50 flooding events are expected in 100 years. Flooding typically occurs in winter and spring. Damage to crops, particularly winter small grain crops, occurs in some years (fig. 10).

Some Sawmill, Shaffton, and Zook soils are subject to frequent flooding for brief periods. The poorly drained Sawmill soils are frequently flooded for long periods in some areas. The moderately well drained Medway soils are on flood-plain terraces and are subject to occasional flooding for brief periods.

Flood-prone soils are better suited to crop varieties that require a relatively short growing season. Planting crops that are adapted to a shorter growing season and wetter conditions reduces the risk of crop damage caused by floodwater. Reducing runoff from higher ground within the watershed can reduce the frequency and severity of flooding. Changing land use from cropland to pasture or forestland can also minimize economic damage.

High pH is a limitation if the pH in the upper 40 inches of the soil is greater than or equal to 7.4. This limitation can create plant toxicity or reduce the availability of plant nutrients. Many soils in Douglas County have pH above 7.4 within a depth of 40 inches. Harpster, Hartsburg, Senachwine, and Octagon soils have high pH.

Limited available water capacity occurs when the available water capacity in the upper 60 inches of the soil is less than 6 inches. This limitation defines the potential droughtiness of a soil. Mona soils are examples of soils that are subject to this limitation.

Low pH is a limitation if the pH within a depth of 40 inches is less than 4.5. This limitation can create toxicity or reduce the availability of nutrients, thus reducing the

Figure 10.—Flooding can cause crop damage in areas of Sawmill soils.

health and vigor of plants. Most soils in Douglas County have pH of more than 4.5 within a depth of 40 inches.

Ponding is a hazard in areas where the seasonal high water table is above the surface. Ponding is standing water that is only removed by deep percolation or evaporation (fig. 11). Duration of ponding is described as very brief, brief, long, or very long. Ponding reduces aeration and increases nutrient losses. Soils in the survey area that are affected by ponding are Brooklyn, Drummer, Harpster, Hartsburg, Milford, Peotone, Sawmill, Sexton, and Zook soils.

Drainage systems have been installed in most areas of poorly drained and somewhat poorly drained soils in the county. As a result, these soils are adequately drained for the crops commonly grown in the area. Poorly drained soils, such as Drummer and Hartsburg soils, commonly have subsurface drainage. In addition, some areas of poorly drained soils require surface tile inlets or shallow surface ditches to remove ponded water. Milford soils commonly have both tile drainage and surface ditches, especially in the central part of Douglas County. Some areas of somewhat poorly drained soils are occasionally wet long enough that artificial drainage is required if productivity is to be maintained. Most areas of somewhat poorly drained soils, such as Flanagan, Rutland, and Raub soils, have subsurface drainage.

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 wetland regulations may require special permits and extra planning.

Poor tilth is a limitation if (1) the content of clay in the surface layer is at least 27 percent but less than 35 percent and the content of organic matter is less than 4 percent, or (2) the content of clay is greater than or equal to 35 percent. Poor tilth can occur in soils when part of the subsoil is incorporated into the plow layer, typically as a result of the thinning of the surface layer by erosion. The incorporation of subsoil material into the plow layer decreases the amount of organic matter and increases the

Figure 11.—A drainage tile inlet, or riser, helps to drain this ponded area of Milford silty clay loams, 0 to 2 percent slopes.

clay content in the surface soil. Poor tilth also occurs in poorly drained soils that have a high clay content, regardless of organic matter content, and in soils that have been excessively tilled. Soils with poor tilth generally have a surface layer that is sticky when wet and hard and cloddy when dry. Because they can be tilled only within a narrow range of moisture content, seedbed preparation is difficult. Poor tilth inhibits seedling germination and emergence, increases runoff and erosion, and reduces the rate of water infiltration. Clods make it difficult to prepare a good seedbed. Sloping fields commonly have clayey spots where the subsoil is exposed. Preparing a good seedbed and tilling are difficult in these areas because the original friable surface layer has been lost through erosion.

Soils with good tilth are granular and porous and have a high content of organic matter in the surface layer. Dana, Flanagan, and Catlin soils commonly have good tilth. Soils that have poor tilth generally have more clay, a lower content of organic matter, and weaker soil structure in the surface layer. Milford, Peotone, and Zook soils have poor tilth. If these soils are plowed when too wet, they become cloddy.

Practices that improve tilth 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 improve tilth. Regularly returning crop residue to the soil, adding other organic material to the soil, minimizing tillage, and timing conservation tillage operations to near optimal soil moisture conditions can improve tilth. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet or by using no-till methods.

Restricted permeability occurs when the soil has a layer within a depth of 40 inches in which permeability is very slow or slow. Permeability less than 0.2 inch per hour or less than 1.4 micrometers per second is the criterion used for this interpretation. Permeability is the quality of the soil that enables water or air to move through it. Permeability affects interpretations for irrigation and drainage systems and conservation management structures and plantings. Soils with slowly permeable or very slowly permeable layers, such as Brooklyn and Sexton soils, have a higher potential for surface runoff and drain more slowly than more permeable soils.

A root-restrictive layer is a limitation if dense material, a natric horizon, bedrock, or a fragipan is within 40 inches of the surface. A root-restrictive layer can increase the susceptibility of the soil to erosion and can limit the effectiveness of drainage systems. Root-restrictive layers affect plant growth by limiting nutrients and available water. Examples of soils with root-restrictive layers are Mona and Octagon soils.

A combination of conservation measures, including special tillage practices, incorporation of organic material, and crop selection, can help to overcome this limitation.

Water erosion is a hazard in areas of cropland if the erosion factor (Kw) multiplied by the percent slope is greater than 0.8 and the slope is greater than or equal to 3 percent. Water erosion can occur if the surface soil is not protected against the impact of raindrops. Erosion leads to a reduction in soil aggregate stability, which reduces the rate of water infiltration and increases the rate of surface runoff (Brady, 1984). Soils with long or steep slopes are more susceptible than other soils to water erosion. Sheet and rill erosion is a hazard in areas where slopes are more than 2 percent or in areas where slopes are longer or are subject to concentrated flow. Excessive runoff leads to a decrease in surface water quality through sedimentation and contamination by agricultural chemicals attached to soil particles in the sediment. Sediment enters streams, rivers, water impoundments, and road ditches. Water erosion is a hazard on about 8 percent of the total land area in the county. Dana, Senachwine, and Octagon soils are examples of soils that are subject to water erosion.

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. Sedimentation problems should be addressed for maintenance of proper drainage. Removal of sediments is expensive. Management measures that help to control water erosion also help to minimize sedimentation and can improve the quality of water available for rural, municipal, and recreational uses and for fish and wildlife.

Wetness is a limitation when the seasonal high water table is within a depth of 1.5 feet. Wetness is a management concern on about 82 percent of the acreage used for crops and pasture in Douglas County. Some soils are naturally so wet that the production of crops is not possible unless a drainage system is installed. The poorly drained Drummer, Hartsburg, Milford, and Sawmill soils are examples of soils that are subject to wetness. Seasonal wetness in areas of somewhat poorly drained soils, such as Flanagan, Shaffton, Raub, Sabina, Starks, Sunbury, and Rutland soils, can delay planting in wet years.

Most naturally wet soils are already drained by tile, but many drainage systems are old and should be replaced if maximum efficiency is to be achieved. Subsurface 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. Milford soils commonly have both tile drainage and surface ditches, especially in the central part of Douglas County. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning.

Wind erosion occurs on soils that are in wind erodibility groups 1 and 2. These soils typically have a surface layer of sand or loamy sand and are more susceptible to soil blowing than other soils. Wind erosion can also occur on fine textured soils. Generally, most soils that have the surface exposed as a result of cultivation are subject to wind erosion. Surface texture, moisture content, the content of organic matter, the content of calcium carbonate, the content of rock fragments, aggregate stability, and cultivation practices can affect the susceptibility to wind erosion. Large areas without field windbreaks and cleared areas on flood plains are vulnerable. Most of the soils in Douglas County are not susceptible to wind erosion. Clayey soils, however, such as Milford and Peotone soils, are moderately susceptible to soil blowing.

Conservation tillage, crop residue management, moisture management, conservation structures, and windbreaks can be used to limit the damage caused by wind erosion.

Limitations and Hazards Affecting Pastureland

Planting legumes, cool-season grasses, and warm-season grasses suited to the soils and climate of the area helps to maintain a productive stand of pasture.

Suitable pasture and hay plants include several legumes, cool-season grasses, and native warm-season grasses. Alfalfa, red clover, alsike clover, and ladino clover are legumes commonly grown in the county. Alfalfa is best suited to well drained soils, such as Camden and Martinsville soils, and moderately well drained soils, such as Dana and Xenia soils. Alfalfa is suited to some of the somewhat poorly drained soils, such as Flanagan, Raub, and Sunbury soils. Other legumes, such as alsike clover, red clover, and ladino clover, are more tolerant of wetter conditions. These legumes are better suited to poorly drained soils, such as Drummer, Sawmill, and Hartsburg soils, and somewhat poorly drained soils, such as Fincastle and Sabina soils.

Cool-season grasses commonly grown in the county include smooth bromegrass, orchardgrass, timothy, and tall fescue. These grasses can be seeded alone or in mixtures with legumes. Native warm-season grasses, such as indiangrass, big bluestem, and switchgrass, grow very well in the summer. They require different management techniques from those used for cool-season grasses.

Proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. It helps plants maintain sufficient and vigorous top growth during the growing season. Brush control is essential in many areas, and weed control is generally needed. Rotation grazing, deferred grazing during wet periods, and proper applications of lime and fertilizer also are important management practices.

Management concerns affecting the use of the detailed soil map units in the survey area for pasture are shown in table 6. The main concerns in managing pastureland in Douglas County are equipment limitations, flooding, frost heave, high pH, limited available water capacity, low fertility, low pH, ponding, poor tilth, root-restrictive layers, water erosion, and wetness.

Equipment limitations occur if the slope is more than 18 percent. They can cause rapid wear of equipment and can present problems with fertilization, harvest, pasture renovation, and seedbed preparation. The use of equipment is limited in moderately steep and steep areas of Senachwine soils.

Flooding applies to any map unit that is subject to occasional or frequent flooding. Flooding occurs in unprotected areas along major rivers and their tributaries. Surface drainage ditches help to remove floodwater if suitable outlets are available. Flooding may damage pasture plants in some years. Medway, Shaffton, Sawmill, and Zook soils are subject to flooding.

Selecting forage and hay varieties adapted to a shorter growing season and wetter conditions reduces the extent of flood damage. Dikes and diversions can help to minimize the extent of damage resulting from frequent or occasional flooding. Restricted use during wet periods helps to keep the pasture in good condition. Management of drainage in conformance with wetland regulations may require special permits and extra planning.

Frost heave is a concern when the potential for frost action is moderate or high and the drainage class is poorly drained or very poorly drained. Frost heave occurs in soils when ice lenses or bands develop into or push an ice wedge between layers of soil near the surface. The ice wedges heave the overlying soil layer upward, snapping plant roots. Soils with textures low in sand have small pores that hold water and enable ice lenses to form. Drummer, Hartsburg, Milford, Peotone, and Sawmill soils are susceptible to frost heave.

Selecting adapted forage and hay varieties can reduce the effects of frost heave. Timely rotation of grazing maintains a protective cover on the surface and insulates the soil, thereby reducing the effects of frost heave. Maintaining stubble 4 to 6 inches high and using mixtures of grasses and legumes can also help to prevent frost heave.

High pH is a limitation if the pH of the soil above a depth of 40 inches is greater than or equal to 7.4. This limitation can create toxicity or reduce the availability of plant nutrients, either of which will affect the health and vigor of the plants. Many soils in Douglas County have pH of more than 7.4 within a depth of 40 inches. Harpster, Hartsburg, Senachwine, and Octagon soils are subject to this limitation.

Limited available water capacity occurs when the available water capacity in the upper 60 inches is less than 6.0. This limitation defines the potential droughtiness of a soil. Mona soils are subject to this limitation.

Low fertility occurs when the average content of organic matter in the surface layer is less than 1 percent or the cation-exchange capacity (CEC) is less than or equal to 7 milliequivalents per 100 grams. Low organic matter content and low cation-exchange capacity result in a limited capacity of the soil to retain nutrients for plant use. Severely eroded Mona soils are examples of soils that have low fertility.

Frequent applications of small amounts of fertilizer help to prevent excessive loss of plant nutrients through leaching. Legumes, when used as part of a seeding mixture, can provide nitrogen to grass varieties. Timely deferment of grazing helps to maintain a protective cover on the surface and maintains the content of organic matter, which is a source of nutrients in the soil.

Low pH is a limitation if the pH within a depth of 40 inches is less than or equal to 5.5. This limitation can create toxicity or reduce the availability of nutrients, thus reducing the health and vigor of plants. Many soils in Douglas County have pH less than or equal to 5.5 within a depth of 40 inches. Starks, Sexton, and Birkbeck soils are examples.

Selecting adapted forage and hay varieties and applying lime according to the results of soil tests can help to overcome low pH. Some species, such as red clover or alsike clover, are more tolerant of acidic conditions and can improve the quantity and quality of livestock forage.

Ponding is a limitation if the upper limit of the seasonal high water table is above the soil surface. Ponding affects aeration and increases nutrient losses. Some soils affected by ponding in the survey area are Drummer, Harpster, Hartsburg, Milford, Peotone, and Sawmill soils.

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 conformity with wetland regulations may require special permits and extra planning. Selecting forage and hay varieties adapted to wet conditions can improve forage production. Restricted use during wet periods helps to keep the pasture in good condition.

Poor tilth is a limitation if (1) the content of clay in the surface layer is at least 27 percent but less than 35 percent and the content of organic matter is less than 4 percent, or (2) the content of clay is greater than or equal to 35 percent. Poor tilth can occur in soils when part of the subsoil is incorporated into the plow layer, typically as a result of the thinning of the surface layer by erosion. The incorporation of subsoil material into the plow layer reduces the content of organic matter and increases the clay content in the surface soil. Poor tilth also occurs in poorly drained soils that have a high content of clay, regardless of organic matter content, and in soils that have been excessively tilled. Soils with poor tilth generally have a surface layer that is sticky when wet and hard and cloddy when dry. Because they can be tilled only within a narrow range of moisture content, seedbed preparation is difficult. Poor tilth inhibits seedling germination and emergence, increases runoff and erosion, and reduces the rate of water infiltration. Clods make it difficult to prepare a good seedbed. Sloping fields commonly have clayey spots where the subsoil is exposed. Preparing a good seedbed and tilling are difficult in these areas because the original friable surface layer has been lost through erosion.

Soils with good tilth are granular and porous and have a high content of organic matter in the surface layer. Dana, Flanagan, and Catlin soils commonly have good tilth. Soils that have poor tilth generally have more clay, a lower content of organic matter, and weaker soil structure in the surface layer. Milford, Peotone, and Zook soils have poor tilth. If these soils are plowed when too wet, they become cloddy.

Practices that improve tilth 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 can improve tilth. Regularly returning crop residue to the soil, adding other organic material to the soil, minimizing tillage, and timing conservation tillage operations to near optimal soil moisture conditions also improve tilth. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet or by using no-till methods.

A root-restrictive layer is a limitation if dense material, a natric horizon, bedrock, or a fragipan is within 40 inches of the surface. A root-restrictive layer can increase the susceptibility of the soil to erosion and can limit the effectiveness of drainage systems. Root-restrictive layers affect plant growth by limiting nutrients and available water. Examples of soils with root-restrictive layers are Mona and Octagon soils.

A combination of conservation measures, including special tillage practices, incorporation of organic material, and crop selection, can help to overcome this limitation.

Water erosion is a hazard in areas of pastureland if the erosion factor (Kw) multiplied by the percent slope is greater than 1.0 and the slope is greater than or equal to 3 percent. 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. Erosion causes poor tilth, which reduces the rate of water infiltration and increases the rate of surface runoff. Water erosion reduces the productivity of the soil. It results in sediments, livestock manure, and added nutrients entering streams, rivers, water impoundments, and road ditches.

Soils with long or steep slopes are more susceptible than other soils to water erosion. Rotation grazing helps to control erosion by preventing overgrazing, which can cause surface compaction and excessive runoff. Other methods of reducing the hazard of erosion include tilling on the contour, using a no-till system of seeding during pasture establishment or renovation, and selecting adapted forage and hay varieties. Dana, Octagon, Senachwine, and Xenia soils are examples of soils that are subject to water erosion.

Wetness is a limitation if the seasonal high water table is within a depth of 1.5 feet. Wetness is a management concern on about 82 percent of the acreage used for crops and pasture in Douglas County. Some soils are naturally so wet that the production of crops is not possible unless a drainage system is installed. The poorly drained Drummer, Hartsburg, Milford, and Sawmill soils are examples of soils that are subject to wetness. Seasonal wetness in areas of somewhat poorly drained soils, such as Flanagan, Shaffton, Raub, Sabina, Starks, Sunbury, and Rutland soils, can delay planting in wet years.

Erosion Control

Generally, a combination of several practices is needed to control erosion. Conservation tillage, including chisel tillage and no-till, are common in Douglas County. Contour stripcropping, contour farming, conservation cropping systems, crop residue management, terraces, diversions, buffer strips, riparian areas, bendway weirs (fig. 12), and grassed waterways help to prevent excessive soil loss.

The loss of the surface layer through erosion causes damage in two ways. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. The subsoil generally has fewer plant nutrients, a lower content of organic matter, and a higher content of clay than the surface layer. As the content of organic matter in the tilled layer decreases and the clay content increases, soil tilth is reduced. The deterioration of soil tilth increases the likelihood that a crust will form on the surface and that the rate of water infiltration will be reduced. The higher content of clay increases the likelihood that the surface layer will become cloddy when tilled, especially if tilled when wet. The cloddiness makes it difficult to prepare a seedbed. Puddling is common in eroded areas after hard rains, and a crust may form on the surface of the soil as it dries. The runoff rate increases as a result. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Sabina soils; on soils that tend to be droughty; and on soils that are moderately eroded, such as Senachwine soils. Second, erosion on farmland results in the sedimentation and pollution of streams. Controlling erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and other wildlife.

Erosion-control measures provide a protective plant cover, increase the rate of water infiltration, and reduce the runoff rate. A cropping system that keeps plants on the surface for extended periods reduces the hazard of erosion and preserves the productive capacity of the soils. Including forage crops, such as grasses and legumes,

Figure 12.—Bendway weirs stabilize the stream flow and help to maintain streambanks along the Embarras River near Hindsboro.

in the cropping sequence helps to control erosion in the more sloping areas. It also provides nitrogen and improves tilth for the subsequent crop.

Terraces reduce the hazard of erosion by shortening the slopes and by controlling runoff. If a tile outlet terrace is used, the water that collects behind the terrace is removed by tile at a slow, controlled rate.

Grassed waterways reduce the hazard of erosion by providing a stable channel for water runoff on sloping land (fig. 13).

Conservation buffer strips and riparian areas can help to maintain stream channels and control runoff. A stream channel without trees is susceptible to slumping, but a protected riparian area can help to maintain the stream channel (fig. 14).

Contour farming involves conducting tillage or other fieldwork along the contour of a slope rather than perpendicular to it. This practice helps to control erosion because it

Figure 13.—Grassed waterways reduce the runoff rate in sloping areas.

results in the formation of small ridges perpendicular to the slope of the land. The ridges greatly reduce the velocity of the water moving downhill.

Stripcropping, although not used widely in the survey area, is an effective erosion-control measure if used in combination with other methods. It involves alternating rows or strips of one crop with rows of another crop that has a different rate of maturity and a different canopy cover. The rows are planted on the contour. The resulting vegetation reduces the hazard of erosion by protecting the surface from the impact of raindrops.

Erosion-control management through tillage and cropping systems is effective alone or in combination on most of the farmland in the county. The combination used and its effectiveness depend on soil characteristics and topography. Information about the design of erosion-control practices for each kind of soil is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Conservation Tillage

Most of the cropland in Douglas County can be protected from erosion by using a system of conservation tillage. Conservation tillage includes any non-inversion tillage practice that keeps a protective cover of residue on the surface throughout the year. The crop residue increases the rate of water infiltration by improving tilth. It also protects the surface from the beating action of raindrops, prevents surface crusting, and provides a more friable seedbed for good germination (fig. 15).

Chisel tillage is a common system of conservation tillage used in Douglas County. It leaves crop residue covering 20 to 60 percent of the surface. The extent of the coverage depends on the type of chisel plow used, the speed with which the

Figure 14.—Growing and maintaining a permanent cover of grass, forbs, shrubs, or trees can minimize streambank erosion. Pictured is an area of Sawmill and Shaffton soils along Lake Fork Creek near Atwood.

Figure 15.—Corn residue in this area of Dana soil improves tilth and the capacity of the soil to hold nutrients.

equipment moves through the field, and the kind of crop planted. Chisel tillage often follows stalk chopping in the fall, but it can also be used immediately prior to planting in the spring.

The acreage being farmed by no-till methods is increasing in the county. In no-till systems, a grain crop is planted directly in a cover crop, sod, or the crop residue of the previous year. A special planter that disturbs only the row area is used. Herbicides are used to control competing vegetation. The nearly complete ground cover protects the soil from the impact of raindrops and helps to control erosion caused by runoff.

Drainage Systems

Drainage systems consist of subsurface tile drains, surface inlets, open drainage ditches, or a combination of these. They have been installed in most areas of poorly drained and somewhat poorly drained soils in the county (fig. 16). As a result, these soils are adequately drained for the crops commonly grown in the area. Some areas of poorly drained soils require surface tile inlets or shallow surface ditches to remove ponded water. Some areas of somewhat poorly drained soils are wet long enough that artificial drainage is required if productivity is to be maintained. Management of drainage in conformity with wetland regulations may require special permits and extra planning.

The design of surface and subsurface drainage systems varies with the kind of soil and the availability of drainage outlets. Some areas of poorly drained soils in depressions require a combination of surface drains and tile drains. The tile should be more closely spaced in more slowly permeable soils than in more rapidly permeable soils. Manipulating drainage can allow the producer to conserve moisture, manage weeds and insects, and limit the leaching of nutrients and chemicals.

Further information about drainage systems is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Yields per Acre

Table 7 shows the optimum yields per acre that can be expected for the principal crops (corn, soybeans, winter wheat, and grass-legume hay) under a high level of management and the yields for grass-legume pasture under an average level of management. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification 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 (Olsen and others, 2000a and 2000b). Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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

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

Crops other than those shown in the yields tables 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.

Figure 16.—Ten-inch main tile outlets in a surface ditch in an area of Drummer soils.

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). Only class and subclass are used in this survey.

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, 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, 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.

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.

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

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, 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.

About 251,947 acres in the survey area, or nearly 94 percent of the total acreage, meets the soil requirements for prime farmland. This land generally is used for cultivated crops, mainly corn and soybeans.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 8. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Soil Series and Detailed Soil Map Units."

Hydric Soils

Table 9 lists the map unit components in the survey area that are considered hydric soils. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

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

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

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 2003) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

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

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

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

Forestland

When the first settlers arrived in the survey area, forests covered about 15.5 percent of the land (Iverson and others, 1989). Since then, most of the trees have been cleared from areas that are most suitable for cultivation.

By 2002, only 2,901 acres, or about 1 percent of the acreage in Douglas County, remained as forestland (USDA, NASS, 2002). Most of the forestland is privately owned. The most common trees in the uplands are white oak, black oak, northern red oak, shagbark hickory, white ash, green ash, sugar maple, silver maple, boxelder, black walnut, black cherry, and American elm. The most common trees on flood plains are cottonwood, sycamore, willow, bur oak, pin oak, swamp white oak, hackberry, and silver maple.

The remaining forestland acres are predominantly in areas too steep, too wet, or too isolated for cultivation. Most of these areas are along the drainageways of the Kaskaskia and Embarras Rivers. If they are properly managed, the soils in these areas are well suited to producing high-quality trees.

The productivity of many of the remaining forestland stands could be improved with proper management. Management practices needed in these areas include excluding livestock from the stands; providing protection from fire, insects, and diseases; using proper logging methods; and using proven silvicultural methods to enhance growth and regeneration.

In table 10, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual" (USDA/NRCS, National Forestry Manual), which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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

Suggested trees to plant are those 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. Wind erosion is a moderate hazard on about 12.5 percent of the soils in the county. These soils have a surface layer of very fine sandy loam or sandy loam, have a high content of finely divided calcium carbonate, or have a high content of clay in the surface layer. Hartsburg soils generally have a high content of calcium carbonate in the surface layer. Milford and Peotone soils have a high content of clay in the surface layer.

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 11 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 the Cooperative Extension Service or from a commercial nursery.

Recreation

The demand for recreational facilities is increasing in Douglas County. The largest recreation area is Walnut Point State Park north of Oakland. Small areas throughout the county offer playgrounds, athletic fields, golf courses, fishing ponds, camping and picnic areas, and hunting areas.

The potential for further recreational development is favorable throughout the county. Soils that have the best potential for such development are in the uplands along the Kaskaskia and Embarras Rivers. These soils are in areas where the hilly terrain, wooded slopes, and numerous streams provide a variety of locations suited to recreational uses.

The soils of the survey area are rated in tables 12a and 12b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

The information in the tables can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

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

Much of Douglas County was once part of a broad, tall-grass prairie that contained wet meadows, marshes, and areas of open water. This broad area is near the southern limit of the midwestern prairie pothole region that provided valuable nesting and stop-over habitat for migratory waterfowl and habitat for other wetland and openland wildlife. Although some areas were woodlands, especially those along creeks and on moderately steep to very steep landforms, the native plant communities were dominated by tall prairie grasses.

As the county was settled, the conversion of land for agriculture and urbanization altered these natural communities and the wildlife species associated with them. The landscape in the survey area is now a mosaic of urban development, cropland, pasture, isolated areas of forestland, wetlands, and waterways that support wildlife species that are able to adapt to the human-altered landscape. These species include whitetail deer, fox, coyotes, mourning doves, pheasants, squirrels, cardinals, and raccoons.

The largest areas managed for wildlife in the county are in the Walnut Point State Park and other nature preserves. Walnut Point covers about 631 acres and includes a 59-acre lake and a 65-acre nature preserve (fig. 17). It is managed by the Illinois Department of Natural Resources.

Wildlife habitat is commonly a secondary use in most areas. Large areas of nearly level and gently sloping soils used for cultivated crops and pasture are generally well suited to use as habitat for openland wildlife. Most areas in the county can be improved for wildlife habitat by providing needed food, cover, and water.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 13, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope,

Figure 17.—A forested area of Xenia and Sabina soils at Walnut Point State Park provides habitat for woodland wildlife.

surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are lovegrass, 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, goldenrod, ragweed, wildrye, and Illinois bundleflower.

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, hickory, sycamore, cottonwood, elm, sassafras, serviceberry, gray dogwood, flowering dogwood, hazelnut, sumac, and raspberry. Examples of native plants that are suitable for planting on soils rated *good* are hazelnut, gray dogwood, silky dogwood, oak, and hickory.

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 white pine, Norway spruce, balsam fir, red cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

Shallow water areas can often be included in the design of ponds and lakes by utilizing the naturally shallow end of the impoundment. Wetland areas can also be created by installing water-control valves on field drainage tiles, which allows the flooding of fields between times of crop production, such as after fall harvest. Valves can be opened to drain fields for spring planting while allowing soil moisture to remain high enough for good productivity. Islands, wood duck boxes, and an even mix of open water and aquatic plants help to provide optimum wildlife habitat in permanent wetland areas.

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.

Measures that can improve the habitat for openland wildlife include seeding roadsides, fence rows, and wildlife travel lanes to perennial plants and legumes, such as smooth bromegrass, timothy, redtop, bluegrass, alfalfa, red clover, ladino clover, and alsike clover; enhancing grassy areas with perennial native prairie grasses, such as big bluestem, little bluestem, switchgrass, and indiangrass; and protecting nesting cover from fire, traffic, grazing, mowing, or other disturbance until after the nesting season.

Warm-season grasses grow best under periodic prescribed burning. Any existing woody cover should be protected from fire and grazing. Establishing hedgerows and windbreaks with trees and shrubs that provide a source of food and roosting areas also enhances the habitat. Piles of brush can provide cover along fence rows and in oddly shaped areas that are inconvenient for cultivation. Leaving crop residue on the surface after harvest and leaving waste grain in the fields can provide wildlife with cover and food throughout the winter. Also, leaving some unharvested areas next to areas used as cover for wildlife can improve the habitat.

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

Measures that can improve the habitat for woodland wildlife include protecting native trees, shrubs, and prairie plants from grazing by livestock and from uncontrolled fire; minimizing the destruction of leaf mulch and of desirable young trees, shrubs, and sprouts that provide food and cover; and establishing hedgerows, farm windbreaks, brush piles, food plots, and strips of grass or grass-legume mixtures for additional food and cover. Plantings for food and cover may be difficult to establish and maintain in sloping areas. Establishing food plots of grain or seed crops in the less sloping areas and planting on the contour can reduce the hazard of erosion. Leaving dead trees to provide den sites for raccoons, woodpeckers, opossum, and other cavity-dwelling species also improves the habitat.

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, frogs, snakes, and turtles.

Measures that can improve the habitat for wetland wildlife include delaying or limiting the cultivation and planting of commodity crops in the shallow depressions that are subject to ponding; protecting areas of smartweeds, bulrushes, burreeds, and barnyard grasses; and planting Japanese millet, milo, and short corn varieties to provide food and cover. Blocking natural channels and manmade drainage systems can create shallow ponds and marshes. Ducks can be encouraged to nest by digging pits in areas of poorly drained or very poorly drained soils. The pits should be at least 30 feet in diameter and 2 to 3 feet deep. They provide open water through the spring and early summer. These areas should be protected from grazing by livestock.

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 14a and 14b 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 15a and 15b 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 16a and 16b give information about the soils as potential sources of reclamation material, roadfill, topsoil, gravel, and sand. Normal compaction, minor processing, and other standard construction practices are assumed.

In table 16a, the soils are rated *good, fair,* or *poor* as potential sources of roadfill, reclamation material, and topsoil. The features that limit the soils as sources of these materials 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 roadfill, reclamation material, or topsoil. The lower the number, the greater the limitation.

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

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

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

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

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

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

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 16b, 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.

Water Management

Tables 17a, 17b, and 17c 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; tile drains and underground outlets; and sprinkler irrigation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

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

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

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

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

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 and surface drains. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

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.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or other layers affecting the rate of water movement; permeability; depth to a high water table, or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating, grading, and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Sprinkler irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

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. These results are reported in table 23.

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 18 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 (fig. 18). "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

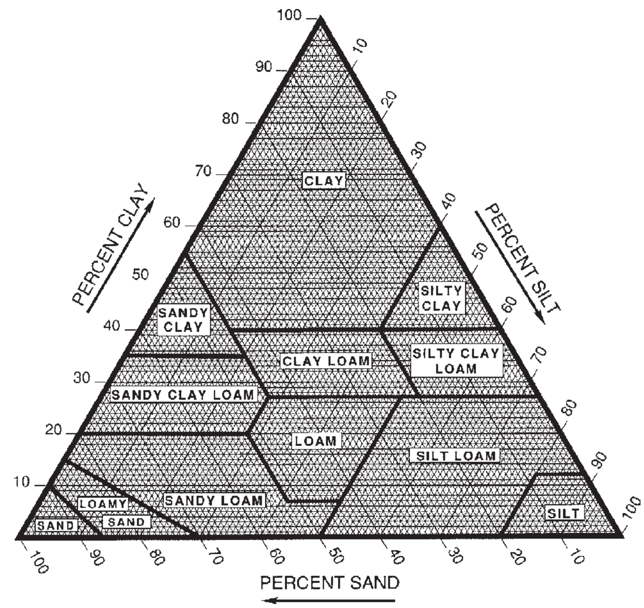


Figure 18.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

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 19 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 (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in 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 19, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Erosion factors are shown in table 19 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” (USDA/NRCS, National Soil Survey Handbook).

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

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

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

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

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

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

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 and soil organisms.

Water Features

Table 21 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.

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 21 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).

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.

Water table refers to a saturated zone in the soil. Table 21 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.

Soil Features

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

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

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

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

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

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

Engineering Index Test Data

Table 23 shows laboratory test data for one pedon sampled at a carefully selected site in the survey area. The pedon is representative of the series as it occurs in MLRA 108. The soil samples were tested by the Illinois Department of Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are Moisture density—T 99 (AASHTO), D 698 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); and Unified classification—D 2487-00 (ASTM).

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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.

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.

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).

Batavia facies (geology). An informal separation of the Henry Formation. Consists of stratified silt loam to gravelly sandy loam with thin bands of finer or coarser material on outwash plains.

Batestown Member (geology). The medium textured, lowermost unit of diamicton in the Lemont Formation. Diamicton of the Batestown Member generally consists of calcareous, dark gray to gray silt loam to loam that contains lenses of gravel, sand, silt, and clay. Locally, the Batestown Member is finer texturally and therefore similar to the Yorkville Member.

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 saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

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.

Cahokia Formation (geology). Deposits in flood plains and channels in modern rivers and streams. Mostly poorly sorted sand, silt, or clay containing local deposits of sandy gravel.

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.

Carmi facies (geology). Largely quiet-water lake sediments dominated by well bedded silt and some clay. See Equality Formation.

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.

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.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delavan Member (geology). Calcareous, brown gray to pink or violet gray loam diamicton. The lower part of the Tiskilwa Formation, deposited between 26,000 and 18,500 radiocarbon years ago. Reclassified to include what was formerly called the Fairgrange Till Member.

Delta. A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

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 (geology). A general 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.

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.

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.

Equality Formation (geology). Consists of gray to red silt and clay; generally shows evidence of bedding structures and occurs above the Sangamon geosol. Predominantly occurs as a fine grained lacustrine sediment. Ranges in age from 26,000 radiocarbon years to present.

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.

Fairgrange Till Member (geology). Abandoned nomenclature. Pink, reddish brown, and brownish gray sandy till in east-central Illinois. See Delavan Member.

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.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glacial (geology). The 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.

Glasford Formation (geology). Encompasses all till members of Illinoian age in Illinois.

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.

Haeger Member (geology). The coarse grained, uppermost unit of diamicton in the Lemont Formation. The Haeger Member consists of calcareous, light gray to gray, gravelly sandy loam diamicton that contains lenses of gravel, sand, silt, and clay.

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.

Henry Formation (geology). Consists of stratified sand and gravel that occur above the Sangamon Geosol.

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.

Holocene (geology). Postglacial age or time period (interglacial). About 0 to 12,600 years before present. See Quaternary.

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).

Illinoian (geology). In Illinois, represents the glacial age of ice advance preceding the Sangamonian and Wisconsinan and following the Yarmouthian and pre-Illinoian during the Pleistocene. This glaciation practically covered the entire State of Illinois with the exception of small portions in northwestern, western, and southern Illinois. See Pleistocene.

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

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. 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.

Interglacial. A period of time between major glacial stages. See Holocene, Sangamonian, and Yarmouthian.

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.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

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.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. 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.

Landscape. A collection of related natural landforms; usually the land surface which the eye can comprehend in a single view.

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.

Lemont Formation (geology). The Lemont Formation of the Wedron Group is the succession of fine textured to coarse textured gray diamicton units that overlie the Tiskilwa Formation. It has four differentiated members—the Lemont Member, the Batestown Member, the Yorkville Member, and the Haeger Member. In northern Illinois, the Lemont Formation is not subdivided. The Lemont Formation consists of calcareous, gray, fine textured to coarse textured diamicton units that contain lenses of gravel, sand, silt, and clay.

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.

Mackinaw facies (geology). The Mackinaw facies is an informal separation of the Henry Formation. It consists of well sorted sand and gravel outwash deposits in valleys leading outward from glacier fronts. Preserved today as terraces beneath Holocene deposits in major stream and river valleys.

Mason Group (geology). The Mason Group comprises three proglacial and one postglacial sorted sediment formations that represent distinct stratigraphic layers based on grain size and bedding characteristics. The proglacial units are Roxana Silt, Peoria Silt, and the Henry Formation. The postglacial unit is the Equality Formation.

Masses. See Redoximorphic features.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

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

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.

Parkland facies (geology). An informal separation of the Henry Formation as dunes in outwash areas; an informal separation of Peoria Silt if interfingered with silt in bluff areas. Consists of well sorted eolian sand deposits in the form of dunes or sheetlike deposits.

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.

Peoria Silt (geology). Light yellowish tan to gray, calcareous silt that grades from a sandy silt in the bluffs to a clayey silt away from the bluffs. Also known as Peoria loess. Covers most of Illinois and ranges in thickness from 80 feet in bluff areas along the Mississippi River to 1 or 2 feet away from bluff areas. Deposition occurred 25,000 to 12,500 radiocarbon years ago.

Percolation. The movement of water through the soil.

Permafrost. Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

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.

Piatt Member (geology). The upper diamicton facies of the Tiskilwa Formation deposited between 19,000 and 18,500 radiocarbon years ago. The Piatt Member consists of gray loam diamicton containing lenses of sorted sediment. Textures vary, especially near the surface, where it is often interbedded with stratified sediment.

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.

Pleistocene (geology). The period in a geologic time series that encompasses all glacial and interglacial stages. Includes the Wisconsinan, Sangamonian, Illinoian, Yarmouthian, and pre-Illinoian. The period covered is about 12,600 to 2 million years before present.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

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.

Quaternary (geology). The latest period of time in the stratigraphic column, about 0 to 2 million years before present, represented by local accumulations of glacial (Pleistocene) and postglacial (Holocene) deposits. An artificial division of time used to separate pre-human from post-human sedimentation.

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.
Roxana Silt (geology). Brownish red and gray silt loam. Typically leached of carbonates. It overlies the Sangamon Geosol and is typically bounded above by Peoria Silts. It can be distinguished from Peoria Silts by being darker brown and more clayey. Deposition occurred 75,000 to 27,000 radiocarbon years ago.
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.

Sangamonian (geology). In Illinois, represents an interglacial age between the Illinoian and Wisconsinan glacial stages during the Pleistocene. See Pleistocene; Geosol.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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

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

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

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

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, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock 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.

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. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Strongly sloping	5 to 10 percent
Moderately steep	10 to 18 percent
Steep	18 to 35 percent
Very steep	35 percent and higher

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.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on outwash, or on a glaciolacustrine deposit.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief 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 grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

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

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.

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.

Tiskilwa Formation (geology). The lowermost sequence of red to gray diamicton units of the Wedron Group. It has three differentiated members—the Tiskilwa Member, the Delavan Member, and the Piatt Member. The Tiskilwa Formation consists of calcareous, red gray to gray, medium textured (clay loam to loam) diamicton units that contain lenses of gravel, sand, silt, and clay. Typically, it oxidizes to red brown, brown, or yellow brown.

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.

Tuff. A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

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. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Vandalia Till Member (geology). The Vandalia Till Member of the Glasford Formation consists of clay loam diamicton. It is generally gray and calcareous, except where weathered. It is commonly 25 to 30 feet thick and is bounded at the top by the Sangamon Geosol.

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.

Wasco facies (geology). An informal separation of the Henry Formation. Consists of poorly sorted sand and gravel outwash deposits on kames, eskers, and deltas.

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.

Wedron Group (geology). Mostly diamicton of the Wisconsinan Age.

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.

Wisconsinan (geology). In Illinois, represents the last glacial stage of ice advance during the Pleistocene. Follows the Sangamonian interglacial stage. See Pleistocene.

Yarmouthian (geology). In Illinois, represents an interglacial stage between the pre-Illinoian and Illinoian glacial stages during the Pleistocene. See Pleistocene.

Yorkville Member (geology). The middle unit of diamicton in the Lemont Formation. The Yorkville Member generally consists of calcareous, gray, fine textured (silty clay to silty clay loam) diamicton that contains lenses of gravel, sand, silt, and clay. It typically oxidizes to olive brown. Locally, the Yorkville Member is coarser texturally and therefore similar to the Batestown Member.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Tuscola, Illinois)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	34.4	17.6	26.0	61	-16	2	2.04	0.81	3.07	5	8.3
February---	40.3	22.1	31.2	67	-10	3	2.16	1.04	3.13	4	4.8
March------	52.5	32.0	42.2	81	7	52	3.13	1.70	4.38	6	2.6
April------	65.5	41.6	53.6	86	21	174	3.84	1.83	5.58	8	.3
May--------	76.4	52.4	64.4	93	33	448	3.96	2.00	5.66	7	.0
June-------	85.5	61.6	73.5	98	44	704	4.05	1.96	5.86	7	.0
July-------	88.2	64.9	76.6	100	50	821	4.64	2.29	6.69	6	.0
August-----	86.1	62.5	74.3	98	48	745	3.79	1.75	5.53	5	.0
September--	80.4	55.1	67.7	95	35	532	3.17	1.38	4.70	5	.0
October----	68.2	43.9	56.1	88	25	225	2.90	1.67	3.99	5	.0
November---	52.1	33.5	42.8	75	11	44	3.85	1.91	5.53	6	1.7
December---	40.2	24.1	32.1	66	-6	8	3.05	1.27	4.56	6	5.2
Yearly:											
Average---	64.1	42.6	53.4	---	---	---	---	---	---	---	---
Extreme---	104	-26	---	100	-18	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,758	40.58	31.95	46.24	70	22.9

* 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 Tuscola, 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	May 5
2 years in 10 later than--	Apr. 6	Apr. 13	Apr. 30
5 years in 10 later than--	Mar. 28	Apr. 5	Apr. 19
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 18	Oct. 10	Sept. 25
2 years in 10 earlier than--	Oct. 24	Oct. 15	Oct. 1
5 years in 10 earlier than--	Nov. 6	Oct. 26	Oct. 11

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Tuscola, 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	201	186	152
8 years in 10	208	192	160
5 years in 10	222	203	174
2 years in 10	236	214	188
1 year in 10	243	220	196

Table 4.--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
Birkbeck	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Blackberry	Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Brenton	Fine-silty, mixed, superactive, mesic Aquic Argiudolls
Brooklyn	Fine, smectitic, mesic Mollic Albaqualfs
Camden	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Catlin	Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Clare	Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Dana	Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Drummer	Fine-silty, mixed, superactive, mesic Typic Endoaquolls
Elburn	Fine-silty, mixed, superactive, mesic Aquic Argiudolls
*Fincastle	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Flanagan	Fine, smectitic, mesic Aquic Argiudolls
Harpster	Fine-silty, mixed, superactive, mesic Typic Calciaquolls
Hartsburg	Fine-silty, mixed, superactive, mesic Typic Endoaquolls
Harvard	Fine-silty, mixed, superactive, mesic Mollic Hapludalfs
Kendall	Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs
*Kernan	Fine, smectitic, mesic Aeric Epiaqualfs
Martinsville	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Medway	Fine-loamy, mixed, superactive, mesic Fluvaquentic Hapludolls
Milford	Fine, mixed, superactive, mesic Typic Endoaquolls
*Millbrook	Fine-silty, mixed, superactive, mesic Aquollic Hapludalfs
*Mona	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs
Octagon	Fine-loamy, mixed, active, mesic Mollic Oxyaquic Hapludalfs
Orthents, loamy	Loamy, mesic Udorthents
Orthents, loamy-skeletal	Loamy-skeletal, mixed, acid, mesic Typic Udorthents
Peotone	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Plano	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Proctor	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Raub	Fine-silty, mixed, superactive, mesic Aquic Argiudolls
Russell	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Rutland	Fine, smectitic, mesic Aquic Argiudolls
Sabina	Fine, smectitic, mesic Aeric Epiaqualfs
Sawmill	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Senachwine	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Sexton	Fine, smectitic, mesic Typic Endoaqualfs
Shaffton	Fine-loamy, mixed, superactive, mesic Fluvaquentic Hapludolls
Starks	Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs
Sunbury	Fine, smectitic, mesic Aquollic Hapludalfs
Toronto	Fine-silty, mixed, superactive, mesic Udollic Epiaqualfs
Wingate	Fine-silty, mixed, superactive, mesic Mollic Oxyaquic Hapludalfs
Xenia	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Zook	Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Table 5.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
56B	Dana silt loam, 2 to 5 percent slopes	4,049	1.5
67A	Harpster silty clay loam, 0 to 2 percent slopes	654	0.2
69A	Milford silty clay loam, 0 to 2 percent slopes	26,571	10.0
132A	Starks silt loam, 0 to 2 percent slopes	2,385	0.9
134B	Camden silt loam, 2 to 5 percent slopes	518	0.2
136A	Brooklyn silt loam, 0 to 2 percent slopes	828	0.3
148B	Proctor silt loam, 2 to 5 percent slopes	2	*
149A	Brenton silt loam, 0 to 2 percent slopes	4,651	1.7
152A	Drummer silty clay loam, 0 to 2 percent slopes	19,556	7.3
154A	Flanagan silt loam, 0 to 2 percent slopes	53,837	20.2
171B	Catlin silt loam, 2 to 5 percent slopes	2,465	0.9
198A	Elburn silt loam, 0 to 2 percent slopes	11,724	4.4
199B	Plano silt loam, 2 to 5 percent slopes	353	0.1
208A	Sexton silt loam, 0 to 2 percent slopes	636	0.2
219A	Millbrook silt loam, 0 to 2 percent slopes	1,543	0.6
233B	Birkbeck silt loam, 2 to 5 percent slopes	528	0.2
234A	Sunbury silt loam, 0 to 2 percent slopes	2,711	1.0
234B	Sunbury silt loam, 2 to 5 percent slopes	358	0.1
236A	Sabina silt loam, 0 to 2 percent slopes	3,183	1.2
242A	Kendall silt loam, 0 to 2 percent slopes	1,427	0.5
244A	Hartsburg silty clay loam, 0 to 2 percent slopes	1,149	0.4
291B	Xenia silt loam, 2 to 5 percent slopes	2,628	1.0
322C2	Russell silt loam, 5 to 10 percent slopes, eroded	1,477	0.6
330A	Peotone silty clay loam, 0 to 2 percent slopes	591	0.2
344B	Harvard silt loam, 2 to 5 percent slopes	338	0.1
348B	Wingate silt loam, 2 to 5 percent slopes	523	0.2
353A	Toronto silt loam, 0 to 2 percent slopes	623	0.2
375A	Rutland silt loam, 0 to 2 percent slopes	8,495	3.2
448C3	Mona loam, 5 to 10 percent slopes, severely eroded	703	0.3
481A	Raub silt loam, 0 to 2 percent slopes	3,602	1.3
496A	Fincastle silt loam, 0 to 2 percent slopes	1,554	0.6
533	Urban land	591	0.2
554A	Kernan silt loam, 0 to 2 percent slopes	805	0.3
554B	Kernan silt loam, 2 to 5 percent slopes	682	0.3
570B	Martinsville silt loam, 2 to 5 percent slopes	1,319	0.5
570C2	Martinsville loam, 5 to 10 percent slopes, eroded	818	0.3
570D2	Martinsville loam, 10 to 18 percent slopes, eroded	188	*
618C2	Senachwine silt loam, 5 to 10 percent slopes, eroded	1,616	0.6
618D2	Senachwine silt loam, 10 to 18 percent slopes, eroded	1,196	0.4
618F	Senachwine silt loam, 18 to 35 percent slopes	766	0.3
656C2	Octagon silt loam, 5 to 10 percent slopes, eroded	996	0.4
663B	Clare silt loam, 2 to 5 percent slopes	971	0.4
679B	Blackberry silt loam, 2 to 5 percent slopes	483	0.2
722A	Drummer-Milford silty clay loams, 0 to 2 percent slopes	84,450	31.6
747A	Milford silty clay loams, 0 to 2 percent slopes	2,718	1.0
802D	Orthents, loamy, undulating	236	*
809F	Orthents, loamy-skeletal, acid, steep	186	*
864	Pits, quarries	102	*
865	Pits, gravel	17	*
1107A	Sawmill silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded	5,405	2.0
3107A	Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded	1,151	0.4
3183A	Shaffton silt loam, 0 to 2 percent slopes, frequently flooded	946	0.4
3405A	Zook silty clay loam, 0 to 2 percent slopes, frequently flooded	744	0.3
8682A	Medway loam, 0 to 2 percent slopes, occasionally flooded	196	*
MW	Miscellaneous water	238	*
W	Water	488	0.2
	Total	266,970	100.0

* Less than 0.1 percent.

Table 6.--Management Considerations on Cropland and Pastureland

(See text for a description of the limitations and hazards listed in this table. Only the map units that are generally available for use as cropland or pastureland are listed. Absence of an entry indicates that the map unit is generally unsuited to use as cropland or pastureland or that it is not commonly used for those purposes)

Map symbol and soil name	Management considerations on cropland	Management considerations on pastureland
56B:		
Dana	Water erosion	Low pH, water erosion
67A:		
Harpster	Ponding, poor tilth, high pH, wetness, excess lime	Ponding, high pH, excess lime, wetness, frost heave
69A:		
Milford	Ponding, poor tilth, wetness	Ponding, frost heave, wetness
132A:		
Starks	Wetness, crusting	Wetness, low pH
134B:		
Camden	Crusting, water erosion	Low pH, water erosion
136A:		
Brooklyn	Ponding, wetness, restricted permeability	Ponding, low pH, frost heave, wetness
148B:		
Proctor	Water erosion	Low pH, water erosion
149A:		
Brenton	Wetness	Wetness
152A:		
Drummer	Ponding, wetness	Ponding, frost heave, wetness
154A:		
Flanagan	Wetness	Wetness
171B:		
Catlin	Water erosion	No major concerns
198A:		
Elburn	Wetness	Wetness
199B:		
Plano	Water erosion	Low pH
208A:		
Sexton	Ponding, crusting, restricted permeability, wetness	Ponding, low pH, frost heave, wetness
219A:		
Millbrook	Wetness	Wetness, low pH
233B:		
Birkbeck	Crusting, water erosion	Low pH, water erosion
234A:		
Sunbury	Wetness	Wetness

Table 6.--Management Considerations on Cropland and Pastureland--Continued

Map symbol and soil name	Management considerations on cropland	Management considerations on pastureland
234B:		
Sunbury	Wetness, water erosion	Wetness, water erosion
236A:		
Sabina	Wetness, crusting	Wetness, low pH
242A:		
Kendall	Wetness, crusting	Wetness, low pH
244A:		
Hartsburg	Ponding, high pH, excess lime, wetness	Ponding, high pH, excess lime, frost heave, wetness
291B:		
Xenia	Wetness, crusting, water erosion	Wetness, low pH, water erosion
322C2:		
Russell	Crusting, water erosion	Low pH, water erosion
330A:		
Peotone	Ponding, poor tilth, wetness, restricted permeability	Ponding, frost heave, wetness
344B:		
Harvard	Water erosion	Low pH, water erosion
348B:		
Wingate	Wetness, water erosion	Wetness, low pH, water erosion
353A:		
Toronto	Wetness	Wetness, low pH
375A:		
Rutland	Wetness	Wetness, low pH
448C3:		
Mona	Root-restrictive layer, water erosion, limited available water capacity, restricted permeability, crusting	Root-restrictive layer, water erosion, limited available water capacity
481A:		
Raub	Wetness	Wetness, low pH
496A:		
Fincastle	Wetness, crusting	Wetness, low pH
554A:		
Kernan	Wetness	Wetness
554B:		
Kernan	Wetness, water erosion, restricted permeability	Wetness, low pH, water erosion
570B:		
Martinsville	Water erosion	Low pH, water erosion

Table 6.--Management Considerations on Cropland and Pastureland--Continued

Map symbol and soil name	Management considerations on cropland	Management considerations on pastureland
570C2:		
Martinsville	Water erosion	Low pH, water erosion
570D2:		
Martinsville	Water erosion	Low pH, water erosion
618C2:		
Senachwine	High pH, crusting, water erosion	Low pH, high pH, water erosion
618D2:		
Senachwine	High pH, crusting, water erosion	Low pH, high pH, water erosion
618F:		
Senachwine	---	Equipment limitation, low pH, water erosion
656C2:		
Octagon	Wetness, root-restrictive layer, high pH, water erosion	Wetness, root-restrictive layer, high pH, water erosion
663B:		
Clare	Water erosion	Low pH, water erosion
679B:		
Blackberry	Water erosion	Low pH
722A:		
Drummer	Ponding, wetness	Ponding, frost heave, wetness
Milford	Ponding, poor tilth, wetness, restricted permeability	Ponding, frost heave, wetness
747A:		
Milford, undrained	---	Ponding, frost heave, wetness
Milford, drained	Ponding, poor tilth, wetness	Ponding, frost heave, wetness
802D:		
Orthents, loamy	Poor tilth, crusting, water erosion	Poor tilth, water erosion
809F.		
1107A:		
Sawmill, undrained	---	Flooding, ponding, frost heave, wetness
3107A:		
Sawmill	Flooding, ponding, wetness	Flooding, ponding, frost heave, wetness
3183A:		
Shaffton	Flooding, wetness	Flooding, wetness

Table 6.--Management Considerations on Cropland and Pastureland--Continued

Map symbol and soil name	Management considerations on cropland	Management considerations on pastureland
3405A:		
Zook	Flooding, ponding, poor tilth, restricted permeability, wetness	Flooding, ponding, frost heave, wetness
8682A:		
Medway	Flooding, wetness	Flooding, wetness

Table 7.--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	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
56B:							
Dana----------------	2e	160	50	61	88	5.59	8.25
67A:							
Harpster------------	2w	164	52	61	80	4.86	7.20
69A:							
Milford-------------	2w	154	51	61	79	4.97	7.33
132A:							
Starks--------------	2w	147	46	57	76	4.63	6.83
134B:							
Camden--------------	2e	148	46	57	77	4.25	6.27
136A:							
Brooklyn------------	2w	136	44	54	67	4.07	6.00
148B:							
Proctor-------------	2e	164	51	62	88	5.70	8.42
149A:							
Brenton-------------	1	176	54	67	95	5.09	7.50
152A:							
Drummer-------------	2w	175	57	66	90	5.09	7.50
154A:							
Flanagan------------	1	175	56	69	92	5.31	7.83
171B:							
Catlin--------------	2e	166	52	65	88	6.04	8.91
198A:							
Elburn--------------	1	178	55	67	85	5.20	7.67
199B:							
Plano---------------	2e	173	53	66	92	6.27	9.10
208A:							
Sexton--------------	2w	142	45	57	71	4.41	6.50
219A:							
Millbrook-----------	1	159	50	62	84	4.75	7.00
233B:							
Birkbeck------------	2e	149	47	59	78	4.58	6.76
234A:							
Sunbury-------------	1	162	51	63	84	4.97	7.33
234B:							
Sunbury-------------	2e	160	50	62	83	4.92	7.26
236A:							
Sabina--------------	2w	151	47	59	78	4.63	6.83

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
242A:							
Kendall-------------	2w	155	48	60	80	4.75	7.00
244A:							
Hartsburg-----------	2w	164	53	61	80	4.86	7.17
291B:							
Xenia---------------	2e	145	45	57	74	4.03	5.94
322C2:							
Russell-------------	3e	134	42	53	68	3.79	5.52
330A:							
Peotone-------------	3w	148	49	55	70	4.52	6.67
344B:							
Harvard-------------	2e	152	48	59	78	4.92	7.26
348B:							
Wingate-------------	2e	148	46	60	81	4.81	7.10
353A:							
Toronto-------------	2w	156	50	62	84	4.75	7.00
375A:							
Rutland-------------	1	162	52	64	87	4.97	7.33
448C3:							
Mona----------------	3e	108	34	42	56	2.84	4.08
481A:							
Raub----------------	1	165	52	66	92	5.09	7.50
496A:							
Fincastle-----------	1	150	47	59	77	4.52	6.67
533.							
Urban land							
554A:							
Kernan--------------	2w	138	45	55	70	4.18	6.17
554B:							
Kernan--------------	2e	137	45	54	69	4.14	6.11
570B:							
Martinsville--------	2e	139	44	56	67	4.03	5.94
570C2:							
Martinsville--------	3e	130	41	53	63	3.79	5.52
570D2:							
Martinsville--------	4e	122	38	50	59	3.54	5.10
618C2:							
Senachwine----------	3e	123	40	48	59	2.94	4.29
618D2:							
Senachwine----------	4e	115	37	45	55	2.75	3.97

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
618F:							
Senachwine----------	6e	---	---	---	---	2.37	3.45
656C2:							
Octagon-------------	3e	133	44	54	65	4.20	6.13
663B:							
Clare---------------	2e	162	50	62	86	5.70	8.42
679B:							
Blackberry----------	2e	175	54	66	88	6.27	9.10
722A-----------------		167	55	64	86	5.04	7.40
Milford-------------	2w						
Drummer-------------	2w						
747A-----------------		103	34	41	53	3.34	4.91
Milford, undrained--	5w						
Milford, drained----	2w						
802D:							
Orthents, loamy-----	4e	---	---	---	---	---	---
809F:							
Orthents, loamy-skeletal-----------	7s	---	---	---	---	---	---
864, 865.							
Pits							
1107A:							
Sawmill, undrained--	5w	---	---	---	---	---	5.37
3107A:							
Sawmill-------------	3w	153	49	---	---	4.68	6.90
3183A:							
Shaffton------------	3w	126	41	---	---	4.17	6.15
3405A:							
Zook----------------	3w	123	42	---	---	3.86	5.70
8682A:							
Medway--------------	2w	159	51	62	77	5.09	7.50

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 8.--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
56B	Dana silt loam, 2 to 5 percent slopes
67A	Harpster silty clay loam, 0 to 2 percent slopes (where drained)
69A	Milford silty clay loam, 0 to 2 percent slopes (where drained)
132A	Starks silt loam, 0 to 2 percent slopes (where drained)
134B	Camden silt loam, 2 to 5 percent slopes
136A	Brooklyn silt loam, 0 to 2 percent slopes (where drained)
148B	Proctor silt loam, 2 to 5 percent slopes
149A	Brenton silt loam, 0 to 2 percent slopes
152A	Drummer silty clay loam, 0 to 2 percent slopes (where drained)
154A	Flanagan silt loam, 0 to 2 percent slopes
171B	Catlin silt loam, 2 to 5 percent slopes
198A	Elburn silt loam, 0 to 2 percent slopes
199B	Plano silt loam, 2 to 5 percent slopes
208A	Sexton silt loam, 0 to 2 percent slopes (where drained)
219A	Millbrook silt loam, 0 to 2 percent slopes
233B	Birkbeck silt loam, 2 to 5 percent slopes
234A	Sunbury silt loam, 0 to 2 percent slopes
234B	Sunbury silt loam, 2 to 5 percent slopes
236A	Sabina silt loam, 0 to 2 percent slopes (where drained)
242A	Kendall silt loam, 0 to 2 percent slopes (where drained)
244A	Hartsburg silty clay loam, 0 to 2 percent slopes (where drained)
291B	Xenia silt loam, 2 to 5 percent slopes
330A	Peotone silty clay loam, 0 to 2 percent slopes (where drained)
344B	Harvard silt loam, 2 to 5 percent slopes
348B	Wingate silt loam, 2 to 5 percent slopes
353A	Toronto silt loam, 0 to 2 percent slopes (where drained)
375A	Rutland silt loam, 0 to 2 percent slopes
481A	Raub silt loam, 0 to 2 percent slopes
496A	Fincastle silt loam, 0 to 2 percent slopes
554A	Kernan silt loam, 0 to 2 percent slopes (where drained)
554B	Kernan silt loam, 2 to 5 percent slopes
570B	Martinsville silt loam, 2 to 5 percent slopes
663B	Clare silt loam, 2 to 5 percent slopes
679B	Blackberry silt loam, 2 to 5 percent slopes
722A	Drummer-Milford silty clay loams, 0 to 2 percent slopes (where drained)
3107A	Sawmill 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)
3183A	Shaffton silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3405A	Zook 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)
8682A	Medway loam, 0 to 2 percent slopes, occasionally flooded

Table 9.--Hydric Soils

(Only the map units that have hydric components are listed. See text for a description of hydric qualities and definitions of the hydric criteria codes)

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
56B:				
Dana silt loam, 2 to 5 percent slopes	Dana	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
67A:				
Harpster silty clay loam, 0 to 2 percent slopes	Harpster	Hydric	ground moraine, lake plain, outwash plain, stream terrace	2B3
69A:				
Milford silty clay loam, 0 to 2 percent slopes	Milford	Hydric	lake plain	2B3
132A:				
Starks silt loam, 0 to 2 percent slopes	Starks	Not hydric	outwash plain, stream terrace	---
	Sexton	Hydric	depression	2B3
	Brooklyn	Hydric	depression, stream terrace	2B3
	Drummer	Hydric	swale	2B3
134B:				
Camden silt loam, 2 to 5 percent slopes	Camden	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3
136A:				
Brooklyn silt loam, 0 to 2 percent slopes	Brooklyn	Hydric	outwash plain, outwash terrace	2B3
	Drummer	Hydric	swale	2B3
148B:				
Proctor silt loam, 2 to 5 percent slopes	Proctor	Not hydric	outwash plain	---
	Drummer	Hydric	swale	2B3
149A:				
Brenton silt loam, 0 to 2 percent slopes	Brenton	Not hydric	outwash plain	---
	Drummer	Hydric	swale	2B3
152A:				
Drummer silty clay loam, 0 to 2 percent slopes	Drummer	Hydric	outwash plain, stream terrace	2B3
154A:				
Flanagan silt loam, 0 to 2 percent slopes	Flanagan	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
171B:				
Catlin silt loam, 2 to 5 percent slopes	Catlin	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
198A:				
Elburn silt loam, 0 to 2 percent slopes	Elburn	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
199B:				
Plano silt loam, 2 to 5 percent slopes	Plano	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3
208A:				
Sexton silt loam, 0 to 2 percent slopes	Sexton	Hydric	outwash plain	2B3
219A:				
Millbrook silt loam, 0 to 2 percent slopes	Millbrook	Not hydric	outwash plain, outwash terrace	---
	Drummer	Hydric	swale	2B3
	Brooklyn	Hydric	depression, outwash plain, stream terrace, swale	2B3
234A:				
Sunbury silt loam, 0 to 2 percent slopes	Sunbury	Not hydric	till plain, ground moraine	---
	Drummer	Hydric	swale	2B3
234B:				
Sunbury silt loam, 2 to 5 percent slopes	Sunbury	Not hydric	till plain, ground moraine	---
	Drummer	Hydric	swale	2B3
236A:				
Sabina silt loam, 0 to 2 percent slopes	Sabina	Not hydric	ground moraine, till plain	---
	Drummer	Hydric	swale	2B3
242A:				
Kendall silt loam, 0 to 2 percent slopes	Kendall	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3
	Brooklyn	Hydric	depression	2B3
244A:				
Hartsburg silty clay loam, 0 to 2 percent slopes	Hartsburg	Hydric	outwash plain, ground moraine	2B3
291B:				
Xenia silt loam, 2 to 5 percent slopes	Xenia	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
322C2:				
Russell silt loam, 5 to 10 percent slopes, eroded	Russell	Not hydric	ground moraine, end moraine	---
	Drummer	Hydric	swale	2B3
330A:				
Peotone silty clay loam, 0 to 2 percent slopes	Peotone	Hydric	depression	2B3
344B:				
Harvard silt loam, 2 to 5 percent slopes	Harvard	Not hydric	outwash plain	---
	Brooklyn	Hydric	depression, outwash plain, stream terrace	2B3
348B:				
Wingate silt loam, 2 to 5 percent slopes	Wingate	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
353A:				
Toronto silt loam, 0 to 2 percent slopes	Toronto	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
375A:				
Rutland silt loam, 0 to 2 percent slopes	Rutland	Not hydric	ground moraine, lake plain	---
	Harpster	Hydric	depression, lake plain	2B3
	Milford	Hydric	swale	2B3
	Drummer	Hydric	swale	2B3
448C3:				
Mona loam, 5 to 10 percent slopes, severely eroded	Mona	Not hydric	ground moraine, lake plain	---
	Milford	Hydric	swale	2B3
481A:				
Raub silt loam, 0 to 2 percent slopes	Raub	Not hydric	ground moraine	---
	Drummer	Hydric	swale	2B3
533:				
Urban land	Urban land	---	---	---
	Drummer	Hydric	swale	2B3
554A:				
Kernan silt loam, 0 to 2 percent slopes	Kernan	Not hydric	lake plain	---
	Milford	Hydric	swale	2B3
554B:				
Kernan silt loam, 2 to 5 percent slopes	Kernan	Not hydric	lake plain	---
	Milford	Hydric	swale	2B3
570B:				
Martinsville silt loam, 2 to 5 percent slopes	Martinsville	Not hydric	outwash terrace, outwash plain	---
	Drummer	Hydric	swale	2B3
570C2:				
Martinsville loam, 5 to 10 percent slopes, eroded	Martinsville	Not hydric	outwash terrace, outwash plain	---
	Drummer	Hydric	swale	2B3
	Sawmill	Hydric	flood plain	2B3
570D2:				
Martinsville loam, 10 to 18 percent slopes, eroded	Martinsville	Not hydric	outwash terrace, outwash plain	---
	Drummer	Hydric	swale	2B3
	Sawmill	Hydric	flood plain	2B3
618C2:				
Senachwine silt loam, 5 to 10 percent slopes, eroded	Senachwine	Not hydric	ground moraine, end moraine	---
	Drummer	Hydric	swale	2B3
	Sawmill	Hydric	flood plain	2B3
618D2:				
Senachwine silt loam, 10 to 18 percent slopes, eroded	Senachwine	Not hydric	end moraine, ground moraine	---
	Drummer	Hydric	swale	2B3
	Sawmill	Hydric	flood plain	2B3
	Sawmill, undrained	Hydric	backswamp, flood plain	2B3,3,4

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
618F:				
Senachwine silt loam, 18 to 35 percent slopes	Senachwine	Not hydric	end moraine	---
	Sawmill	Hydric	flood plain	2B3
	Sawmill, undrained	Hydric	backswamp, flood plain	2B3,3,4
656C2:				
Octagon silt loam, 5 to 10 percent slopes, eroded	Octagon	Not hydric	end moraine, ground moraine	---
	Drummer	Hydric	swale	2B3
663B:				
Clare silt loam, 2 to 5 percent slopes	Clare	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3
679B:				
Blackberry silt loam, 2 to 5 percent slopes	Blackberry	Not hydric	outwash plain, stream terrace	---
	Drummer	Hydric	swale	2B3
722A:				
Drummer-Milford silty clay loams, 0 to 2 percent slopes	Drummer	Hydric	outwash plain	2B3
	Milford	Hydric	lake plain	2B3
747A:				
Milford silty clay loams, 0 to 2 percent slopes	Milford, undrained	Hydric	depression	2B3,3
	Milford, drained	Hydric	lake plain	2B3
802D:				
Orthents, loamy, rolling	Orthents	Not hydric	---	---
	Sawmill	Hydric	flood plain	2B3
	Sawmill, undrained	Hydric	backswamp, flood plain	2B3
	Drummer	Hydric	swale	2B3
1107A:				
Sawmill silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded	Sawmill, undrained	Hydric	flood plain, backswamp	2B3,3,4
3107A:				
Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded	Sawmill	Hydric	flood plain	2B3
3183A:				
Shaffton silt loam, 0 to 2 percent slopes, frequently flooded	Shaffton	Not hydric	flood plain step, stream terrace	---
	Sawmill	Hydric	flood plain	2B3
	Sawmill, undrained	Hydric	backswamp, flood plain	2B3,3,4
3405A:				
Zook silty clay loam, 0 to 2 percent slopes, frequently flooded	Zook	Hydric	flood plain	2B3

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
8682A:				
Medway loam, 0 to 2 percent slopes, occasionally flooded	Medway	Not hydric	flood plain step, stream terrace	---
	Sawmill	Hydric	flood plain	2B3
	Sawmill, undrained	Hydric	backswamp, flood plain	2B3,3,4

Table 10.--Forestland Productivity

(Only the soils commonly used for production of commercial trees are listed)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre/yr	
132A:				
Starks	Northern red oak	80	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	White oak	80	57	
	Black walnut	---	---	
134B:				
Camden	White oak	85	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Green ash	76	72	
	Northern red oak	85	72	
	Sweetgum	80	86	
	Tuliptree	95	100	
136A:				
Brooklyn	Pin oak	80	57	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	White oak	---	---	
	Green ash	---	---	
	Tuliptree	---	---	
208A:				
Sexton	Pin oak	80	57	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	White oak	---	---	
	Green ash	---	---	
	Tuliptree	---	---	
219A:				
Millbrook	White oak	80	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	90	86	
233B:				
Birkbeck	White oak	86	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Green ash	---	---	
	Northern red oak	---	---	
234B:				
Sunbury	White oak	80	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
236A:				
Sabina	White oak	80	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Black walnut	---	---	
	Northern red oak	80	57	

Table 10.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre/yr	
242A:				
Kendall	White oak	80	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	90	86	
291B:				
Xenia	White oak	90	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Sweetgum	76	72	
	Tuliptree	98	100	
322C2:				
Russell	White oak	90	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	90	72	
	Tuliptree	96	100	
344B:				
Harvard	White oak	85	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Green ash	76	72	
	Northern red oak	85	72	
	Sweetgum	80	86	
	Tuliptree	95	100	
348B:				
Wingate	White oak	90	72	Black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, pecan, pin oak, tuliptree, white oak.
	Sweetgum	76	72	
	Tuliptree	98	100	
353A:				
Toronto	White oak	75	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Northern red oak	75	57	
	Pin oak	85	72	
	Tuliptree	85	86	
448C3:				
Mona	Bur oak	---	---	Black oak, common hackberry, eastern white pine, green ash.
	Green ash	---	---	
	Northern red oak	70	57	
	White oak	70	57	
496A:				
Fincastle	White oak	75	57	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Northern red oak	75	57	
	Pin oak	85	72	
	Tuliptree	85	86	
554A:				
Kernan	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Green ash	---	---	
	Northern red oak	70	57	
	White oak	70	57	

Table 10.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre/yr	
554B:				
Kernan	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, green ash, pecan, pin oak, swamp white oak.
	Green ash	---	---	
	Northern red oak	70	57	
	White oak	70	57	
570B:				
Martinsville	White oak	80	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
570C2:				
Martinsville	White oak	80	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
570D2:				
Martinsville	White oak	80	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
618C2:				
Senachwine	White oak	90	72	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
618D2:				
Senachwine	White oak	90	72	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
618F:				
Senachwine	White oak	90	72	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Sweetgum	76	72	
	Tuliptree	98	100	
656C2:				
Octagon	Northern red oak	69	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	American beech	---	---	
	Shagbark hickory	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	---	---	
1107A:				
Sawmill, undrained	Pin oak	90	72	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	American sycamore	---	---	
	Eastern cottonwood	---	---	
	Sweetgum	---	---	
3107A:				
Sawmill	Pin oak	90	72	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	American sycamore	---	---	
	Eastern cottonwood	---	---	
	Sweetgum	---	---	

Table 10.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Suggested trees to plant
	Common trees	Site index	Volume of wood fiber	
			cu ft/acre/yr	
3183A:				
Shaffton	Black cherry	---	---	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	96	100	
	White ash	---	---	
	White oak	---	---	
3405A:				
Zook	Pin oak	90	72	Common hackberry, eastern cottonwood, green ash, pin oak, river birch, swamp white oak, sweetgum.
	American sycamore	---	---	
	Eastern cottonwood	---	---	
	Sweetgum	---	---	
8682A:				
Medway	Black cherry	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	96	100	
	White ash	---	---	
	White oak	---	---	

Table 11.--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
56B:					
Dana	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
67A:					
Harpster	Common winterberry, gray dogwood, redosier dogwood	Common pawpaw, nannyberry, roughleaf dogwood, silky dogwood	Arborvitae, bur oak, common hackberry, eastern redcedar, green hawthorn	Carolina poplar, eastern cottonwood, green ash	---
69A:					
Milford	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
132A:					
Starks	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
134B:					
Camden	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
136A:					
Brooklyn	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
148B:					
Proctor	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
149A: Brenton	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
152A: Drummer	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
154A: Flanagan	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
171B:					
Catlin	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
198A:					
Elburn	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
199B:					
Plano	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
208A:					
Sexton	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
219A:					
Millbrook	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
233B:					
Birkbeck	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
234A:					
Sunbury	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
234B:					
Sunbury	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
236A:					
Sabina	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
242A: Kendall	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
244A: Hartsburg	Common winterberry, gray dogwood, redosier dogwood	Common pawpaw, nannyberry, roughleaf dogwood, silky dogwood	Arborvitae, bur oak, common hackberry, eastern redcedar, green hawthorn	Carolina poplar, eastern cottonwood, green ash	---
291B: Xenia	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
322C2: Russell	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
330A:					
Peotone	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
344B:					
Harvard	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
348B:					
Wingate	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
353A:					
Toronto	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
375A:					
Rutland	Common winterberry, gray dogwood, redosier dogwood, silky dogwood	Blackhaw, common pawpaw, common serviceberry, downy arrowwood, roughleaf dogwood, southern arrowwood	Austrian pine, arborvitae, bur oak, common hackberry, eastern redcedar, green ash, green hawthorn, nannyberry	Carolina poplar, eastern cottonwood	---
448C3:					
Mona	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, green ash	Carolina poplar	---
481A:					
Raub	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
496A:					
Fincastle	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
533.					
Urban land					
554A:					
Kernan	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
554B:					
Kernan	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, green ash, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
570B:					
Martinsville	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
570C2:					
Martinsville	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
570D2:					
Martinsville	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
618C2:					
Senachwine	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
618D2:					
Senachwine	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
618F:					
Senachwine	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
656C2:					
Octagon	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
663B:					
Clare	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
679B:					
Blackberry	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
722A:					
Drummer	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
Milford	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
747A:					
Milford, undrained	American plum, black chokeberry, blackhaw, common juniper, gray dogwood, mapleleaf viburnum	Cockspur hawthorn, common serviceberry, eastern redcedar, nannyberry, prairie crabapple	Bur oak, chinkapin oak, green ash, thornless honeylocust	---	---

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
747A:					
Milford, drained	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, shingle oak	Green ash, red maple, river birch, swamp white oak	Carolina poplar, eastern cottonwood, pin oak
802D:					
Orthents, loamy	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, green ash, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
809F:					
Orthents, loamy-skeletal	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, green ash	Carolina poplar	---
864, 865.					
Pits					

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
1107A: Sawmill, undrained	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3107A: Sawmill	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3183A: Shaffton	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 11.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
3405A:					
Zook	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	Green ash, red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
8682A:					
Medway	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, green ash, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine

Table 12a.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:						
Dana	Not limited		Not limited		Somewhat limited	
					Slope	0.50
67A:						
Harpster	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
69A:						
Milford	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	0.21	Slow water movement	0.21	Slow water movement	0.21
132A:						
Starks	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.81	Depth to saturated zone	0.48	Depth to saturated zone	0.81
134B:						
Camden	Not limited		Not limited		Somewhat limited	
					Slope	0.28
136A:						
Brooklyn	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
148B:						
Proctor	Not limited		Not limited		Somewhat limited	
					Slope	0.50
149A:						
Brenton	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.83	Depth to saturated zone	1.00
152A:						
Drummer	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
154A:						
Flanagan	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21

Table 12a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171B:						
Catlin	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.16	Depth to saturated zone	0.08	Depth to saturated zone	0.16
					Slope	0.12
198A:						
Elburn	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
199B:						
Plano	Not limited		Not limited		Somewhat limited	
					Slope	0.28
208A:						
Sexton	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
219A:						
Millbrook	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
233B:						
Birkbeck	Not limited		Not limited		Somewhat limited	
					Slope	0.28
234A:						
Sunbury	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
234B:						
Sunbury	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slope	0.50
					Slow water movement	0.21
236A:						
Sabina	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
242A:						
Kendall	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00

Table 12a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
244A:						
Hartsburg	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
291B:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
					Slope	0.50
322C2:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
330A:						
Peotone	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	0.21	Slow water movement	0.21	Slow water movement	0.21
344B:						
Harvard	Not limited		Not limited		Somewhat limited	
					Slope	0.12
348B:						
Wingate	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.07	Depth to saturated zone	0.03	Slope	0.50
					Depth to saturated zone	0.07
353A:						
Toronto	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
375A:						
Rutland	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.39	Slow water movement	0.21	Depth to saturated zone	0.39
	Slow water movement	0.21	Depth to saturated zone	0.19	Slow water movement	0.21
448C3:						
Mona	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.96	Slow water movement	0.96	Slope	0.97
					Slow water movement	0.96
481A:						
Raub	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98

Table 12a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
496A:						
Fincastle-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
533:						
Urban land----------	Not rated		Not rated		Not rated	
554A:						
Kernan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
554B:						
Kernan--------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.96	Depth to saturated zone	1.00
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
					Slope	0.12
570B:						
Martinsville--------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
570C2:						
Martinsville--------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
570D2:						
Martinsville--------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
618C2:						
Senachwine----------	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.21	Slow water movement	0.21	Slope	1.00
	Slope	0.01	Slope	0.01	Slow water movement	0.21
618D2:						
Senachwine----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
618F:						
Senachwine----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
656C2:						
Octagon------------	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.21	Slow water movement	0.21	Slope	1.00
					Slow water movement	0.21

Table 12a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
663B:						
Clare	Not limited		Not limited		Somewhat limited	
					Slope	0.50
679B:						
Blackberry	Not limited		Not limited		Somewhat limited	
					Slope	0.28
722A:						
Drummer	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
Milford	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	0.21	Slow water movement	0.21	Slow water movement	0.21
747A:						
Milford, undrained	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	0.21	Slow water movement	0.21	Slow water movement	0.21
Milford, drained	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	0.21	Slow water movement	0.21	Slow water movement	0.21
802D:						
Orthents, loamy	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.37	Slope	0.37	Slope	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
809F:						
Orthents, loamy-skeletal	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	1.00
	Gravel content	0.06	Gravel content	0.06	Slow water movement	0.21
864, 865:						
Pits	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00

Table 12a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3107A:						
Sawmill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
3183A:						
Shaffton	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.56	Depth to saturated zone	0.28	Depth to saturated zone	0.56
3405A:						
Zook	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	0.96	Ponding	1.00
	Slow water movement	0.96	Flooding	0.40	Slow water movement	0.96
8682A:						
Medway	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
	Depth to saturated zone	0.98			Flooding	0.60

Table 12b.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:						
Dana	Not limited		Not limited		Not limited	
67A:						
Harpster	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
69A:						
Milford	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
132A:						
Starks	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
134B:						
Camden	Not limited		Not limited		Not limited	
136A:						
Brooklyn	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
148B:						
Proctor	Not limited		Not limited		Not limited	
149A:						
Brenton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.62	Depth to saturated zone	0.62	Depth to saturated zone	0.83
152A:						
Drummer	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
154A:						
Flanagan	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
171B:						
Catlin	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.08

Table 12b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
198A:						
Elburn	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
199B:						
Plano	Not limited		Not limited		Not limited	
208A:						
Sexton	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
219A:						
Millbrook	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
233B:						
Birkbeck	Not limited		Not limited		Not limited	
234A:						
Sunbury	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
234B:						
Sunbury	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
236A:						
Sabina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
242A:						
Kendall	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
244A:						
Hartsburg	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
291B:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
322C2:						
Russell	Not limited		Not limited		Somewhat limited	
					Slope	0.01
330A:						
Peotone	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

Table 12b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
344B:						
Harvard-------------	Not limited		Not limited		Not limited	
348B:						
Wingate-------------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
353A:						
Toronto-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
375A:						
Rutland-------------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
448C3:						
Mona----------------	Not limited		Not limited		Not limited	
481A:						
Raub----------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
496A:						
Fincastle-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
533:						
Urban land----------	Not rated		Not rated		Not rated	
554A:						
Kernan--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
554B:						
Kernan--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.92	Depth to saturated zone	0.92	Depth to saturated zone	0.96
570B:						
Martinsville--------	Not limited		Not limited		Not limited	
570C2:						
Martinsville--------	Not limited		Not limited		Somewhat limited	
					Slope	0.01
570D2:						
Martinsville--------	Not limited		Not limited		Somewhat limited	
					Slope	0.96
618C2:						
Senachwine----------	Not limited		Not limited		Somewhat limited	
					Slope	0.01
618D2:						
Senachwine----------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96

Table 12b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
618F:						
Senachwine----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.04		
656C2:						
Octagon-------------	Not limited		Not limited		Not limited	
663B:						
Clare---------------	Not limited		Not limited		Not limited	
679B:						
Blackberry----------	Not limited		Not limited		Not limited	
722A:						
Drummer-------------	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
Milford-------------	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
747A:						
Milford, undrained--	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
Milford, drained----	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
802D:						
Orthents, loamy-----	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.37
809F:						
Orthents, loamy-skeletal-----------	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.78	Slope	1.00
					Droughty	0.26
					Gravel content	0.06
864, 865:						
Pits----------------	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained--	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00

Table 12b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
3107A:						
Sawmill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
3183A:						
Shaffton	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.01	Depth to saturated zone	0.01	Depth to saturated zone	0.28
3405A:						
Zook	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
8682A:						
Medway	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Flooding	0.60

Table 13.--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: 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
56B:										
Dana	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
67A:										
Harpster	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
69A:										
Milford	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
132A:										
Starks	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
134B:										
Camden	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
136A:										
Brooklyn	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
148B:										
Proctor	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
149A:										
Brenton	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
152A:										
Drummer	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
154A:										
Flanagan	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
171B:										
Catlin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
198A:										
Elburn	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
199B:										
Plano	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
208A:										
Sexton	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
219A:										
Millbrook	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
233B:										
Birkbeck	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
234A:										
Sunbury	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
234B: Sunbury	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
236A: Sabina	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
242A: Kendall	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
244A: Hartsburg	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
291B: Xenia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
322C2: Russell	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
330A: Peotone	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
344B: Harvard	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
348B: Wingate	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
353A: Toronto	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
375A: Rutland	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
448C3: Mona	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
481A: Raub	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
496A: Fincastle	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
533. Urban land										
554A: Kernan	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
554B: Kernan	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
570B: Martinsville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
570C2: Martinsville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
570D2:										
Martinsville------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
618C2:										
Senachwine--------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
618D2:										
Senachwine--------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
618F:										
Senachwine--------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
656C2:										
Octagon-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
663B:										
Clare-------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
679B:										
Blackberry--------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
722A:										
Drummer-----------	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Milford-----------	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
747A:										
Milford, undrained	Very poor.	Poor	Poor	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Milford, drained--	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
802D.										
Orthents, loamy										
809F:										
Orthents, loamy-skeletal---------	Very poor.	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
864, 865.										
Pits										
1107A:										
Sawmill, undrained	Very poor.	Poor	Poor	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
3107A:										
Sawmill-----------	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3183A:										
Shaffton----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
3405A:										
Zook	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
8682A:										
Medway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

Table 14a.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further nation of ratings in this table)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:						
Dana	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
67A:						
Harpster	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
69A:						
Milford	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
132A:						
Starks	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
	Shrink-swell	0.50			Shrink-swell	0.50
134B:						
Camden	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
136A:						
Brooklyn	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
148B:						
Proctor	Not limited		Not limited		Not limited	
149A:						
Brenton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
152A:						
Drummer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 14a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
154A:						
Flanagan	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.98	Shrink-swell	1.00	Depth to saturated zone	0.98
171B:						
Catlin	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.16	Shrink-swell	0.50	Depth to saturated zone	0.16
198A:						
Elburn	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
199B:						
Plano	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.27	Shrink-swell	0.27	Shrink-swell	0.27
208A:						
Sexton	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	Ponding	1.00	Shrink-swell	1.00
	Ponding	1.00			Ponding	1.00
219A:						
Millbrook	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.68	Shrink-swell	0.68	Shrink-swell	0.68
233B:						
Birkbeck	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.92	Depth to saturated zone	0.99	Shrink-swell	0.92
			Shrink-swell	0.92		
234A:						
Sunbury	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
234B:						
Sunbury	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
236A:						
Sabina	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

Table 14a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
242A:						
Kendall	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
244A:						
Hartsburg	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
291B:						
Xenia	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
322C2:						
Russell	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
330A:						
Peotone	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
344B:						
Harvard	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.44			Shrink-swell	0.44
348B:						
Wingate	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.07	Shrink-swell	0.50	Depth to saturated zone	0.07
353A:						
Toronto	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
375A:						
Rutland	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39	Shrink-swell	1.00	Depth to saturated zone	0.39
448C3:						
Mona	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.02	Depth to saturated zone	0.99	Slope	0.28
					Shrink-swell	0.02

Table 14a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
481A:						
Raub	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.50			Shrink-swell	0.50
496A:						
Fincastle	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
533:						
Urban land	Not rated		Not rated		Not rated	
554A:						
Kernan	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
554B:						
Kernan	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
570B:						
Martinsville	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
570C2:						
Martinsville	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.01	Shrink-swell	0.01	Slope	1.00
	Slope	0.01	Slope	0.01	Shrink-swell	0.01
570D2:						
Martinsville	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
618C2:						
Senachwine	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.01	Slope	1.00
	Slope	0.01			Shrink-swell	0.50
618D2:						
Senachwine	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
618F:						
Senachwine	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
656C2:						
Octagon	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.11	Depth to saturated zone	0.99	Slope	0.88
			Shrink-swell	0.11	Shrink-swell	0.11

Table 14a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
663B:						
Clare	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
679B:						
Blackberry	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
722A:						
Drummer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Milford	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
747A:						
Milford, undrained	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	0.50	Shrink-swell	1.00
Milford, drained	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
802D:						
Orthents, loamy	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.37	Depth to saturated zone	0.47	Shrink-swell	0.50
			Slope	0.37		
809F:						
Orthents, loamy-skeletal	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
864, 865:						
Pits	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained	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
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 14a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
3107A:						
Sawmill	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
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
3183A:						
Shaffton	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.56	Depth to saturated zone	1.00	Depth to saturated zone	0.56
3405A:						
Zook	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
8682A:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98

Table 14b.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:						
Dana----------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.99		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
67A:						
Harpster------------	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				
	Shrink-swell	0.50				
69A:						
Milford-------------	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	Too clayey	0.02		
	Shrink-swell	0.50				
132A:						
Starks--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.48
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
	Depth to saturated zone	0.48				
134B:						
Camden--------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.50				
136A:						
Brooklyn------------	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		
	Shrink-swell	1.00	Too clayey	0.01		
	Ponding	1.00				
148B:						
Proctor-------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
149A:						
Brenton	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.83
	Low strength	1.00	Cutbanks cave	0.50		
	Depth to saturated zone	0.83				
	Shrink-swell	0.50				
152A:						
Drummer	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				
	Shrink-swell	0.50				
154A:						
Flanagan	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00				
	Depth to saturated zone	0.75				
171B:						
Catlin	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.08
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
	Depth to saturated zone	0.08				
198A:						
Elburn	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	1.00		
	Depth to saturated zone	0.75				
	Shrink-swell	0.50				
199B:						
Plano	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	1.00				
	Shrink-swell	0.27				
208A:						
Sexton	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	1.00	Ponding	1.00
	Low strength	1.00	Ponding	1.00		
	Shrink-swell	1.00	Too clayey	0.01		
	Ponding	1.00				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
219A:						
Millbrook-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
	Shrink-swell	0.68				
233B:						
Birkbeck-----------	Very limited		Very limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.99		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.92				
234A:						
Sunbury-------------	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				
234B:						
Sunbury-------------	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				
236A:						
Sabina--------------	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				
242A:						
Kendall-------------	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		
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
244A:						
Hartsburg-----------	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				
	Shrink-swell	0.50				
291B:						
Xenia---------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Dense layer	0.50		
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
322C2:						
Russell	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				
330A:						
Peotone	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		
	Shrink-swell	1.00				
	Ponding	1.00				
344B:						
Harvard	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	1.00				
	Shrink-swell	0.44				
348B:						
Wingate	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00	Dense layer	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Depth to saturated zone	0.03				
353A:						
Toronto	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	Dense layer	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
375A:						
Rutland	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	1.00	Too clayey	0.41		
	Frost action	0.50	Cutbanks cave	0.10		
	Depth to saturated zone	0.19				
448C3:						
Mona	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	0.50	Too clayey	0.18		
	Shrink-swell	0.02	Cutbanks cave	0.10		
481A:						
Raub	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
	Shrink-swell	0.50				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
496A:						
Fincastle-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Dense layer	0.50		
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50				
533:						
Urban land----------	Not rated		Not rated		Not rated	
554A:						
Kernan--------------	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	Too clayey	0.12		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00				
554B:						
Kernan--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.96
	Low strength	1.00	Too clayey	0.12		
	Shrink-swell	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.96				
570B:						
Martinsville--------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.01				
570C2:						
Martinsville--------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Slope	0.01
	Shrink-swell	0.01	Slope	0.01		
	Slope	0.01				
570D2:						
Martinsville--------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.96	Cutbanks cave	1.00	Slope	0.96
	Frost action	0.50	Slope	0.96		
	Shrink-swell	0.01				
618C2:						
Senachwine----------	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
	Shrink-swell	0.50	Slope	0.01		
	Frost action	0.50				
	Slope	0.01				
618D2:						
Senachwine----------	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				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
618F:						
Senachwine----------	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				
656C2:						
Octagon-------------	Somewhat limited		Somewhat limited		Not limited	
	Frost action	0.50	Depth to saturated zone	0.99		
	Shrink-swell	0.11	Dense layer	0.50		
			Cutbanks cave	0.10		
663B:						
Clare---------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.99		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
679B:						
Blackberry----------	ery limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.99		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
722A:						
Drummer-------------	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				
	Shrink-swell	0.50				
Milford-------------	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	Too clayey	0.02		
	Shrink-swell	0.50				
747A:						
Milford, undrained--	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	0.02		
	Shrink-swell	1.00				
Milford, drained----	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	Too clayey	0.02		
	Shrink-swell	0.50				

Table 14b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
802D:						
Orthents, loamy-----	Not rated		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.47	Slope	0.37
			Slope	0.37		
			Cutbanks cave	0.10		
809F:						
Orthents, loamy-skeletal-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Dense layer	0.50	Droughty	0.26
			Cutbanks cave	0.10	Gravel content	0.06
864, 865:						
Pits-----------------	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained--	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00		
	Flooding	1.00	Flooding	0.80	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
3107A:						
Sawmill------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00		
	Flooding	1.00	Flooding	0.80	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
3183A:						
Shaffton-----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Low strength	1.00			Depth to saturated zone	0.28
	Frost action	0.50	Cutbanks cave	1.00		
	Depth to saturated zone	0.28	Flooding	0.80		
3405A:						
Zook----------------	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
					Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.80		
	Flooding	1.00	Cutbanks cave	0.10		
	Low strength	1.00	Too clayey	0.01		
8682A:						
Medway-------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75				
			Flooding	0.60	Flooding	0.60
	Frost action	0.50	Cutbanks cave	0.10		

Table 15a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:				
Dana	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Slow water movement	1.00	Slope	0.32
			Depth to saturated zone	0.04
67A:				
Harpster	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
69A:				
Milford	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
132A:				
Starks	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53
134B:				
Camden	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	0.18
136A:				
Brooklyn	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		
148B:				
Proctor	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	0.32

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
149A:				
Brenton-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53
152A:				
Drummer-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
154A:				
Flanagan------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
171B:				
Catlin--------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.56
	Slow water movement	1.00	Seepage	0.53
			Slope	0.08
198A:				
Elburn--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46		
199B:				
Plano---------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	0.18
208A:				
Sexton--------------	Very limited		Very limited	
	Slow water movement	1.00	Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
219A:				
Millbrook-----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
233B:				
Birkbeck	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Slow water movement	1.00	Depth to saturated zone	0.19
			Slope	0.18
234A:				
Sunbury	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
234B:				
Sunbury	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
			Slope	0.32
236A:				
Sabina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
242A:				
Kendall	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53
244A:				
Hartsburg	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
291B:				
Xenia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
			Slope	0.32
322C2:				
Russell	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	0.01	Seepage	0.53

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
330A:				
Peotone-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
344B:				
Harvard-------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	0.08
348B:				
Wingate-------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Slow water movement	1.00	Depth to saturated zone	0.44
			Slope	0.32
353A:				
Toronto-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
375A:				
Rutland-------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	1.00		
448C3:				
Mona----------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slope	0.82
	Depth to saturated zone	1.00	Depth to saturated zone	0.12
481A:				
Raub----------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
496A:				
Fincastle-----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
533:				
Urban land----------	Not rated		Not rated	

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
554A:				
Kernan	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
554B:				
Kernan	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
570B:				
Martinsville	Very limited		Somewhat limited	
	Seepage	1.00	Seepage	0.53
	Slow water movement	0.46	Slope	0.32
570C2:				
Martinsville	Very limited		Very limited	
	Seepage	1.00	Slope	1.00
	Slow water movement	0.46	Seepage	0.53
	Slope	0.01		
570D2:				
Martinsville	Very limited		Very limited	
	Seepage	1.00	Slope	1.00
	Slope	0.96	Seepage	0.53
	Slow water movement	0.46		
618C2:				
Senachwine	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
			Seepage	0.53
	Slope	0.01		
618D2:				
Senachwine	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
			Seepage	0.53
	Slope	0.96		
618F:				
Senachwine	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.53
656C2:				
Octagon	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	1.00
			Seepage	0.53

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
663B:				
Clare----------------	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
679B:				
Blackberry----------	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	0.18
722A:				
Drummer-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
Milford-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
			Seepage	0.53
	Ponding	1.00		
747A:				
Milford, undrained--	Very limited		Very limited	
	Slow water movement	1.00	Ponding	1.00
			Depth to saturated zone	1.00
	Ponding	1.00		
	Depth to saturated zone	1.00	Seepage	0.53
Milford, drained----	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
			Seepage	0.53
	Ponding	1.00		
802D:				
Orthents, loamy-----	Somewhat limited		Very limited	
	Depth to saturated zone	0.94	Slope	1.00
			Depth to saturated zone	0.40
	Slow water movement	0.78		
			Seepage	0.21
	Slope	0.37		
809F:				
Orthents, loamy-skeletal-----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00		
864, 865:				
Pits----------------	Not rated		Not rated	

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
1107A:				
Sawmill, undrained--	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
3107A:				
Sawmill------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
3183A:				
Shaffton-----------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46		
3405A:				
Zook---------------	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		
8682A:				
Medway-------------	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

Table 15b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56B:						
Dana	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.04	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24
67A:						
Harpster	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
69A:						
Milford	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
132A:						
Starks	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.96
134B:						
Camden	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Seepage	0.22
136A:						
Brooklyn	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			Hard to compact	1.00
					Ponding	1.00
148B:						
Proctor	Very limited		Not limited		Not limited	
	Seepage	1.00				
149A:						
Brenton	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
152A:						
Drummer	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

Table 15b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
154A:						
Flanagan------------	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
171B:						
Catlin--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.56	Depth to saturated zone	0.76
	Too clayey	0.50			Too clayey	0.50
198A:						
Elburn--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
199B:						
Plano---------------	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
208A:						
Sexton--------------	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	Too clayey	1.00
	Too sandy	0.50			Ponding	1.00
					Seepage	0.51
					Too sandy	0.50
219A:						
Millbrook-----------	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
233B:						
Birkbeck------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.47
234A:						
Sunbury-------------	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
234B:						
Sunbury-------------	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

Table 15b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
236A:						
Sabina	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			Hard to compact	1.00
					Too clayey	0.50
242A:						
Kendall	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
244A:						
Hartsburg	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
291B:						
Xenia	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
322C2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
330A:						
Peotone	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
344B:						
Harvard	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
348B:						
Wingate	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
353A:						
Toronto	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
375A:						
Rutland	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.86
	Too clayey	0.50			Too clayey	0.50

Table 15b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
448C3:						
Mona----------------	Very limited		Somewhat limited		Somewhat limited	
	Too clayey	1.00	Depth to saturated zone	0.12	Too clayey	0.50
	Depth to saturated zone	0.80			Depth to saturated zone	0.38
481A:						
Raub----------------	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
496A:						
Fincastle-----------	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
533:						
Urban land----------	Not rated		Not rated		Not rated	
554A:						
Kernan--------------	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
554B:						
Kernan--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	0.50
570B:						
Martinsville--------	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
570C2:						
Martinsville--------	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Slope	0.01	Too clayey	0.50
	Too clayey	0.50			Slope	0.01
	Slope	0.01				
570D2:						
Martinsville--------	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Slope	0.96	Slope	0.96
	Slope	0.96			Too clayey	0.50
	Too clayey	0.50				
618C2:						
Senachwine----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.01
618D2:						
Senachwine----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
618F:						
Senachwine----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

Table 15b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
656C2:						
Octagon	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24
663B:						
Clare	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24
679B:						
Blackberry	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24
722A:						
Drummer	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
Milford	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
747A:						
Milford, undrained	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
Milford, drained	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
802D:						
Orthents, loamy	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	0.37
	Slope	0.37	Slope	0.37		
809F:						
Orthents, loamy-skeletal	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.94
864, 865:						
Pits	Not rated		Not rated		Not rated	

Table 15b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1107A:						
Sawmill, undrained--	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	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
3107A:						
Sawmill-------------	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	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
3183A:						
Shaffton------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.91
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
3405A:						
Zook----------------	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
8682A:						
Medway--------------	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		

Table 16a.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential 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
56B:						
Dana	Fair		Poor		Fair	
	Content of organic matter	0.50	Low strength	0.00	Too clayey	0.76
	Carbonate content	0.68	Shrink-swell	0.90	Depth to saturated zone	0.98
	Too acid	0.97	Depth to saturated zone	0.98		
	Too clayey	0.98				
	Water erosion	0.99				
67A:						
Harpster	Fair		Poor		Poor	
	Carbonate content	0.80	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.92	Low strength	0.00	Too clayey	0.72
	Water erosion	0.99	Shrink-swell	0.99		
69A:						
Milford	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.24	Shrink-swell	0.86	Too clayey	0.18
	Water erosion	0.99				
132A:						
Starks	Fair		Fair		Fair	
	Content of organic matter	0.24	Depth to saturated zone	0.29	Depth to saturated zone	0.29
	Too acid	0.32	Shrink-swell	0.99	Too clayey	0.67
	Water erosion	0.68			Too acid	0.88
	Too clayey	0.98				
134B:						
Camden	Fair		Good		Fair	
	Content of organic matter	0.12			Too clayey	0.55
	Water erosion	0.37				
	Too acid	0.84				
	Too clayey	0.92				
136A:						
Brooklyn	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.37	Low strength	0.00	Too clayey	0.00
	Content of organic matter	0.50	Shrink-swell	0.64		
	Carbonate content	0.68				
	Too acid	0.92				
148B:						
Proctor	Fair		Poor		Good	
	Content of organic matter	0.50	Low strength	0.00		
	Water erosion	0.99				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
149A:						
Brenton	Fair		Fair		Fair	
	Too clayey	0.82	Depth to saturated zone	0.09	Depth to saturated zone	0.09
	Too acid	0.84			Too clayey	0.64
152A:						
Drummer	Fair		Poor		Poor	
	Too acid	0.95	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.98	Low strength	0.00	Too clayey	0.86
	Water erosion	0.99	Shrink-swell	0.99		
154A:						
Flanagan	Fair		Poor		Fair	
	Too clayey	0.18	Low strength	0.00	Too clayey	0.13
	Carbonate content	0.68	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Too acid	0.84	Shrink-swell	0.90		
	Content of organic matter	0.88				
	Water erosion	0.99				
171B:						
Catlin	Fair		Poor		Fair	
	Too clayey	0.82	Low strength	0.00	Too clayey	0.64
	Water erosion	0.99	Depth to saturated zone	0.68	Depth to saturated zone	0.68
			Shrink-swell	0.98		
198A:						
Elburn	Fair		Poor		Fair	
	Too clayey	0.98	Low strength	0.00	Depth to saturated zone	0.14
	Water erosion	0.99	Depth to saturated zone	0.14	Too clayey	0.81
			Shrink-swell	0.99		
199B:						
Plano	Fair		Poor		Fair	
	Content of organic matter	0.68	Low strength	0.00	Too clayey	0.67
	Too acid	0.92	Shrink-swell	0.99		
	Too clayey	0.98				
	Water erosion	0.99				
208A:						
Sexton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.05	Shrink-swell	0.91	Too clayey	0.00
	Water erosion	0.37			Too acid	0.98
	Too acid	0.54				
219A:						
Millbrook	Fair		Fair		Fair	
	Water erosion	0.37	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Content of organic matter	0.82	Shrink-swell	0.97		
	Too acid	0.84				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
233B:						
Birkbeck------------	Fair		Poor		Fair	
	Too acid	0.16	Low strength	0.00	Too clayey	0.49
	Content of organic matter	0.18	Shrink-swell	0.78	Depth to saturated zone	0.89
	Water erosion	0.68	Depth to saturated zone	0.89	Too acid	0.98
	Too clayey	0.82				
	Carbonate content	0.95				
234A:						
Sunbury-------------	Fair		Fair		Fair	
	Content of organic matter	0.05	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Too clayey	0.18	Shrink-swell	0.88	Too clayey	0.11
	Water erosion	0.68			Hard to reclaim (dense layer)	0.94
	Too acid	0.84				
	Carbonate content	0.92				
234B:						
Sunbury-------------	Fair		Fair		Fair	
	Content of organic matter	0.05	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Too clayey	0.18	Shrink-swell	0.88	Too clayey	0.11
	Water erosion	0.68			Hard to reclaim (dense layer)	0.94
	Too acid	0.84				
	Carbonate content	0.92				
236A:						
Sabina--------------	Fair		Poor		Poor	
	Too clayey	0.08	Low strength	0.00	Hard to reclaim (dense layer)	0.00
	Water erosion	0.37	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Content of organic matter	0.50	Shrink-swell	0.56	Too clayey	0.05
	Too acid	0.88				
	Carbonate content	0.92				
242A:						
Kendall-------------	Fair		Poor		Fair	
	Content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
	Too acid	0.61	Depth to saturated zone	0.04	Too clayey	0.57
	Water erosion	0.68	Shrink-swell	0.95	Too acid	0.99
	Too clayey	0.98				
244A:						
Hartsburg-----------	Fair		Poor		Poor	
	Content of organic matter	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.68	Low strength	0.00	Too clayey	0.82
	Carbonate content	0.68				
	Too clayey	0.82				
291B:						
Xenia---------------	Fair		Poor		Fair	
	Water erosion	0.68	Low strength	0.00	Depth to saturated zone	0.14
	Carbonate content	0.68	Depth to saturated zone	0.14	Too clayey	0.67
	Content of organic matter	0.68	Shrink-swell	0.94	Hard to reclaim (dense layer)	0.97
	Too acid	0.74				
	Too clayey	0.98				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
322C2:						
Russell-------------	Fair		Poor		Fair	
	Too acid	0.20	Low strength	0.00	Too clayey	0.57
	Content of organic matter	0.32	Shrink-swell	0.90	Too acid	0.76
	Carbonate content	0.68				
	Water erosion	0.90				
	Too clayey	0.92				
330A:						
Peotone-------------	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Too clayey	0.18
			Shrink-swell	0.21		
344B:						
Harvard-------------	Fair		Good		Good	
	Content of organic matter	0.02				
	Too acid	0.84				
	Water erosion	0.99				
348B:						
Wingate-------------	Fair		Poor		Fair	
	Content of organic matter	0.08	Low strength	0.00	Hard to reclaim (dense layer)	0.29
	Water erosion	0.68	Depth to saturated zone	0.76	Too clayey	0.67
	Carbonate content	0.68	Shrink-swell	0.95	Depth to saturated zone	0.76
	Too acid	0.74				
	Too clayey	0.98				
353A:						
Toronto-------------	Fair		Poor		Poor	
	Content of organic matter	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too acid	0.39	Low strength	0.00	Hard to reclaim (dense layer)	0.20
	Water erosion	0.68	Shrink-swell	0.94	Too clayey	0.67
	Carbonate content	0.68			Too acid	0.92
	Too clayey	0.98				
375A:						
Rutland-------------	Fair		Poor		Fair	
	Too clayey	0.08	Low strength	0.00	Too clayey	0.06
	Carbonate content	0.68	Shrink-swell	0.20	Depth to saturated zone	0.53
	Too acid	0.97	Depth to saturated zone	0.53		
	Water erosion	0.99				
448C3:						
Mona----------------	Fair		Poor		Fair	
	Content of organic matter	0.08	Low strength	0.00	Depth to saturated zone	0.93
	Carbonate content	0.68	Depth to saturated zone	0.93		
	Too acid	0.84	Shrink-swell	0.99		
	Water erosion	0.99				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
481A:						
Raub	Fair		Fair		Fair	
	Content of organic matter	0.08	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Carbonate content	0.68	Shrink-swell	0.99		
	Too acid	0.95				
	Water erosion	0.99				
496A:						
Fincastle	Fair		Poor		Fair	
	Content of organic matter	0.32	Low strength	0.00	Depth to saturated zone	0.14
	Water erosion	0.37	Depth to saturated zone	0.14	Too clayey	0.57
	Too acid	0.84	Shrink-swell	0.96	Hard to reclaim (dense layer)	0.71
	Carbonate content	0.92				
	Too clayey	0.92				
533:						
Urban land	Not rated		Not rated		Not rated	
554A:						
Kernan	Fair		Poor		Poor	
	Too clayey	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.32	Low strength	0.00	Too clayey	0.05
	Carbonate content	0.68	Shrink-swell	0.38		
	Water erosion	0.90				
	Too acid	0.97				
554B:						
Kernan	Fair		Poor		Fair	
	Content of organic matter	0.02	Low strength	0.00	Depth to saturated zone	0.02
	Too clayey	0.08	Depth to saturated zone	0.02	Too clayey	0.05
	Too acid	0.61	Shrink-swell	0.37	Too acid	0.99
	Carbonate content	0.68				
	Water erosion	0.90				
570B:						
Martinsville	Fair		Good		Good	
	Content of organic matter	0.12				
	Water erosion	0.37				
	Too acid	0.54				
570C2:						
Martinsville	Fair		Good		Good	
	Content of organic matter	0.12				
	Too acid	0.84				
570D2:						
Martinsville	Fair		Good		Fair	
	Content of organic matter	0.12			Slope	0.04
	Too acid	0.84				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
618C2:						
Senachwine----------	Fair		Good		Poor	
	Content of organic matter	0.02			Hard to reclaim (dense layer)	0.00
	Carbonate content	0.68				
	Too acid	0.84				
	Water erosion	0.90				
618D2:						
Senachwine----------	Fair		Good		Poor	
	Content of organic matter	0.02			Hard to reclaim (dense layer)	0.00
	Carbonate content	0.68			Slope	0.04
	Too acid	0.84				
	Water erosion	0.90				
618F:						
Senachwine----------	Fair		Poor		Poor	
	Content of organic matter	0.02	Slope	0.00	Slope	0.00
					Hard to reclaim (dense layer)	0.00
	Carbonate content	0.68				
	Too acid	0.74				
	Water erosion	0.99				
656C2:						
Octagon-------------	Fair		Fair		Fair	
	Too acid	0.84	Depth to saturated zone	0.98	Hard to reclaim (dense layer)	0.97
	Content of organic matter	0.88			Depth to saturated zone	0.98
	Carbonate content	0.92				
	Water erosion	0.99				
663B:						
Clare---------------	Fair		Poor		Fair	
	Too clayey	0.82	Low strength	0.00	Too clayey	0.68
	Too acid	0.84	Depth to saturated zone	0.98	Depth to saturated zone	0.98
	Water erosion	0.99	Shrink-swell	0.99		
679B:						
Blackberry----------	Fair		Poor		Fair	
	Content of organic matter	0.68	Low strength	0.00	Too clayey	0.63
	Too acid	0.92	Depth to saturated zone	0.98	Depth to saturated zone	0.98
	Too clayey	0.92	Shrink-swell	0.98		
	Water erosion	0.99				
722A:						
Drummer-------------	Fair		Poor		Poor	
	Too acid	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.98				
	Water erosion	0.99	Low strength	0.00	Too clayey	0.81
			Shrink-swell	0.99		
Milford-------------	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.18	Shrink-swell	0.86	Too clayey	0.18
	Water erosion	0.99				

Table 16a.--Construction Materials--Continued

Map symbol and soil name	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
747A:						
Milford, undrained--	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.24	Low strength	0.00	Too clayey	0.18
	Carbonate content	0.32	Shrink-swell	0.51		
	Water erosion	0.99				
Milford, drained----	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Content of organic matter	0.18	Shrink-swell	0.86	Too clayey	0.18
	Water erosion	0.99				
802D:						
Orthents, loamy-----	Fair		Poor		Fair	
	Content of organic matter	0.12	Low strength	0.00	Slope	0.63
			Shrink-swell	0.87		
	Water erosion	0.90				
809F:						
Orthents, loamy-skeletal-----------	Fair		Poor		Poor	
	Content of organic matter	0.02	Low strength	0.00	Slope	0.00
			Slope	0.00	Hard to reclaim (dense layer)	0.00
	Too acid	0.50	Cobble content	0.94		
	Droughty	0.76			Rock fragments	0.00
	Water erosion	0.99			Hard to reclaim (rock fragments)	0.00
					Too acid	0.50
864, 865:						
Pits----------------	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained--	Fair		Poor		Poor	
	Too clayey	0.98	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Too clayey	0.98
			Shrink-swell	0.87		
3107A:						
Sawmill-------------	Fair		Poor		Poor	
	Too clayey	0.98	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too acid	0.99				
			Low strength	0.00	Too clayey	0.98
			Shrink-swell	0.87		
3183A:						
Shaffton------------	Fair		Poor		Fair	
	Water erosion	0.99	Low strength	0.00	Depth to saturated zone	0.44
			Depth to saturated zone	0.44		
3405A:						
Zook----------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Too clayey	0.00
			Shrink-swell	0.16		

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8682A:						
Medway---------------	Fair		Fair		Fair	
	Content of organic matter	0.88	Depth to saturated zone	0.14	Depth to saturated zone	0.14

Table 16b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
56B:				
Dana	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
67A:				
Harpster	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
69A:				
Milford	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
132A:				
Starks	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
134B:				
Camden	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
136A:				
Brooklyn	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
148B:				
Proctor	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
149A:				
Brenton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
152A:				
Drummer	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.01
154A:				
Flanagan	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
171B:				
Catlin	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
198A:				
Elburn	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.05
199B:				
Plano	Poor		Poor	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.00
208A:				
Sexton	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.08
219A:				
Millbrook	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
233B:				
Birkbeck	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
234A:				
Sunbury	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
234B:				
Sunbury	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
236A:				
Sabina	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
242A:				
Kendall	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
244A:				
Hartsburg	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
291B:				
Xenia	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
322C2:				
Russell-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
330A:				
Peotone-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
344B:				
Harvard-------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
348B:				
Wingate-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
353A:				
Toronto-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
375A:				
Rutland-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
448C3:				
Mona----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
481A:				
Raub----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
496A:				
Fincastle-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
533:				
Urban land----------	Not rated		Not rated	
554A:				
Kernan--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
554B:				
Kernan--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
570B:				
Martinsville--------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
570C2:				
Martinsville--------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
570D2:				
Martinsville--------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
618C2:				
Senachwine----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
618D2:				
Senachwine----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
618F:				
Senachwine----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
656C2:				
Octagon-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
663B:				
Clare---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
679B:				
Blackberry----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
722A:				
Drummer-------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.01
Milford-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
747A:				
Milford, undrained--	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Milford, drained----	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
802D:				
Orthents, loamy-----	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
809F:				
Orthents, loamy-skeletal-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
864, 865:				
Pits----------------	Not rated		Not rated	
1107A:				
Sawmill, undrained--	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3107A:				
Sawmill-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3183A:				
Shaffton------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.01
3405A:				
Zook----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
8682A:				
Medway--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 17a.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
56B:						
Dana	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Depth to saturated zone	0.68	Depth to water	1.00
			Piping	0.03		
67A:						
Harpster	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.22		
69A:						
Milford	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.74		
132A:						
Starks	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.81		
134B:						
Camden	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.82	Depth to water	1.00
136A:						
Brooklyn	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Ponding	1.00		
			Piping	0.31		
148B:						
Proctor	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.72	Depth to water	1.00
149A:						
Brenton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Cutbanks cave	0.50
					Slow refill	0.28
			Piping	0.97		
152A:						
Drummer	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.43		
			Seepage	0.01		

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
154A:						
Flanagan	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.42		
171B:						
Catlin	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Depth to saturated zone	0.98	Depth to water	1.00
			Piping	0.51		
198A:						
Elburn	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.51		
			Seepage	0.05		
199B:						
Plano	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.94	Depth to water	1.00
			Seepage	0.01		
208A:						
Sexton	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Ponding	1.00		
			Piping	0.91		
			Seepage	0.08		
219A:						
Millbrook	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.80		
233B:						
Birkbeck	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Depth to saturated zone	0.86	Depth to water	1.00
			Piping	0.14		
234A:						
Sunbury	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.59		
234B:						
Sunbury	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.59		
236A:						
Sabina	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.01		

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
242A:						
Kendall	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.53		
244A:						
Hartsburg	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.39		
291B:						
Xenia	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.60		
322C2:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.47	Depth to water	1.00
330A:						
Peotone	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		
344B:						
Harvard	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
			Seepage	0.04		
348B:						
Wingate	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.47		
353A:						
Toronto	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.43		
375A:						
Rutland	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
448C3:						
Mona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.04	Depth to saturated zone	0.80	Depth to water	1.00
			Piping	0.04		
481A:						
Raub	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.84		

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
496A:						
Fincastle----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.64		
533:						
Urban land----------	Not rated		Not rated		Not rated	
554A:						
Kernan-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
554B:						
Kernan-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
570B:						
Martinsville--------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
570C2:						
Martinsville--------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
570D2:						
Martinsville--------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
	Slope	0.02				
618C2:						
Senachwine----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	Depth to water	1.00
618D2:						
Senachwine----------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.98	Depth to water	1.00
	Slope	0.02				
618F:						
Senachwine----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	Depth to water	1.00
	Slope	0.36				
656C2:						
Octagon------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.68	Depth to saturated zone	0.14
					Cutbanks cave	0.10
663B:						
Clare---------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	0.68	Slow refill	0.28
			Piping	0.56	Depth to saturated zone	0.14
					Cutbanks cave	0.10

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
679B:						
Blackberry----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.74	Slow refill	0.28
			Depth to saturated zone	0.68	Depth to saturated zone	0.14
					Cutbanks cave	0.10
722A:						
Drummer-------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.43		
			Seepage	0.01		
Milford-------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.74		
747A:						
Milford, undrained--	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.32		
Milford, drained----	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.74		
802D:						
Orthents, loamy-----	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.47	Piping	0.59	Depth to saturated zone	0.90
	Slope	0.01			Slow refill	0.53
					Cutbanks cave	0.10
809F:						
Orthents, loamy-skeletal-----------	Somewhat limited		Not limited		Very limited	
	Slope	0.72			Depth to water	1.00
	Seepage	0.04				
864, 865:						
Pits----------------	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained--	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3107A:						
Sawmill	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.02		
3183A:						
Shaffton	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
			Seepage	0.01		
3405A:						
Zook	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.02	Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to pack	0.12		
8682A:						
Medway	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	1.00		

Table 17b.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
56B:						
Dana	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		
67A:						
Harpster	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		
69A:						
Milford	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	Too clayey	0.02
132A:						
Starks	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
134B:						
Camden	Somewhat limited		Very limited		Not limited	
	Slope	0.26	Water erosion	1.00		
			Slope	0.26		
136A:						
Brooklyn	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
148B:						
Proctor	Somewhat limited		Very limited		Not limited	
	Slope	0.37	Water erosion	1.00		
			Slope	0.37		
149A:						
Brenton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Water erosion	0.88	Cutbanks cave	0.50

Table 17b.--Water Management--Continued

Map symbol and soil name	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
152A:						
Drummer	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		
154A:						
Flanagan	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
171B:						
Catlin	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		
198A:						
Elburn	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
199B:						
Plano	Somewhat limited		Very limited		Very limited	
	Slope	0.26	Water erosion	1.00	Cutbanks cave	1.00
			Slope	0.26		
208A:						
Sexton	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	Cutbanks cave	1.00
					Too clayey	0.01
219A:						
Millbrook	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
233B:						
Birkbeck	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.26	Water erosion	1.00	Depth to saturated zone	0.99
			Depth to saturated zone	1.00		
			Slope	0.26		
234A:						
Sunbury	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		

Table 17b.--Water Management--Continued

Map symbol and soil name	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
234B:						
Sunbury	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
			Slope	0.37		
236A:						
Sabina	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
242A:						
Kendall	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
244A:						
Hartsburg	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		
291B:						
Xenia	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Dense layer	0.50
			Slope	0.37		
322C2:						
Russell	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
330A:						
Peotone	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	0.12		
344B:						
Harvard	Somewhat limited		Very limited		Very limited	
	Slope	0.16	Water erosion	1.00	Cutbanks cave	1.00
			Slope	0.16		
348B:						
Wingate	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Dense layer	0.50
			Slope	0.37		

Table 17b.--Water Management--Continued

Map symbol and soil name	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
353A:						
Toronto	Not limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Dense layer	0.50
375A:						
Rutland	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Too clayey	0.41
448C3:						
Mona	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.74	Depth to saturated zone	1.00	Depth to saturated zone	0.99
			Water erosion	0.88	Too clayey	0.18
			Slope	0.74		
481A:						
Raub	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
496A:						
Fincastle	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Dense layer	0.50
533:						
Urban land	Not rated		Not rated		Not rated	
554A:						
Kernan	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Too clayey	0.12
554B:						
Kernan	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	Too clayey	0.12
			Slope	0.16		
570B:						
Martinsville	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Cutbanks cave	1.00
			Slope	0.37		
570C2:						
Martinsville	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Cutbanks cave	1.00
			Water erosion	0.88		
570D2:						
Martinsville	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Cutbanks cave	1.00
			Water erosion	0.88	Slope	0.96

Table 17b.--Water Management--Continued

Map symbol and soil name	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
618C2:						
Senachwine----------	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
618D2:						
Senachwine----------	Very limited		Very limited		Somewhat limited	
	Slope	1.00	Water erosion	1.00	Slope	0.96
			Slope	1.00		
618F:						
Senachwine----------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
			Slope	1.00		
656C2:						
Octagon-------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.96	Depth to saturated zone	1.00	Depth to saturated zone	0.99
			Slope	0.96	Dense layer	0.50
			Water erosion	0.88		
663B:						
Clare---------------	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		
679B:						
Blackberry----------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.26	Water erosion	1.00	Depth to saturated zone	0.99
			Depth to saturated zone	1.00		
			Slope	0.26		
722A:						
Drummer-------------	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		
Milford-------------	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	Too clayey	0.02
747A:						
Milford, undrained--	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	Too clayey	0.02

Table 17b.--Water Management--Continued

Map symbol and soil name	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
747A:						
Milford, drained----	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	Too clayey	0.02
802D:						
Orthents, loamy-----	Very limited		Very limited		Somewhat limited	
	Slope	1.00	Water erosion	1.00	Depth to saturated zone	0.45
			Slope	1.00	Slope	0.37
809F:						
Orthents, loamy-skeletal-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Content of large stones	1.00	Slope	1.00	Dense layer	0.50
			Content of large stones	1.00		
864, 865:						
Pits----------------	Not rated		Not rated		Not rated	
1107A:						
Sawmill, undrained--	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	0.50	Frequent flooding	0.80
3107A:						
Sawmill-------------	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	0.50	Frequent flooding	0.80
3183A:						
Shaffton------------	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
					Frequent flooding	0.80
3405A:						
Zook----------------	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	0.50	Frequent flooding	0.80
					Too clayey	0.01

Table 17b.--Water Management--Continued

Map symbol and soil name	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
8682A:						
Medway--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Water erosion	0.88	Occasional flooding	0.60

Table 17c.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Sprinkler irrigation: Rating class and limiting features	Sprinkler irrigation: Value
56B:		
Dana	Not limited	
67A:		
Harpster	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
69A:		
Milford	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
132A:		
Starks	Very limited	
	Depth to saturated zone	1.00
134B:		
Camden	Very limited	
	Water erosion	1.00
136A:		
Brooklyn	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
148B:		
Proctor	Not limited	
149A:		
Brenton	Very limited	
	Depth to saturated zone	1.00
152A:		
Drummer	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
154A:		
Flanagan	Very limited	
	Depth to saturated zone	1.00
171B:		
Catlin	Not limited	

Table 17c.--Water Management--Continued

Map symbol and soil name	Sprinkler irrigation: Rating class and limiting features	Value
198A:		
Elburn	Very limited	
	Depth to saturated zone	1.00
199B:		
Plano	Not limited	
208A:		
Sexton	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
219A:		
Millbrook	Very limited	
	Depth to saturated zone	1.00
233B:		
Birkbeck	Very limited	
	Water erosion	1.00
234A:		
Sunbury	Very limited	
	Depth to saturated zone	1.00
234B:		
Sunbury	Very limited	
	Depth to saturated zone	1.00
	Water erosion	1.00
236A:		
Sabina	Very limited	
	Depth to saturated zone	1.00
242A:		
Kendall	Very limited	
	Depth to saturated zone	1.00
244A:		
Hartsburg	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
291B:		
Xenia	Very limited	
	Depth to saturated zone	1.00
	Water erosion	1.00
322C2:		
Russell	Very limited	
	Water erosion	1.00
	Slope	0.10

Table 17c.--Water Management--Continued

Map symbol and soil name	Sprinkler irrigation: Rating class and limiting features	Value
330A:		
Peotone	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
	Droughtiness	0.01
344B:		
Harvard	Very limited	
	Water erosion	1.00
348B:		
Wingate	Very limited	
	Water erosion	1.00
353A:		
Toronto	Very limited	
	Depth to saturated zone	1.00
375A:		
Rutland	Somewhat limited	
	Depth to saturated zone	0.97
	Droughtiness	0.02
448C3:		
Mona	Very limited	
	Water erosion	1.00
	Droughtiness	0.80
481A:		
Raub	Very limited	
	Depth to saturated zone	1.00
496A:		
Fincastle	Very limited	
	Depth to saturated zone	1.00
533:		
Urban land	Not rated	
554A:		
Kernan	Very limited	
	Depth to saturated zone	1.00
554B:		
Kernan	Very limited	
	Depth to saturated zone	1.00
	Water erosion	1.00
570B:		
Martinsville	Very limited	
	Water erosion	1.00

Table 17c.--Water Management--Continued

Map symbol and soil name	Sprinkler irrigation	
	Rating class and limiting features	Value
570C2:		
Martinsville	Very limited	
	Water erosion	1.00
	Droughtiness	0.19
	Slope	0.10
570D2:		
Martinsville	Very limited	
	Water erosion	1.00
	Slope	0.98
	Droughtiness	0.19
618C2:		
Senachwine	Very limited	
	Water erosion	1.00
	Slope	0.10
	Droughtiness	0.07
618D2:		
Senachwine	Very limited	
	Water erosion	1.00
	Slope	0.98
	Droughtiness	0.02
618F:		
Senachwine	Very limited	
	Slope	1.00
	Water erosion	1.00
656C2:		
Octagon	Very limited	
	Water erosion	1.00
	Slope	0.02
	Droughtiness	0.02
663B:		
Clare	Not limited	
679B:		
Blackberry	Not limited	
722A:		
Drummer	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
Milford	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
747A:		
Milford, undrained	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00

Table 17c.--Water Management--Continued

Map symbol and soil name	Sprinkler irrigation: Rating class and limiting features	Value
747A:		
Milford, drained	Very limited	
	Ponding	1.00
	Depth to saturated zone	1.00
802D:		
Orthents, loamy	Very limited	
	Water erosion	1.00
	Droughtiness	1.00
	Slope	0.98
809F:		
Orthents, loamy-skeletal	Very limited	
	Slope	1.00
	Water erosion	1.00
	Droughtiness	1.00
864, 865:		
Pits	Not rated	
1107A:		
Sawmill, undrained	Very limited	
	Ponding	1.00
	Flooding	1.00
	Depth to saturated zone	1.00
3107A:		
Sawmill	Very limited	
	Ponding	1.00
	Flooding	1.00
	Depth to saturated zone	1.00
3183A:		
Shaffton	Very limited	
	Flooding	1.00
	Depth to saturated zone	1.00
3405A:		
Zook	Very limited	
	Ponding	1.00
	Flooding	1.00
	Depth to saturated zone	1.00
8682A:		
Medway	Somewhat limited	
	Droughtiness	0.01

Table 18.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
56B:												
Dana------------	0-11	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	85-100	30-35	8-15
	11-32	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	85-100	35-50	20-35
	32-58	Clay loam	CL	A-6, A-7-6	0	0-3	90-98	90-98	80-90	55-80	30-50	15-30
	58-80	Loam, clay loam	CL-ML, CL	A-4, A-6	0-1	0-3	90-98	80-98	75-85	50-80	15-30	5-15
67A:												
Harpster--------	0-18	Silty clay loam	ML, CL	A-7-6	0	0	100	97-100	95-100	85-100	40-46	15-19
	18-41	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	41-56	Silt loam	CL	A-6, A-4	0	0	100	97-100	95-100	85-100	24-37	7-18
	56-60	Loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	70-90	50-70	22-33	4-14
69A:												
Milford---------	0-14	Silty clay loam	ML, CL, MH, CH	A-7-6, A-7-5	0	0	100	97-100	95-100	85-95	40-55	15-24
	14-25	Silty clay, silty clay loam	MH, CH, CL, ML	A-7-6, A-7-5	0	0	100	95-100	90-100	85-95	40-55	15-24
	25-45	Silty clay loam	CL	A-6	0	0	95-100	85-97	80-95	70-95	33-39	12-17
	45-80	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-100	80-90	65-85	22-33	4-13
132A:												
Starks----------	0-9	Silt loam	CL, ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-40	9-15
	9-13	Silt loam	CL, ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-40	9-15
	13-30	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	30-40	Sandy clay loam, sandy loam	SC, SM, CL, SC-SM, CL-ML	A-4, A-6, A-2-4, A-2-6	0	0	100	90-100	55-100	30-60	22-35	4-15
	40-60	Stratified loam to sandy clay loam to sandy loam	SC, SC-SM, SM, CL-ML, CL, ML	A-2-4, A-4	0	0	85-100	75-100	45-95	25-60	19-28	2-10
134B:												
Camden----------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	9-14	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-35	10-20
	14-22	Silty clay loam, silt loam	CL	A-6	0	0	100	100	97-100	95-100	25-35	10-20
	22-35	Silty clay loam	CL	A-6, A-7-6	0	0	98-100	95-100	90-100	80-100	35-45	15-25
	35-52	Clay loam, loam, sandy loam	CL, SC	A-6	0	0	95-100	85-100	70-90	45-80	25-35	10-15
	52-80	Stratified sandy loam to loam to sandy clay loam	SC, CL-ML, CL, SC-SM, SM, ML	A-4, A-6, A-2-4, A-2-6	0	0	95-100	80-100	65-95	20-60	25-30	5-15

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
136A:												
Brooklyn--------	0-9	Silt loam	ML, CL, CL-ML	A-4	0	0	100	100	95-100	85-100	24-36	6-11
	9-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	23-31	6-13
	14-40	Silty clay loam, silty clay	MH, CH, CL	A-7-5, A-7-6	0	0	100	100	95-100	85-100	45-60	20-35
	40-62	Clay loam, gravelly clay loam	CL, SC	A-6	0	0-2	75-95	70-90	55-90	40-70	33-42	12-20
	62-73	Stratified sandy loam to loam	SC-SM, SC, CL-ML, CL	A-6, A-4	0	0	85-100	80-100	50-95	35-75	22-33	4-14
	73-80	Loam	SC-SM, SM, SC, CL-ML, ML, CL	A-6, A-4	0-1	0-3	85-100	80-95	65-90	35-70	23-33	4-14
148B:												
Proctor---------	0-13	Silt loam	CL	A-6	0	0	100	100	97-100	85-100	25-40	10-20
	13-25	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	97-100	92-100	25-50	10-25
	25-45	Loam, sandy loam, clay loam, sandy clay loam	CL, SC	A-4, A-6	0	0	85-100	85-100	75-100	36-80	20-40	7-20
	45-60	Stratified sandy loam to silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	85-100	75-100	60-99	36-80	20-30	5-15
149A:												
Brenton---------	0-14	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	25-35	5-15
	14-33	Silty clay loam	CL	A-6, A-7-6	0	0	100	97-100	95-100	85-100	35-45	15-24
	33-45	Stratified loam to fine sandy loam	CL-ML, CL, ML	A-4	0	0	95-100	90-100	75-90	50-70	20-30	NP-10
	45-54	Loam	CL	A-6, A-4	0	0	95-100	90-100	75-90	55-70	25-35	8-15
	54-80	Stratified silt loam to silt	CL, CL-ML	A-4, A-6	0	0-3	100	95-100	85-100	75-100	20-30	5-12
152A:												
Drummer---------	0-14	Silty clay loam	CL, ML	A-7-6, A-7-5	0	0	100	97-100	95-100	85-100	40-46	15-19
	14-41	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	16-24
	41-47	Loam	CL, SC	A-6, A-4	0	0	95-100	90-100	70-90	45-80	25-33	8-14
	47-60	Stratified loam to sandy loam	SC, CL, CL-ML, SC-SM	A-4, A-2-4	0	0	95-100	80-100	55-95	30-65	22-28	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
154A:												
Flanagan--------	0-18	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	24-37	4-14
	18-38	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	95-100	95-100	45-52	22-28
	38-45	Silty clay loam silt loam	CL	A-6	0	0	100	100	95-100	95-100	35-40	14-20
	45-49	Silt loam, loam	CL	A-6, A-4	0	0-3	85-100	80-100	75-90	60-90	25-33	9-13
	49-60	Loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0-1	0-5	85-100	80-100	70-90	45-70	22-33	4-14
171B:												
Catlin----------	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	97-100	95-100	24-37	5-15
	11-16	Silty clay loam	CL	A-7-6	0	0	100	100	97-100	95-100	40-46	16-21
	16-41	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	85-100	37-46	16-24
	41-45	Clay loam	CL	A-6	0	0	90-98	85-98	76-95	54-83	33-39	12-18
	45-60	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0-1	0-3	90-100	85-95	70-90	45-70	22-33	4-14
198A:												
Elburn----------	0-16	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	100	100	97-100	95-100	24-37	4-14
	16-49	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	97-100	95-100	37-46	16-24
	49-58	Stratified sandy loam to silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	85-100	55-75	20-30	5-15
	58-62	Stratified sandy loam to loamy sand	SC-SM, SM	A-2-4, A-4	0	0	95-100	90-100	50-85	20-45	19-25	1-7
199B:												
Plano-----------	0-15	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	27-35	7-15
	15-45	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	90-100	29-40	11-20
	45-55	Clay loam, loam, sandy loam	CL	A-4, A-6	0	0	85-100	80-97	55-95	50-85	25-35	7-15
	55-72	Stratified loamy sand to clay loam	SC-SM, SC, CL-ML, CL	A-2-4, A-4	0	0-3	85-100	80-95	45-90	30-60	22-28	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
208A:												
Sexton----------	0-8	Silt loam	CL, CL-ML	A-4	0	0	100	100	95-100	85-100	24-31	6-11
	8-12	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	23-31	6-13
	12-16	Silty clay loam, silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	85-100	25-41	7-18
	16-36	Silty clay loam, silty clay	MH, CH, CL, ML	A-7-5, A-7-6	0	0	100	100	95-100	85-100	45-60	20-35
	36-45	Clay loam, gravelly clay loam	CL, SC	A-6	0	0-2	75-95	70-90	55-90	40-70	33-42	12-20
	45-78	Stratified sandy loam to loamy sand	SM, SC-SM	A-1-b, A-2-4	0	0	94-98	85-95	45-85	15-35	19-25	2-7
	78-90	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-100	80-90	65-85	22-33	4-13
219A:												
Millbrook-------	0-7	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	97-100	88-99	21-29	3-9
	7-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	88-98	21-29	5-11
	14-35	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	97-100	90-100	29-46	11-25
	35-55	Clay loam, loam, sandy clay loam	CL, SC	A-6, A-7-6	0	0	100	81-100	65-99	36-86	29-46	11-25
	55-80	Sandy loam	CL, ML, CL-ML, SC, SM	A-4, A-6, A-2-6, A-2-4	0	0	100	82-100	66-99	28-85	19-29	3-12
233B:												
Birkbeck--------	0-4	Silt loam	CL, ML	A-6	0	0	100	100	97-100	95-100	29-37	11-18
	4-9	Silt loam	CL	A-6, A-4	0	0	100	100	97-100	95-100	24-37	7-18
	9-54	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	97-100	95-100	37-46	16-25
	54-60	Loam	CL, SC	A-6, A-4	0	0-1	85-100	85-100	70-90	45-70	25-33	8-14
	60-68	Loam	CL, SC, SC-SM, CL-ML	A-4, A-6	0-1	0-3	85-100	85-100	70-90	45-70	22-33	4-14
234A:												
Sunbury---------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	24-37	4-14
	8-15	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	24-37	4-14
	15-36	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	95-100	95-100	45-52	22-28
	36-43	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	95-100	35-40	14-20
	43-47	Silt loam, loam	CL	A-6, A-4	0	0	100	90-100	75-90	60-90	25-33	9-13
	47-72	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	70-90	50-70	22-33	4-13

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
234B:												
Sunbury---------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	24-37	4-14
	8-15	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	24-37	4-14
	15-36	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	95-100	95-100	45-52	22-28
	36-43	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	95-100	35-40	14-20
	43-47	Silt loam, loam	CL	A-6, A-4	0	0	100	90-100	75-90	60-90	25-33	9-13
	47-72	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	70-90	50-70	22-33	4-13
236A:												
Sabina----------	0-8	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	95-100	25-35	8-15
	8-12	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	8-20
	12-43	Silty clay, silty clay loam	CH, CL	A-7-6	0	0	100	100	95-100	95-100	45-60	25-35
	43-50	Clay loam, loam, silt loam, silty clay loam	CL	A-6	0-1	0-3	95-100	90-100	70-95	50-80	30-40	10-20
	50-80	Clay loam, loam, silt loam	CL	A-6	0-1	0-5	90-100	85-95	70-95	50-80	25-35	10-15
242A:												
Kendall---------	0-7	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	5-15
	7-11	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	5-15
	11-51	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-100	35-45	16-25
	51-58	Loam, clay loam	CL, SC	A-6, A-4	0	0	95-100	80-98	65-98	40-80	25-35	8-15
	58-80	Stratified sandy loam to silt loam	CL-ML, CL, SC-SM, SC	A-4	0	0-3	90-100	80-98	60-95	40-80	20-30	4-10
244A:												
Hartsburg-------	0-17	Silty clay loam	CL, ML	A-7-6, A-7-5	0	0	100	100	97-100	95-100	40-46	15-19
	17-34	Silty clay loam, silt loam	CL	A-7-6, A-6	0	0	100	100	97-100	95-100	37-46	16-24
	34-60	Silt loam	CL	A-6, A-4	0	0	95-100	90-100	90-100	85-100	24-37	7-18
291B:												
Xenia-----------	0-4	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	4-16	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	16-37	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	37-57	Clay loam, loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	57-72	Loam	CL-ML, CL, SC-SM	A-4	0-1	0-3	90-100	85-99	70-90	45-75	22-28	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
322C2:												
Russell---------	0-7	Silt loam	CL, ML	A-6	0	0	100	97-100	95-100	85-100	29-37	11-18
	7-27	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	16-25
	27-56	Clay loam	CL	A-6	0	0	90-100	85-100	75-95	55-85	33-39	12-18
	56-72	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0-1	0-3	85-100	80-100	70-90	45-70	22-33	4-14
330A:												
Peotone---------	0-6	Silty clay loam	CL, MH, CH	A-7-6	0	0	100	100	97-100	95-100	45-52	22-28
	6-28	Silty clay loam	CL, CH	A-7-6	0	0	100	100	97-100	95-100	45-52	22-28
	28-44	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	97-100	95-100	85-100	46-53	25-34
	44-60	Silty clay loam	CL, CH	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-52	16-28
344B:												
Harvard---------	0-9	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	90-99	23-35	5-14
	9-26	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-100	37-43	16-21
	26-31	Clay loam, loam	CL	A-6, A-4	0	0	95-100	90-98	75-98	51-86	27-39	8-18
	31-65	Stratified sandy loam to loamy sand, sandy loam	SC-SM, SM	A-2-4, A-4	0	0	95-100	80-98	51-95	20-40	19-25	2-7
348B:												
Wingate---------	0-9	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	9-12	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	12-27	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	27-52	Clay loam, loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	52-60	Loam	CL-ML, CL, SC-SM	A-4	0-1	0-3	90-100	85-99	70-90	45-75	22-28	4-10
353A:												
Toronto---------	0-9	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	9-12	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	5-15
	12-26	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	26-54	Clay loam, loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	54-60	Loam	CL-ML, CL	A-4	0-1	0-3	90-100	85-99	70-90	50-75	22-30	4-10
375A:												
Rutland---------	0-10	Silt loam	CL, ML	A-6	0	0	100	100	95-100	89-100	31-37	11-14
	10-47	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	99-100	97-100	45-57	23-33
	47-80	Silty clay, clay	CH, MH, ML, CL	A-7-6	0	0	100	100	97-100	95-99	42-55	18-30

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
448C3:												
Mona------------	0-8	Loam	CL	A-4, A-6	0	0	100	85-100	75-100	50-70	20-30	7-15
	8-26	Clay loam, sandy clay loam	CL	A-6, A-7-6	0	0	95-100	92-100	76-98	50-86	35-46	15-24
	26-46	Silty clay loam	CL	A-6	0	0	95-100	92-100	86-99	75-94	35-39	13-17
	46-80	Silty clay	CL	A-7-6	0	0	96-100	93-100	90-100	86-98	42-49	18-25
481A:												
Raub------------	0-18	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	97-100	95-100	85-100	24-37	4-14
	18-32	Silty clay loam	CL	A-6, A-7-6	0	0	100	97-100	95-100	85-100	37-46	17-24
	32-50	Clay loam, loam	CL	A-6	0	0	90-100	85-100	75-95	55-85	33-39	12-18
	50-80	Loam, clay loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0-1	0-3	85-100	80-95	70-90	45-70	22-33	4-14
496A:												
Fincastle-------	0-8	Silt loam	CL, ML, CL-ML	A-6, A-4	0	0	100	97-100	95-100	85-100	24-37	6-15
	8-11	Silt loam	CL	A-6, A-4	0	0	100	97-100	95-100	85-100	24-37	7-18
	11-32	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	16-25
	32-40	Clay loam	CL	A-6	0	0	90-100	80-100	70-95	50-80	33-39	12-18
	40-50	Clay loam, loam	CL	A-6, A-4	0	0	90-100	80-100	70-95	50-80	27-34	8-14
	50-60	Loam	CL-ML, SC-SM, SC, CL	A-4	0-1	0-3	85-100	80-95	70-90	45-70	22-28	4-10
533.												
Urban land												
554A:												
Kernan----------	0-5	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	94-100	86-100	19-29	2-9
	5-12	Silt loam	CL	A-6, A-4	0	0	100	100	94-100	86-98	27-37	9-16
	12-42	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	88-100	45-54	23-31
	42-80	Silty clay, clay	MH, CH, ML, CL	A-7-6	0	0	91-100	91-100	87-100	81-99	42-53	18-28
554B:												
Kernan----------	0-5	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	94-100	86-100	19-29	2-9
	5-12	Silt loam	CL	A-6, A-4	0	0	100	100	94-100	86-98	27-37	9-16
	12-36	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	88-100	45-54	23-31
	36-43	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	95-100	91-100	86-100	78-100	48-57	25-33
	43-80	Silty clay, clay	MH, CH, ML, CL	A-7-6	0	0	93-100	91-100	87-100	81-99	42-53	18-28

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
570B:												
Martinsville----	0-9	Silt loam	ML, CL-ML	A-4	0	0	100	85-100	70-100	50-95	20-30	2-7
	9-12	Silt loam	ML, CL-ML, CL	A-4	0	0	100	85-100	70-100	50-95	20-30	3-9
	12-45	Clay loam, loam, sandy clay loam	CL, SC	A-4, A-6	0	0	95-100	85-100	60-100	40-85	29-37	9-17
	45-69	Sandy loam, sandy clay loam, loam	CL, SC	A-4, A-6	0	0	92-100	85-100	45-95	35-80	25-37	7-17
	69-80	Stratified sand to silt loam	SM, SC-SM, ML, CL-ML	A-4, A-2-4	0	0	92-100	85-100	40-95	25-65	15-25	2-7
570C2:												
Martinsville----	0-9	Loam	CL-ML	A-4	0	0	100	85-100	75-100	50-70	15-25	4-7
	9-45	Clay loam, loam, sandy clay loam	CL, SC	A-4, A-6	0	0	95-100	85-100	60-100	40-85	29-37	9-17
	45-69	Sandy loam, sandy clay loam, loam	CL, SC	A-4, A-6	0	0	92-100	85-100	45-95	35-80	25-37	7-17
	69-80	Stratified sand to silt loam	SM, SC-SM, ML, CL-ML	A-4, A-2-4	0	0	92-100	85-100	40-95	25-65	15-25	2-7
570D2:												
Martinsville----	0-9	Loam	CL-ML	A-4	0	0	100	85-100	75-100	50-70	15-25	4-7
	9-45	Clay loam, loam, sandy clay loam	CL, SC	A-4, A-6	0	0	95-100	85-100	60-100	40-85	29-37	9-17
	45-69	Sandy loam, sandy clay loam, loam	CL, SC	A-4, A-6	0	0	92-100	85-100	45-95	35-80	25-37	7-17
	69-80	Stratified sand to silt loam	SM, SC-SM, ML, CL-ML	A-4, A-2-4	0	0	92-100	85-100	40-95	25-65	15-25	2-7
618C2:												
Senachwine------	0-6	Silt loam	CL, ML	A-6	0	0	95-100	95-100	90-98	80-90	29-37	10-16
	6-12	Silty clay loam, clay loam	CL	A-6	0	0	95-100	95-100	85-95	75-90	33-39	13-18
	12-27	Clay loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	27-60	Loam	CL-ML, CL, SC-SM	A-4	0-1	0-3	90-100	85-99	70-90	45-75	22-28	4-10
618D2:												
Senachwine------	0-6	Silt loam	CL, ML	A-6	0	0	95-100	95-100	90-98	80-90	29-37	10-16
	6-15	Silty clay loam, clay loam	CL	A-6	0	0	95-100	95-100	85-95	75-90	33-39	13-18
	15-28	Clay loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	28-34	Loam, clay loam	CL, SC	A-6, A-4	0	0-2	90-100	85-99	70-90	45-75	25-33	8-14
	34-60	Loam	CL-ML, CL, SC-SM	A-4	0-1	0-3	90-100	85-99	70-90	45-75	22-28	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
618F:												
Senachwine------	0-11	Silt loam	CL-ML, CL, ML	A-4	0	0	95-100	90-100	75-100	55-90	19-29	2-10
	11-17	Silty clay loam, clay loam	CL, ML	A-6	0	0	90-100	85-99	75-95	55-90	33-39	12-18
	17-32	Clay loam	CL	A-6	0	0	90-100	85-99	75-95	55-85	33-39	12-18
	32-40	Loam, clay loam	CL, SC	A-6, A-4	0	0-2	90-100	85-99	70-90	45-75	25-33	8-14
	40-60	Loam	CL-ML, CL, SC-SM	A-4	0-1	0-3	90-100	85-99	70-90	45-75	22-28	4-10
656C2:												
Octagon---------	0-8	Silt loam	ML, CL-ML	A-4	0	0	100	85-100	70-100	50-95	20-30	2-7
	8-37	Clay loam, loam, silty clay loam	CL, SC	A-6, A-4	0	0	100	83-100	69-100	39-92	27-39	8-16
	37-60	Loam, fine sandy loam	CL, CL-ML, SC-SM, SC	A-4	0	0	100	86-97	55-96	35-69	22-28	4-10
663B:												
Clare-----------	0-14	Silt loam	CL, ML, CL-ML	A-6, A-4	0	0	100	100	95-100	85-100	25-40	5-15
	14-36	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-45	15-30
	36-44	Clay loam, silty clay loam, loam, silt loam	CL	A-6	0	0	95-100	85-99	70-98	50-90	30-40	10-20
	44-60	Stratified sandy loam to loam	SC, CL, SC-SM, CL-ML	A-4, A-6	0	0	90-100	80-99	60-98	35-65	20-30	4-15
679B:												
Blackberry------	0-16	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	27-37	8-15
	16-47	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-45	15-25
	47-62	Stratified loam to silt loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	70-99	50-75	25-35	5-10
	62-70	Stratified silt loam to loam to sandy loam	CL-ML, CL, ML, SC-SM, SM, SC	A-4	0	0	95-100	80-100	60-99	40-75	15-30	NP-10
722A:												
Drummer---------	0-14	Silty clay loam	CL, ML	A-7-6, A-7-5	0	0	100	97-100	95-100	85-100	40-46	15-19
	14-41	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	95-100	85-100	37-46	16-24
	41-47	Loam	CL, SC	A-6, A-4	0	0	95-100	90-100	70-90	45-80	25-33	8-14
	47-60	Stratified loam to sandy loam	SC, CL, CL-ML, SC-SM	A-4, A-2-4	0	0	95-100	80-100	55-95	30-65	22-28	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
722A:												
Milford---------	0-14	Silty clay loam	ML, CL, MH, CH	A-7-6, A-7-5	0	0	100	97-100	95-100	85-95	40-55	15-24
	14-25	Silty clay, silty clay loam	CH, MH, CL, ML	A-7-6, A-7-5	0	0	100	95-100	90-100	85-95	40-55	15-24
	25-45	Silty clay loam	CL	A-6	0	0	95-100	85-97	80-95	70-95	33-39	12-17
	45-80	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-100	80-90	65-85	22-33	4-13
747A:												
Milford, undrained------	0-19	Silty clay loam	ML, MH	A-7-6, A-7-5	0	0	100	97-100	95-100	85-100	45-55	15-20
	19-34	Silty clay, silty clay loam	CL, ML, CH, MH	A-7-6, A-7-5	0	0	100	95-100	90-100	85-95	40-55	15-24
	34-61	Silty clay loam	CL	A-6	0	0	95-100	85-97	80-95	70-95	33-39	12-17
	61-80	Stratified silt loam to silty clay	ML, CL	A-7-6, A-6	0	0	100	95-100	93-100	75-99	32-45	10-20
Milford, drained	0-14	Silty clay loam	ML, CL, MH, CH	A-7-6, A-7-5	0	0	100	97-100	95-100	85-95	40-55	15-24
	14-25	Silty clay, silty clay loam	CH, MH, CL, ML	A-7-6, A-7-5	0	0	100	95-100	90-100	85-95	40-55	15-24
	25-45	Silty clay loam	CL	A-6	0	0	95-100	85-97	80-95	70-95	33-39	12-17
	45-80	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-100	80-90	65-85	22-33	4-13
802D:												
Orthents, loamy	0-10	Clay loam	CL, ML	A-6	0-1	0-5	95-100	90-100	85-95	50-80	30-40	10-15
	10-60	Clay loam, silty clay loam, loam	CL, SC	A-6	0-1	0-5	95-100	85-100	85-95	40-85	30-40	10-20
809F:												
Orthents, loamy-skeletal-------	0-3	Gravelly loam	SC, SC-SM, SM	A-6, A-4, A-2-6, A-2-4	0-2	0-3	75-95	50-75	40-70	30-50	20-40	5-20
	3-60	Very channery loam, very channery sandy clay loam, very channery clay loam	SC, SC-SM, SM, SW-SM	A-1-b, A-2-4, A-2-6, A-4, A-6	0-5	15-25	75-95	25-65	20-55	10-50	20-40	5-20
864, 865.												
Pits												

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1107A:												
Sawmill, undrained------	0-29	Silty clay loam	CL, ML	A-7-6	0	0	100	97-100	95-100	85-100	40-46	16-21
	29-38	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	85-100	80-95	37-46	16-22
	38-60	Silty clay loam, clay loam	CL	A-7-6, A-6	0	0	100	97-100	85-100	80-95	37-46	16-22
3107A:												
Sawmill---------	0-10	Silty clay loam	CL, ML	A-7-6	0	0	100	97-100	95-100	85-100	40-46	16-21
	10-32	Silty clay loam	CL	A-7-6	0	0	100	97-100	95-100	85-100	40-46	16-21
	32-58	Silty clay loam	CL	A-7-6, A-6	0	0	100	97-100	85-100	80-95	37-46	16-22
	58-65	Silty clay loam, clay loam	CL	A-7-6, A-6	0	0	100	97-100	85-100	80-95	37-46	16-22
3183A:												
Shaffton--------	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	89-100	66-95	24-35	5-13
	11-46	Loam, clay loam	CL	A-6	0	0	100	100	89-99	59-82	30-40	11-20
	46-62	Sandy loam	SM, SC-SM	A-4	0	0	100	97-100	75-94	37-50	13-23	NP-6
	62-75	Stratified loamy sand to sandy loam	SM	A-4, A-2-4	0	0	100	97-100	78-96	31-48	10-17	NP-3
3405A:												
Zook------------	0-8	Silty clay loam	MH, CH, CL	A-7-6, A-7-5	0	0	100	100	95-100	90-100	45-60	20-30
	8-55	Silty clay, silty clay loam	MH, CH	A-7-6, A-7-5	0	0	100	100	95-100	90-100	50-65	20-35
	55-60	Silty clay loam, silty clay, silt loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-100	35-50	15-30
8682A:												
Medway----------	0-19	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	75-92	55-67	24-33	4-11
	19-33	Loam	CL, CL-ML	A-4, A-6	0	0	100	92-100	83-99	55-71	25-35	6-14
	33-56	Sandy loam	SC, SC-SM	A-2-4, A-4	0	0	96-100	79-100	56-90	29-50	20-28	4-10
	56-60	Stratified loam to sandy loam	CL-ML, CL	A-6, A-4	0	0	96-100	71-100	70-95	50-68	20-29	4-12

Table 19.--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			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
56B:														
Dana----------------	0-11	2-15	58-80	18-27	1.25-1.50	0.6-2	0.15-0.21	0.0-2.9	3.0-5.0	.28	.28	5	6	48
	11-32	2-15	50-70	27-35	1.25-1.55	0.6-2	0.13-0.19	3.0-5.9	0.5-1.5	.37	.37			
	32-58	20-40	25-53	27-35	1.40-1.70	0.6-2	0.15-0.19	3.0-5.9	0.2-0.8	.32	.32			
	58-80	20-45	25-50	15-30	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.37			
67A:														
Harpster------------	0-18	2-15	50-71	27-35	1.20-1.40	0.6-2	0.19-0.22	3.0-5.9	3.5-6.0	.24	.24	5	4L	86
	18-41	2-15	50-71	27-35	1.35-1.55	0.6-2	0.18-0.21	3.0-5.9	0.8-1.5	.37	.37			
	41-56	2-30	58-83	15-27	1.40-1.60	0.6-2	0.19-0.26	0.0-2.9	0.5-1.0	.49	.49			
	56-60	30-50	28-55	15-27	1.45-1.65	0.6-2	0.10-0.20	0.0-2.9	0.1-0.5	.37	.37			
69A:														
Milford-------------	0-14	1-15	45-64	35-40	1.30-1.50	0.2-0.6	0.18-0.21	6.0-8.9	4.5-6.0	.24	.24	5	4	86
	14-25	3-15	40-62	35-45	1.35-1.55	0.2-0.6	0.15-0.18	6.0-8.9	1.0-2.0	.32	.32			
	25-45	5-20	45-68	27-35	1.50-1.70	0.6-2	0.14-0.18	3.0-5.9	0.2-0.5	.37	.37			
	45-80	15-30	50-65	20-27	1.50-1.70	0.6-2	0.09-0.14	0.0-2.9	0.1-0.5	.43	.43			
132A:														
Starks--------------	0-9	2-15	58-82	15-27	1.25-1.50	0.6-2	0.19-0.22	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	9-13	2-15	58-82	15-27	1.35-1.55	0.6-2	0.18-0.21	0.0-2.9	0.5-1.0	.49	.49			
	13-30	2-15	50-70	27-35	1.35-1.55	0.6-2	0.18-0.21	3.0-5.9	0.2-0.8	.37	.37			
	30-40	45-65	15-35	10-30	1.45-1.65	0.6-2	0.13-0.17	3.0-5.9	0.2-0.5	.24	.24			
	40-60	45-70	10-35	5-20	1.50-1.70	0.6-2	0.08-0.15	0.0-2.9	0.1-0.5	.28	.28			
134B:														
Camden--------------	0-9	2-7	66-83	15-27	1.35-1.55	0.6-2	0.22-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	9-14	2-7	66-83	15-27	1.40-1.60	0.6-2	0.17-0.20	0.0-2.9	0.1-1.0	.55	.55			
	14-22	2-7	66-76	22-27	1.30-1.50	0.6-2	0.18-0.23	0.0-2.9	0.1-0.5	.43	.43			
	22-35	3-15	50-70	27-35	1.35-1.55	0.6-2	0.16-0.20	3.0-5.9	0.1-0.5	.37	.37			
	35-52	25-54	28-50	18-30	1.45-1.65	0.6-2	0.11-0.18	0.0-2.9	0.1-0.5	.32	.32			
	52-80	45-65	25-45	10-22	1.50-1.70	0.6-6	0.08-0.15	0.0-2.9	0.1-0.5	.28	.28			
136A:														
Brooklyn------------	0-9	2-14	65-82	15-22	1.30-1.50	0.6-2	0.19-0.25	0.0-2.9	3.0-4.0	.37	.37	3	5	56
	9-14	2-15	71-82	14-22	1.35-1.55	0.2-0.6	0.20-0.26	0.0-2.9	0.2-1.0	.55	.55			
	14-40	0-10	47-63	35-45	1.30-1.50	0.06-0.2	0.11-0.17	6.0-8.9	0.1-0.8	.37	.37			
	40-62	20-44	23-52	27-40	1.50-1.70	0.2-0.6	0.12-0.18	3.0-5.9	0.1-0.5	.28	.32			
	62-73	29-61	28-44	10-27	1.55-1.75	0.6-2	0.11-0.15	0.0-2.9	0.1-0.3	.37	.37			
	73-80	24-54	29-50	10-27	1.70-1.90	0.06-0.2	0.08-0.12	0.0-2.9	0.1-0.3	.37	.37			

Table 19.--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					
148B:														
Proctor-------------	0-13	1-9	64-71	18-27	1.10-1.30	0.6-2	0.15-0.21	0.0-2.9	2.0-4.0	.28	.28	5	6	48
	13-25	1-9	56-74	25-35	1.20-1.45	0.6-2	0.13-0.19	3.0-5.9	0.5-2.0	.37	.37			
	25-45	20-55	23-50	18-32	1.30-1.55	0.6-2	0.13-0.16	0.0-2.9	0.2-0.8	.37	.37			
	45-60	30-50	35-55	5-20	1.40-1.70	0.6-6	0.07-0.19	0.0-2.9	0.1-0.5	.32	.32			
149A:														
Brenton-------------	0-14	2-15	58-82	15-27	1.25-1.45	0.6-2	0.16-0.22	0.0-2.9	3.5-5.0	.28	.28	5	6	48
	14-33	2-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.8-1.5	.32	.32			
	33-45	40-55	30-45	15-27	1.50-1.70	0.6-2	0.13-0.17	0.0-2.9	0.2-0.5	.32	.32			
	45-54	30-50	28-50	20-27	1.45-1.65	0.6-2	0.11-0.14	0.0-2.9	0.1-0.5	.32	.32			
	54-80	2-20	60-93	5-20	1.35-1.55	0.6-2	0.09-0.14	0.0-2.9	0.1-0.5	.55	.55			
152A:														
Drummer-------------	0-14	3-15	50-70	27-35	1.20-1.40	0.6-2	0.12-0.18	3.0-5.9	4.5-7.0	.24	.24	5	6	48
	14-41	3-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.8-2.0	.37	.37			
	41-47	25-45	28-50	20-27	1.45-1.65	0.6-2	0.11-0.17	0.0-2.9	0.2-0.5	.32	.32			
	47-60	45-65	25-45	10-20	1.55-1.75	0.6-2	0.11-0.17	0.0-2.9	0.1-0.5	.24	.24			
154A:														
Flanagan------------	0-18	2-7	66-78	20-27	1.25-1.45	0.6-2	0.16-0.22	0.0-2.9	3.5-5.0	.28	.28	5	6	48
	18-38	2-7	53-63	35-40	1.30-1.50	0.2-0.6	0.11-0.17	6.0-8.9	0.5-1.8	.37	.37			
	38-45	3-15	50-72	25-35	1.30-1.50	0.6-2	0.13-0.19	3.0-5.9	0.1-0.5	.37	.37			
	45-49	15-30	45-65	20-27	1.40-1.60	0.6-2	0.13-0.19	0.0-2.9	0.1-0.5	.37	.37			
	49-60	30-50	28-50	10-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.5	.37	.37			
171B:														
Catlin--------------	0-11	1-7	66-81	18-27	1.30-1.40	0.6-2	0.19-0.23	0.0-2.9	2.5-4.0	.28	.28	5	6	48
	11-16	1-7	58-72	27-35	1.25-1.40	0.6-2	0.17-0.20	3.0-5.9	1.5-3.5	.32	.32			
	16-41	2-8	58-70	27-35	1.35-1.45	0.6-2	0.18-0.21	3.0-5.9	0.5-1.5	.37	.37			
	41-45	20-40	25-53	27-35	1.45-1.55	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.28	.32			
	45-60	30-40	33-50	15-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.5	.37	.43			
198A:														
Elburn--------------	0-16	2-7	66-76	22-27	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	3.5-5.0	.28	.28	5	6	48
	16-49	2-7	58-73	25-35	1.35-1.55	0.6-2	0.18-0.21	3.0-5.9	0.5-1.5	.37	.37			
	49-58	30-55	30-55	15-20	1.45-1.65	0.6-2	0.14-0.17	0.0-2.9	0.1-0.5	.37	.37			
	58-62	60-80	10-25	5-15	1.50-1.70	2-6	0.06-0.10	0.0-2.9	0.1-0.5	.24	.24			
199B:														
Plano---------------	0-15	0-10	63-82	18-27	1.10-1.30	0.6-2	0.22-0.24	0.0-2.9	3.0-5.0	.28	.28	5	6	48
	15-45	0-10	55-80	20-35	1.35-1.55	0.6-2	0.16-0.20	3.0-5.9	0.2-1.0	.37	.37			
	45-55	20-55	30-50	15-30	1.50-1.70	0.6-6	0.11-0.16	0.0-2.9	0.1-0.5	.32	.32			
	55-72	45-65	18-43	10-20	1.50-1.70	2-6	0.11-0.15	0.0-2.9	0.1-0.5	.28	.28			

Table 19.--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					
208A:														
Sexton--------------	0-8	2-14	65-82	15-22	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	0.8-1.5	.43	.43	5	5	56
	8-12	2-15	71-82	14-22	1.35-1.55	0.2-0.6	0.20-0.22	0.0-2.9	0.2-1.0	.55	.55			
	12-16	2-15	50-82	15-35	1.30-1.50	0.2-0.6	0.15-0.20	3.0-5.9	0.1-0.5	.49	.49			
	16-36	0-10	47-63	35-45	1.30-1.50	0.06-0.2	0.13-0.17	6.0-8.9	0.1-0.5	.37	.37			
	36-45	20-44	23-52	27-40	1.50-1.70	0.2-0.6	0.10-0.14	3.0-5.9	0.1-0.5	.28	.32			
	45-78	70-85	5-22	5-14	1.55-1.75	2-6	0.07-0.11	0.0-2.9	0.1-0.3	.15	.15			
	78-90	15-30	50-65	20-27	1.50-1.70	0.6-2	0.09-0.14	0.0-2.9	0.1-0.3	.32	.49			
219A:														
Millbrook-----------	0-7	1-10	71-87	12-20	1.30-1.50	0.6-2	0.19-0.25	0.0-2.9	1.5-3.0	.37	.37	5	5	56
	7-14	2-9	72-85	12-20	1.40-1.60	0.2-0.6	0.20-0.26	0.0-2.9	0.3-1.5	.55	.55			
	14-35	1-10	57-77	20-35	1.30-1.50	0.6-2	0.13-0.19	3.0-5.9	0.2-1.0	.43	.43			
	35-55	35-53	16-42	21-33	1.40-1.60	0.6-2	0.13-0.17	3.0-5.9	0.1-0.5	.24	.24			
	55-80	55-69	11-32	12-20	1.45-1.65	0.6-2	0.11-0.15	0.0-2.9	0.1-0.3	.24	.24			
233B:														
Birkbeck------------	0-4	2-7	66-78	20-27	1.40-1.60	0.6-2	0.17-0.21	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	4-9	2-7	66-83	15-27	1.40-1.60	0.6-2	0.17-0.21	0.0-2.9	0.3-1.0	.49	.49			
	9-54	2-7	58-71	27-35	1.35-1.55	0.6-2	0.16-0.20	3.0-5.9	0.2-0.5	.37	.37			
	54-60	30-50	28-50	20-27	1.45-1.65	0.6-2	0.11-0.14	0.0-2.9	0.1-0.5	.32	.32			
	60-68	30-50	28-50	17-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.5	.37	.37			
234A:														
Sunbury-------------	0-8	2-7	66-78	20-27	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	2.0-4.0	.37	.37	5	6	48
	8-15	2-7	66-78	20-30	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.49	.49			
	15-36	2-7	53-63	35-42	1.30-1.50	0.2-0.6	0.17-0.21	6.0-8.9	0.1-0.5	.37	.37			
	36-43	3-15	50-72	25-35	1.30-1.50	0.6-2	0.17-0.21	3.0-5.9	0.1-0.5	.37	.37			
	43-47	15-30	45-65	20-27	1.40-1.60	0.6-2	0.10-0.17	0.0-2.9	0.1-0.5	.37	.37			
	47-72	30-45	28-50	20-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.37			
234B:														
Sunbury-------------	0-8	2-7	66-78	20-27	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	2.0-4.0	.37	.37	5	6	48
	8-15	2-7	66-78	20-30	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.49	.49			
	15-36	2-7	53-63	35-42	1.30-1.50	0.2-0.6	0.17-0.21	6.0-8.9	0.1-0.5	.37	.37			
	36-43	3-15	50-72	25-35	1.30-1.50	0.6-2	0.17-0.21	3.0-5.9	0.1-0.5	.37	.37			
	43-47	15-30	45-65	20-27	1.40-1.60	0.6-2	0.10-0.17	0.0-2.9	0.1-0.5	.37	.37			
	47-72	30-45	28-50	20-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.37			
236A:														
Sabina--------------	0-8	2-10	63-78	20-27	1.25-1.55	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	8-12	2-10	65-80	18-25	1.35-1.55	0.2-0.6	0.20-0.22	0.0-2.9	0.1-1.0	.55	.55			
	12-43	2-10	48-63	35-42	1.35-1.55	0.2-0.6	0.15-0.19	6.0-8.9	0.1-1.0	.37	.37			
	43-50	15-35	30-65	20-35	1.50-1.75	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	50-80	20-40	28-65	15-32	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.32	.32			

Table 19.--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					
242A:														
Kendall-------------	0-7	0-10	65-86	14-25	1.30-1.50	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	7-11	0-10	65-86	14-25	1.35-1.55	0.6-2	0.20-0.22	0.0-2.9	0.1-1.0	.49	.49			
	11-51	0-10	55-73	27-35	1.30-1.50	0.6-2	0.14-0.18	3.0-5.9	0.1-0.5	.37	.37			
	51-58	30-50	33-50	15-27	1.45-1.55	0.6-2	0.11-0.14	0.0-2.9	0.1-0.5	.32	.32			
	58-80	30-55	25-50	10-20	1.55-1.75	0.6-2	0.11-0.15	0.0-2.9	0.1-0.3	.32	.32			
244A:														
Hartsburg-----------	0-17	2-7	58-71	27-35	1.20-1.40	0.6-2	0.12-0.18	3.0-5.9	4.5-6.0	.24	.24	5	6	48
	17-34	2-7	58-71	25-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.5-2.0	.37	.37			
	34-60	3-15	66-82	15-27	1.45-1.65	0.6-2	0.16-0.22	0.0-2.9	0.1-0.5	.49	.49			
291B:														
Xenia---------------	0-4	2-15	58-82	15-27	1.25-1.50	0.6-2	0.19-0.25	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	4-16	2-15	58-82	15-27	1.35-1.55	0.6-2	0.16-0.22	0.0-2.9	0.5-1.0	.49	.49			
	16-37	2-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.2-0.8	.37	.37			
	37-57	20-40	25-53	24-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.24	.28			
	57-72	30-50	30-50	12-20	1.65-1.95	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
322C2:														
Russell-------------	0-7	3-15	58-77	20-27	1.40-1.60	0.6-2	0.15-0.21	0.0-2.9	1.0-2.5	.43	.43	5	6	48
	7-27	3-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.1-0.5	.43	.43			
	27-56	20-40	25-53	27-35	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.24	.28			
	56-72	30-50	28-50	10-27	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
330A:														
Peotone-------------	0-6	2-7	53-63	35-40	1.25-1.45	0.2-0.6	0.12-0.18	6.0-8.9	4.5-7.0	.24	.24	5	4	86
	6-28	2-7	53-63	35-40	1.35-1.55	0.2-0.6	0.12-0.18	6.0-8.9	4.0-6.0	.24	.24			
	28-44	3-15	53-62	35-40	1.30-1.50	0.2-0.6	0.11-0.17	6.0-8.9	1.5-3.5	.32	.32			
	44-60	3-15	53-70	27-40	1.30-1.50	0.2-0.6	0.11-0.17	3.0-8.9	0.1-1.0	.37	.37			
344B:														
Harvard-------------	0-9	2-15	65-82	14-25	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	1.5-3.5	.37	.37	5	5	56
	9-26	1-13	56-72	27-32	1.30-1.50	0.6-2	0.18-0.23	3.0-5.9	0.3-1.5	.37	.37			
	26-31	25-45	30-57	18-35	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	0.2-0.5	.28	.32			
	31-65	65-75	10-27	5-15	1.50-1.70	2-6	0.10-0.15	0.0-2.9	0.1-0.3	.20	.20			
348B:														
Wingate-------------	0-9	2-15	58-82	15-27	1.25-1.50	0.6-2	0.19-0.25	0.0-2.9	2.0-4.0	.37	.37	5	5	56
	9-12	2-15	58-82	15-27	1.35-1.55	0.6-2	0.16-0.22	0.0-2.9	0.5-2.0	.49	.49			
	12-27	2-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.2-0.8	.37	.37			
	27-52	20-40	25-53	24-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	52-60	30-50	28-50	15-22	1.75-1.95	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			

Table 19.--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					
353A:														
Toronto-------------	0-9	2-15	58-82	15-27	1.25-1.50	0.6-2	0.19-0.25	0.0-2.9	2.0-4.0	.37	.37	5	5	56
	9-12	2-15	58-82	15-27	1.35-1.55	0.6-2	0.16-0.22	0.0-2.9	0.5-2.0	.49	.49			
	12-26	2-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.2-0.8	.37	.37			
	26-54	20-40	25-53	24-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	54-60	30-45	28-50	15-27	1.75-1.95	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
375A:														
Rutland-------------	0-10	2-12	64-75	22-27	1.30-1.50	0.6-2	0.17-0.21	3.0-5.9	3.5-5.0	.28	.28	4	6	48
	10-47	2-10	53-62	35-45	1.35-1.55	0.2-0.6	0.11-0.15	6.0-8.9	0.5-1.5	.37	.37			
	47-80	1-9	39-54	40-59	1.45-1.75	0.06-0.2	0.10-0.14	6.0-8.9	0.1-0.5	.32	.32			
448C3:														
Mona----------------	0-8	30-50	30-50	18-27	1.40-1.60	0.6-2	0.13-0.17	0.0-2.9	1.0-3.5	.32	.32	4	6	48
	8-26	31-49	25-43	25-35	1.50-1.70	0.2-0.6	0.10-0.14	3.0-5.9	0.2-1.5	.28	.28			
	26-46	10-19	45-55	30-40	1.55-1.75	0.06-0.2	0.07-0.11	3.0-5.9	0.2-0.5	.37	.37			
	46-80	3-7	44-54	40-50	1.65-1.85	0.06-0.2	0.02-0.06	0.0-2.9	0.1-0.3	.32	.32			
481A:														
Raub----------------	0-18	2-15	58-82	15-27	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	3.5-5.0	.28	.28	5	6	48
	18-32	2-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.5-1.5	.37	.37			
	32-50	20-35	30-53	26-35	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.2-0.5	.32	.32			
	50-80	30-50	28-50	20-30	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.5	.37	.37			
496A:														
Fincastle-----------	0-8	2-7	66-83	15-27	1.35-1.55	0.6-2	0.19-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	8-11	3-15	58-82	15-27	1.40-1.60	0.2-0.6	0.17-0.21	0.0-2.9	0.1-1.0	.55	.55			
	11-32	3-15	50-70	27-35	1.35-1.55	0.6-2	0.16-0.20	3.0-5.9	0.1-0.5	.37	.37			
	32-40	20-40	28-53	27-32	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.32	.32			
	40-50	25-40	32-53	18-28	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.32	.32			
	50-60	30-50	30-50	10-20	1.75-1.90	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
533.														
Urban land														
554A:														
Kernan--------------	0-5	2-15	70-86	10-20	1.35-1.55	0.6-2	0.21-0.25	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	5-12	2-16	61-78	18-27	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	0.3-2.0	.43	.43			
	12-42	1-14	52-63	35-42	1.30-1.50	0.2-0.6	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	42-80	2-12	35-57	40-55	1.45-1.75	0.06-0.2	0.10-0.14	6.0-8.9	0.1-0.3	.37	.37			

Table 19.--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					
554B:														
Kernan--------------	0-5	2-15	70-86	10-20	1.35-1.55	0.6-2	0.21-0.25	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	5-12	2-16	61-78	18-27	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	0.3-2.0	.43	.43			
	12-36	1-14	52-63	35-42	1.30-1.50	0.2-0.6	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	36-43	1-16	46-63	35-45	1.35-1.55	0.06-0.2	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	43-80	2-12	35-57	40-55	1.45-1.75	0.06-0.2	0.10-0.14	6.0-8.9	0.1-0.3	.32	.32			
570B:														
Martinsville--------	0-9	12-40	50-79	8-20	1.40-1.60	0.6-2	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	9-12	12-40	50-79	8-20	1.35-1.55	0.6-2	0.17-0.21	0.0-2.9	0.1-1.0	.55	.55			
	12-45	20-50	20-50	20-33	1.50-1.70	0.6-2	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	45-69	26-60	17-50	15-25	1.55-1.75	0.6-2	0.12-0.16	0.0-2.9	0.1-0.3	.32	.32			
	69-80	55-75	12-35	5-15	1.55-1.75	2-6	0.09-0.13	0.0-2.9	0.1-0.2	.28	.28			
570C2:														
Martinsville--------	0-9	30-50	35-50	12-20	1.40-1.60	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.32	.32	5	5	56
	9-45	20-50	20-50	20-33	1.50-1.70	0.6-2	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	45-69	26-60	17-50	15-25	1.55-1.75	0.6-2	0.12-0.16	0.0-2.9	0.1-0.3	.32	.32			
	69-80	55-75	12-35	5-15	1.55-1.75	0.6-6	0.09-0.13	0.0-2.9	0.1-0.2	.28	.28			
570D2:														
Martinsville--------	0-9	30-50	35-50	12-20	1.40-1.60	0.6-2	0.13-0.17	0.0-2.9	1.0-2.0	.32	.32	5	5	56
	9-45	20-50	20-50	20-33	1.50-1.70	0.6-2	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	45-69	26-60	17-50	15-25	1.55-1.75	0.6-2	0.12-0.16	0.0-2.9	0.1-0.3	.32	.32			
	69-80	55-75	12-35	5-15	1.55-1.75	0.6-6	0.09-0.13	0.0-2.9	0.1-0.2	.28	.28			
618C2:														
Senachwine----------	0-6	15-20	53-65	20-27	1.35-1.55	0.6-2	0.18-0.20	0.0-2.9	1.0-2.5	.43	.43	5	6	48
	6-12	15-21	45-58	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	12-27	20-40	25-53	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.28	.28			
	27-60	30-50	30-50	10-20	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
618D2:														
Senachwine----------	0-6	15-20	53-65	20-27	1.35-1.55	0.6-2	0.18-0.20	0.0-2.9	1.0-2.5	.43	.43	5	6	48
	6-15	15-21	45-58	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	15-28	20-40	25-53	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.28	.32			
	28-34	30-50	28-50	20-27	1.45-1.65	0.6-2	0.11-0.14	0.0-2.9	0.1-0.5	.28	.32			
	34-60	30-50	30-50	10-20	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			
618F:														
Senachwine----------	0-11	15-40	50-72	10-20	1.40-1.60	0.6-2	0.16-0.22	0.0-2.9	1.0-2.5	.37	.37	5	5	56
	11-17	15-40	25-53	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.32	.32			
	17-32	20-40	25-53	27-35	1.45-1.65	0.6-2	0.14-0.17	3.0-5.9	0.1-0.5	.24	.28			
	32-40	30-50	28-50	20-27	1.45-1.65	0.6-2	0.11-0.14	0.0-2.9	0.1-0.5	.32	.37			
	40-60	30-50	30-50	10-20	1.65-1.85	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.43			

Table 19.--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					
656C2:														
Octagon-------------	0-8	15-40	50-70	10-20	1.40-1.60	0.6-2	0.16-0.20	0.0-2.9	1.5-3.5	.32	.32	5	5	56
	8-37	15-50	30-50	18-35	1.45-1.65	0.6-2	0.12-0.16	3.0-5.9	0.2-2.0	.28	.28			
	37-60	40-60	25-44	10-20	1.70-1.90	0.2-0.6	0.08-0.12	0.0-2.9	0.1-0.3	.37	.37			
663B:														
Clare---------------	0-14	2-15	63-80	18-27	1.30-1.40	0.6-2	0.22-0.24	0.0-2.9	2.5-4.0	.28	.28	5	6	48
	14-36	1-10	55-74	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	36-44	15-45	23-58	20-32	1.40-1.55	0.6-2	0.13-0.19	3.0-5.9	0.2-0.5	.32	.32			
	44-60	40-60	25-45	10-20	1.50-1.75	0.6-2	0.13-0.19	0.0-2.9	0.1-0.5	.32	.32			
679B:														
Blackberry----------	0-16	0-10	63-82	18-27	1.10-1.30	0.6-2	0.18-0.22	0.0-2.9	3.0-5.0	.28	.28	5	6	48
	16-47	0-10	55-75	25-35	1.20-1.40	0.6-2	0.18-0.20	3.0-5.9	0.2-1.0	.37	.37			
	47-62	30-50	35-55	15-25	1.50-1.70	0.6-2	0.11-0.22	0.0-2.9	0.1-0.5	.32	.32			
	62-70	30-50	35-55	5-20	1.50-1.70	0.6-2	0.13-0.17	0.0-2.9	0.1-0.5	.37	.37			
722A:														
Drummer-------------	0-14	3-15	50-70	27-35	1.20-1.40	0.6-2	0.12-0.18	3.0-5.9	4.5-7.0	.24	.24	5	6	48
	14-41	3-15	50-70	27-35	1.35-1.55	0.6-2	0.13-0.19	3.0-5.9	0.5-2.0	.37	.37			
	41-47	25-45	28-50	20-27	1.45-1.65	0.6-2	0.11-0.17	0.0-2.9	0.2-0.5	.32	.32			
	47-60	45-65	25-45	10-20	1.55-1.75	0.6-2	0.11-0.17	0.0-2.9	0.1-0.5	.24	.28			
Milford-------------	0-14	2-15	45-63	35-40	1.30-1.50	0.2-0.6	0.12-0.18	6.0-8.9	4.5-6.0	.24	.24	5	4	86
	14-25	3-15	40-62	35-45	1.35-1.55	0.2-0.6	0.11-0.17	6.0-8.9	1.0-2.0	.32	.32			
	25-45	5-20	45-68	27-35	1.50-1.70	0.6-2	0.13-0.19	3.0-5.9	0.1-0.5	.37	.37			
	45-80	15-30	50-65	20-27	1.50-1.70	0.6-2	0.09-0.14	0.0-2.9	0.1-0.5	.43	.43			
747A:														
Milford, undrained--	0-19	1-15	45-64	35-40	1.00-1.30	0.2-0.6	0.18-0.21	6.0-8.9	5.0-15	.20	.20	5	8	0
	19-34	3-15	40-62	35-45	1.25-1.45	0.2-0.6	0.15-0.18	6.0-8.9	0.5-2.0	.32	.32			
	34-61	5-20	45-68	27-35	1.45-1.65	0.6-2	0.14-0.18	3.0-5.9	0.2-0.8	.37	.37			
	61-80	2-25	50-65	25-45	1.65-1.80	0.0015-0.06	0.09-0.13	3.0-5.9	0.1-0.5	.43	.43			
Milford, drained----	0-14	1-15	45-64	35-40	1.30-1.50	0.2-0.6	0.18-0.21	6.0-8.9	4.5-6.0	.24	.24	5	4	86
	14-25	3-15	40-62	35-45	1.35-1.55	0.2-0.6	0.15-0.18	6.0-8.9	1.0-2.0	.32	.32			
	25-45	5-20	45-68	27-35	1.50-1.70	0.6-2	0.14-0.18	3.0-5.9	0.1-0.8	.37	.37			
	45-80	15-30	50-65	20-27	1.50-1.70	0.6-2	0.09-0.14	0.0-2.9	0.1-0.5	.43	.43			
802D:														
Orthents, loamy-----	0-10	20-45	20-53	27-35	1.50-1.70	0.2-0.6	0.18-0.20	3.0-5.9	0.5-2.0	.43	.43	5	6	48
	10-60	15-50	20-63	22-30	1.40-1.75	0.06-2	0.15-0.20	3.0-5.9	0.0-0.5	.43	.43			

Table 19.--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					
809F:														
Orthents, loamy-skeletal-----------	0-3	30-52	28-50	15-27	1.45-1.65	0.2-0.6	0.08-0.14	0.0-2.9	0.5-1.0	.32	.32	1	5	56
	3-60	20-52	20-50	15-30	1.70-1.90	0.2-0.6	0.06-0.10	0.0-2.9	0.0-0.2	.37	.37			
864, 865.														
Pits														
1107A:														
Sawmill, undrained--	0-29	3-15	58-70	27-35	1.25-1.45	0.6-2	0.19-0.22	3.0-5.9	4.5-7.0	.28	.28	5	6	48
	29-38	3-20	45-68	27-35	1.30-1.50	0.6-2	0.17-0.20	3.0-5.9	1.5-3.5	.32	.32			
	38-60	4-25	40-70	25-35	1.30-1.50	0.6-2	0.17-0.20	3.0-5.9	0.8-3.5	.32	.32			
3107A:														
Sawmill-------------	0-10	3-15	58-70	27-35	1.25-1.45	0.6-2	0.12-0.18	3.0-5.9	4.5-7.0	.28	.28	5	6	48
	10-32	3-15	58-70	27-35	1.25-1.45	0.6-2	0.12-0.18	3.0-5.9	4.5-7.0	.28	.28			
	32-58	5-20	45-68	27-35	1.30-1.50	0.6-2	0.12-0.18	3.0-5.9	1.5-3.5	.32	.32			
	58-65	5-25	40-70	25-35	1.30-1.50	0.6-2	0.12-0.18	3.0-5.9	0.8-3.5	.32	.32			
3183A:														
Shaffton------------	0-11	15-31	50-68	15-25	1.40-1.60	0.6-2	0.15-0.19	0.0-2.9	2.0-4.0	.32	.32	5	5	56
	11-46	20-40	33-56	21-30	1.45-1.65	0.6-2	0.13-0.17	0.0-2.9	0.5-1.5	.37	.37			
	46-62	57-70	17-34	5-15	1.55-1.75	2-6	0.10-0.14	0.0-2.9	0.5-1.0	.32	.32			
	62-75	66-80	14-27	2-10	1.55-1.75	2-6	0.08-0.12	0.0-2.9	0.5-0.8	.37	.37			
3405A:														
Zook----------------	0-8	0-15	45-65	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	4.0-5.0	.28	.28	5	4	86
	8-55	0-15	40-64	36-45	1.30-1.45	0.06-0.2	0.15-0.18	6.0-8.9	2.0-4.0	.28	.28			
	55-60	0-15	40-80	20-45	1.30-1.45	0.06-0.6	0.13-0.20	3.0-5.9	0.5-1.0	.32	.32			
8682A:														
Medway--------------	0-19	35-44	35-46	15-24	1.30-1.50	0.6-2	0.14-0.18	0.0-2.9	3.5-5.0	.24	.24	5	6	48
	19-33	36-45	34-43	16-25	1.50-1.70	0.6-2	0.12-0.16	0.0-2.9	1.5-3.0	.32	.32			
	33-56	54-65	17-32	11-19	1.55-1.75	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.28	.28			
	56-60	40-54	33-46	11-20	1.55-1.75	0.6-2	0.12-0.16	0.0-2.9	0.3-0.9	.37	.37			

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
56B:						
Dana	0-11	17-26	---	5.6-7.3	0	3.0-5.0
	11-32	17-23	---	5.1-7.3	0	0.5-1.5
	32-58	14-19	---	5.6-7.8	0-5	0.2-0.8
	58-80	6.0-16	---	7.4-8.4	15-40	0.1-0.3
67A:						
Harpster	0-18	27-40	---	7.9-8.4	15-40	3.5-6.0
	18-41	18-27	---	7.4-8.4	5-40	0.8-1.5
	41-56	9.0-23	---	7.9-8.4	5-40	0.5-1.0
	56-60	4.0-16	---	7.9-8.4	10-40	0.1-0.5
69A:						
Milford	0-14	22-38	---	5.6-7.3	0	4.5-6.0
	14-25	15-30	---	6.1-7.8	0	1.0-2.0
	25-45	13-24	---	6.1-7.8	0-15	0.2-0.5
	45-80	4.0-16	---	6.6-8.4	0-15	0.1-0.5
132A:						
Starks	0-9	14-24	---	5.1-7.3	0	1.0-3.0
	9-13	12-20	---	5.1-7.3	0	0.5-1.0
	13-30	---	13-18	4.5-6.5	0	0.2-0.8
	30-40	8.3-18	---	5.1-7.3	0-5	0.2-0.5
	40-60	2.0-19	---	6.1-7.8	0-5	0.1-0.5
134B:						
Camden	0-9	11-29	---	6.1-7.3	0	1.0-2.5
	9-14	9.0-24	---	6.1-7.3	0	0.1-1.0
	14-22	10-25	---	6.1-7.3	0	0.1-0.5
	22-35	16-29	---	5.6-6.5	0	0.1-0.5
	35-52	9.0-19	---	5.1-6.5	0	0.1-0.5
	52-80	6.0-14	---	5.6-7.8	0-25	0.1-0.5
136A:						
Brooklyn	0-9	11-24	---	5.6-7.3	0	3.0-4.0
	9-14	6.6-15	---	4.5-7.3	0	0.2-1.0
	14-40	22-37	---	4.5-7.3	0	0.1-0.8
	40-62	11-25	---	5.1-7.8	0-5	0.1-0.5
	62-73	3.6-17	---	6.6-7.8	0-15	0.1-0.3
	73-80	3.6-17	---	7.4-8.4	5-40	0.1-0.3
148B:						
Proctor	0-13	15-24	---	5.1-7.8	0	2.0-4.0
	13-25	16-25	---	5.6-7.3	0	0.5-2.0
	25-45	15-23	---	5.6-7.3	0	0.2-0.8
	45-60	4.0-12	---	6.1-7.8	0-10	0.1-0.5
149A:						
Brenton	0-14	16-32	---	5.6-6.5	0	3.5-5.0
	14-33	18-27	---	5.6-6.5	0	0.8-1.5
	33-45	5.0-16	---	6.1-7.3	0	0.2-0.5
	45-54	9.0-19	---	6.6-7.8	0-5	0.1-0.5
	54-80	3.0-16	---	6.6-7.8	0-15	0.1-0.5
152A:						
Drummer	0-14	27-40	---	5.6-7.3	0	4.5-7.0
	14-41	17-31	---	6.1-7.3	0	0.8-2.0
	41-47	9.0-19	---	6.6-7.8	0-5	0.2-0.5
	47-60	6.0-13	---	7.4-8.4	0-15	0.1-0.5

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
154A:						
Flanagan	0-18	16-32	---	5.6-7.3	0	3.5-5.0
	18-38	22-35	---	5.6-7.3	0	0.5-1.8
	38-45	16-27	---	5.6-7.3	0	0.1-0.5
	45-49	6.0-18	---	6.1-7.8	0-10	0.1-0.5
	49-60	4.0-16	---	7.4-8.4	15-40	0.1-0.5
171B:						
Catlin	0-11	14-30	---	6.1-7.3	0	2.5-4.0
	11-16	23-36	---	6.1-7.3	0	1.5-3.5
	16-41	17-31	---	6.1-7.3	0	0.5-1.5
	41-45	11-22	---	7.4-8.4	0-5	0.1-0.5
	45-60	4.0-16	---	7.4-8.4	15-40	0.1-0.5
198A:						
Elburn	0-16	16-32	---	6.1-7.3	0	3.5-5.0
	16-49	17-31	---	5.6-7.8	0	0.5-1.5
	49-58	6.0-13	---	6.6-7.8	0-5	0.1-0.5
	58-62	2.0-10	---	6.6-7.8	0-15	0.1-0.5
199B:						
Plano	0-15	17-26	---	6.1-7.3	0	3.0-5.0
	15-45	13-26	---	5.1-7.3	0	0.2-1.0
	45-55	6.0-19	---	5.6-7.8	0	0.1-0.5
	55-72	6.0-13	---	5.6-8.4	0-20	0.1-0.5
208A:						
Sexton	0-8	10-18	---	5.1-7.3	0	0.8-1.5
	8-12	6.6-15	---	4.5-7.3	0	0.2-1.0
	12-16	5.1-18	---	4.5-7.3	0-5	0.1-0.5
	16-36	---	18-32	4.5-6.5	0	0.1-0.5
	36-45	---	15-28	5.1-6.5	0-5	0.1-0.5
	45-78	---	3.0-11	5.1-7.3	0	0.1-0.3
	78-90	3.7-12	---	6.6-7.8	0-15	0.1-0.3
219A:						
Millbrook	0-7	10-23	---	5.6-7.3	0	1.5-3.0
	7-14	8.0-19	---	5.6-7.3	0	0.3-1.5
	14-35	12-29	---	5.1-6.5	0	0.2-1.0
	35-55	9.0-26	---	5.6-7.3	0	0.1-0.5
	55-80	5.0-13	---	6.6-8.4	0-10	0.1-0.3
233B:						
Birkbeck	0-4	13-24	---	5.6-7.3	0	1.0-3.0
	4-9	---	7.9-14	4.5-6.5	0	0.3-1.0
	9-54	---	13-17	4.5-7.3	0	0.2-0.5
	54-60	7.0-17	---	6.1-7.8	0-5	0.1-0.5
	60-68	4.0-16	---	7.4-8.4	15-40	0.1-0.5
234A:						
Sunbury	0-8	18-29	---	5.6-7.3	0	2.0-4.0
	8-15	11-20	---	5.6-7.3	0	0.5-1.0
	15-36	22-35	---	5.6-7.3	0	0.1-0.5
	36-43	16-27	---	6.1-7.8	0	0.1-0.5
	43-47	8.0-18	---	6.1-7.8	0-10	0.1-0.5
	47-72	8.0-16	---	7.4-8.4	10-40	0.1-0.3

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
234B:						
Sunbury--------------	0-8	18-29	---	5.6-7.3	0	2.0-4.0
	8-15	11-20	---	5.6-7.3	0	0.5-1.0
	15-36	22-35	---	5.6-7.3	0	0.1-0.5
	36-43	16-27	---	6.1-7.8	0	0.1-0.5
	43-47	8.0-18	---	6.1-7.8	0-10	0.1-0.5
	47-72	8.0-16	---	7.4-8.4	10-40	0.1-0.3
236A:						
Sabina---------------	0-8	14-26	---	5.6-7.3	0	1.0-3.0
	8-12	6.0-17	---	5.1-7.3	0	0.1-1.0
	12-43	6.0-27	---	4.5-7.3	0	0.1-1.0
	43-50	3.7-18	---	6.6-7.8	0-5	0.1-0.5
	50-80	2.9-17	---	7.4-8.4	0-25	0.1-0.3
242A:						
Kendall--------------	0-7	10-26	---	5.1-7.3	0	1.0-3.0
	7-11	8.0-20	---	5.1-7.3	0	0.1-1.0
	11-51	---	13-17	4.5-7.3	0	0.1-0.5
	51-58	9.0-19	---	5.1-7.8	0-15	0.1-0.5
	58-80	3.0-10	---	7.4-8.4	0-20	0.1-0.3
244A:						
Hartsburg------------	0-17	27-40	---	6.1-7.8	0-5	4.5-6.0
	17-34	17-31	---	6.6-8.4	0-25	0.5-2.0
	34-60	9.0-23	---	7.4-8.4	15-40	0.1-0.5
291B:						
Xenia----------------	0-4	14-24	---	5.6-7.3	0	1.0-3.0
	4-16	12-20	---	5.6-7.3	0	0.5-1.0
	16-37	18-27	---	5.1-7.3	0	0.2-0.8
	37-57	11-22	---	5.6-7.3	0-5	0.1-0.5
	57-72	4.0-13	---	7.4-8.4	15-40	0.1-0.3
322C2:						
Russell--------------	0-7	13-24	---	5.6-6.5	0	1.0-2.5
	7-27	---	13-17	4.5-5.5	0	0.1-0.5
	27-56	11-22	---	5.6-7.3	0-5	0.1-0.5
	56-72	4.0-16	---	7.4-8.4	15-40	0.1-0.3
330A:						
Peotone--------------	0-6	30-38	---	5.6-7.3	0	4.5-7.0
	6-28	30-38	---	5.6-7.8	0	4.0-6.0
	28-44	29-40	---	6.1-7.8	0	1.5-3.5
	44-60	15-35	---	6.6-8.4	0-15	0.1-1.0
344B:						
Harvard--------------	0-9	11-27	---	5.1-7.3	0	1.5-3.5
	9-26	17-29	---	5.1-7.3	0	0.3-1.5
	26-31	8.0-22	---	5.6-7.8	0-3	0.2-0.5
	31-65	2.0-10	---	5.6-7.8	0-15	0.1-0.3
348B:						
Wingate--------------	0-9	14-24	---	5.6-7.3	0	2.0-4.0
	9-12	12-20	---	5.6-7.3	0	0.5-2.0
	12-27	18-27	---	5.1-7.3	0	0.2-0.8
	27-52	11-22	---	5.6-7.3	0-5	0.1-0.5
	52-60	4.0-13	---	6.6-8.4	15-40	0.1-0.3

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
353A:						
Toronto	0-9	14-24	---	5.6-7.3	0	2.0-4.0
	9-12	12-22	---	5.1-6.0	0	0.5-2.0
	12-26	---	13-18	4.5-7.3	0	0.2-0.8
	26-54	11-22	---	5.6-7.3	0-5	0.1-0.5
	54-60	4.0-13	---	7.4-8.4	15-40	0.1-0.3
375A:						
Rutland	0-10	22-28	---	5.1-6.5	0	3.5-5.0
	10-47	21-31	---	6.1-8.4	0-30	0.5-1.5
	47-80	12-22	---	7.4-8.4	15-40	0.1-0.5
448C3:						
Mona	0-8	15-23	---	5.6-7.3	0	1.0-3.5
	8-26	15-22	---	5.6-7.3	0	0.2-1.5
	26-46	24-31	---	6.6-7.8	10-30	0.2-0.5
	46-80	24-31	---	7.4-8.4	15-40	0.1-0.3
481A:						
Raub	0-18	16-32	---	5.6-7.3	0	3.5-5.0
	18-32	18-27	---	5.1-6.5	0	0.5-1.5
	32-50	12-24	---	6.1-7.8	0-5	0.2-0.5
	50-80	4.0-16	---	7.4-8.4	15-40	0.1-0.5
496A:						
Fincastle	0-8	13-22	---	5.1-7.3	0	1.0-2.5
	8-11	---	7.6-14	5.1-7.3	0	0.1-1.0
	11-32	---	13-18	5.1-6.5	0	0.1-0.5
	32-40	20-25	---	5.6-7.8	0	0.1-0.5
	40-50	14-22	---	6.6-8.4	0-5	0.1-0.5
	50-60	7.6-16	---	7.4-8.4	15-40	0.1-0.3
533.						
Urban land						
554A:						
Kernan	0-5	7.8-19	---	6.1-7.3	0	1.0-2.5
	5-12	8.7-23	---	6.1-7.3	0	0.3-2.0
	12-42	13-21	---	5.6-7.3	0	0.2-0.5
	42-80	6.7-23	---	7.4-8.4	15-40	0.1-0.3
554B:						
Kernan	0-5	7.8-19	---	6.1-7.3	0	1.0-2.5
	5-12	8.7-23	---	6.1-7.3	0	0.3-2.0
	12-36	---	20-28	5.1-6.0	0	0.2-0.5
	36-43	13-23	---	6.1-7.8	0-5	0.2-0.5
	43-80	6.7-23	---	7.4-8.4	15-40	0.1-0.3
570B:						
Martinsville	0-9	6.0-16	---	5.1-7.3	0	1.0-3.0
	9-12	---	2.1-7.7	5.1-7.3	0	0.1-1.0
	12-45	10-18	---	5.1-7.3	0	0.1-0.5
	45-69	7.8-13	---	5.1-7.8	0-15	0.1-0.3
	69-80	3.0-10	---	6.6-8.4	0-25	0.1-0.2
570C2:						
Martinsville	0-9	8.0-14	---	5.1-7.3	0	1.0-2.0
	9-45	8.0-18	---	5.1-7.3	0	0.1-0.5
	45-69	6.0-15	---	5.1-7.8	0	0.1-0.3
	69-80	3.0-10	---	6.6-8.4	0-25	0.1-0.2

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
570D2:						
Martinsville	0-9	8.0-14	---	5.1-7.3	0	1.0-2.0
	9-45	8.0-18	---	5.1-7.3	0	0.1-0.5
	45-69	6.0-15	---	5.1-7.8	0	0.1-0.3
	69-80	3.0-10	---	6.6-8.4	0-45	0.1-0.2
618C2:						
Senachwine	0-6	14-27	---	5.6-7.3	0	1.0-2.5
	6-12	12-24	---	5.6-7.3	0	0.1-0.5
	12-27	11-22	---	5.1-7.3	0	0.1-0.5
	27-60	4.0-13	---	7.4-8.4	15-40	0.1-0.3
618D2:						
Senachwine	0-6	14-27	---	5.6-7.3	0	1.0-2.5
	6-15	12-24	---	5.6-7.3	0	0.1-0.5
	15-28	11-22	---	5.1-7.3	0	0.1-0.5
	28-34	9.0-19	---	5.1-7.3	0-5	0.1-0.5
	34-60	4.0-13	---	7.4-8.4	15-40	0.1-0.3
618F:						
Senachwine	0-11	8.0-19	---	5.6-7.3	0	1.0-2.5
	11-17	12-24	---	5.1-7.3	0	0.1-0.5
	17-32	11-22	---	5.1-7.3	0	0.1-0.5
	32-40	9.0-19	---	5.1-7.3	0-5	0.1-0.5
	40-60	4.0-13	---	7.4-8.4	15-40	0.1-0.3
656C2:						
Octagon	0-8	6.0-16	---	5.6-7.3	0	1.5-3.5
	8-37	7.0-25	---	5.6-7.3	0	0.2-2.0
	37-60	4.0-13	---	7.4-8.4	10-35	0.1-0.3
663B:						
Clare	0-14	17-26	---	5.6-7.8	0	2.5-4.0
	14-36	16-25	---	5.1-7.3	0	0.5-1.5
	36-44	11-21	---	5.6-7.8	0-5	0.2-0.5
	44-60	6.0-16	---	6.1-8.4	0-20	0.1-0.5
679B:						
Blackberry	0-16	17-26	---	6.1-7.3	0	3.0-5.0
	16-47	15-23	---	5.1-7.3	0	0.2-1.0
	47-62	9.0-22	---	5.6-8.4	0-10	0.1-0.5
	62-70	3.0-19	---	5.6-8.4	0-20	0.1-0.5
722A:						
Drummer	0-14	27-40	---	5.6-7.3	0	4.5-7.0
	14-41	17-31	---	5.6-7.3	0	0.5-2.0
	41-47	9.0-19	---	6.1-7.8	0-5	0.2-0.5
	47-60	4.0-13	---	6.6-8.4	0-15	0.1-0.5
Milford	0-14	29-33	---	5.6-7.3	0	4.5-6.0
	14-25	27-35	---	6.1-7.8	0	1.0-2.0
	25-45	20-27	---	6.1-7.8	0-15	0.1-0.5
	45-80	6.0-16	---	6.6-8.4	0-25	0.1-0.5
747A:						
Milford, undrained	0-19	30-50	---	5.6-7.3	0	5.0-15
	19-34	15-30	---	6.1-7.8	0	0.5-2.0
	34-61	13-24	---	6.6-7.8	0-15	0.2-0.8
	61-80	13-24	---	7.4-8.4	15-40	0.1-0.5

Table 20.--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
	In	meq/100 g	meq/100 g	pH	Pct	Pct
747A:						
Milford, drained-----	0-14	22-38	---	5.6-7.3	0	4.5-6.0
	14-25	15-30	---	6.1-7.8	0	1.0-2.0
	25-45	13-24	---	6.1-7.8	0-15	0.1-0.8
	45-80	4.0-16	---	6.6-8.4	0-15	0.1-0.5
802D:						
Orthents, loamy------	0-10	14-22	---	5.6-7.3	0-10	0.5-2.0
	10-60	11-17	---	5.6-7.8	0-20	0.0-0.5
809F:						
Orthents, loamy-skeletal------------	0-3	---	4.0-8.5	3.5-5.5	0	0.5-1.0
	3-60	---	1.1-5.0	3.5-5.5	0	0.0-0.2
864, 865.						
Pits						
1107A:						
Sawmill, undrained---	0-29	23-36	---	6.6-7.3	0	4.5-7.0
	29-38	18-34	---	6.6-7.3	0	1.5-3.5
	38-60	18-34	---	6.6-7.3	0-5	0.8-3.5
3107A:						
Sawmill--------------	0-10	23-36	---	6.1-7.8	0	4.5-7.0
	10-32	23-36	---	6.1-7.8	0	4.5-7.0
	32-58	18-34	---	6.1-7.8	0	1.5-3.5
	58-65	18-34	---	6.1-7.8	0-5	0.8-3.5
3183A:						
Shaffton-------------	0-11	13-28	---	6.6-7.8	0	2.0-4.0
	11-46	14-27	---	6.6-7.8	0	0.5-1.5
	46-62	5.0-17	---	6.6-7.8	0	0.5-1.0
	62-75	2.0-11	---	6.6-7.8	0	0.5-0.8
3405A:						
Zook-----------------	0-8	36-41	---	5.6-7.3	0	4.0-5.0
	8-55	36-41	---	6.1-7.3	0	2.0-4.0
	55-60	30-36	---	6.1-7.3	0	0.5-1.0
8682A:						
Medway---------------	0-19	16-29	---	6.6-7.8	0	3.5-5.0
	19-33	13-26	---	6.1-7.3	0	1.5-3.0
	33-56	8.0-18	---	6.1-7.3	0	0.5-1.0
	56-60	7.0-18	---	6.6-7.8	0	0.3-0.9

Table 21.--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	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table
		Ft						Ft	Ft	
56B:										
Dana---------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	3.5-5.5	Perched
							May-Dec	>6.0	>6.0	---
67A:										
Harpster-----------	B	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
69A:										
Milford------------	C/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
132A:										
Starks-------------	B	---	---	None	---	None	Jan-May	0.5-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
134B:										
Camden-------------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
136A:										
Brooklyn-----------	C/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	5.0-6.7	Perched
							Jun-Dec	>6.0	>6.0	---
148B:										
Proctor------------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
149A:										
Brenton------------	B	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
152A:										
Drummer------------	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
154A:										
Flanagan-----------	B	---	---	None	---	None	Jan-May	1.0-2.0	3.7-5.4	Perched
							Jun-Dec	>6.0	>6.0	---
171B:										
Catlin-------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	3.7-5.4	Perched
							May-Dec	>6.0	>6.0	---
198A:										
Elburn-------------	B	---	---	---	---	None	Jan-May	1.0-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
199B:										
Plano--------------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
208A:										
Sexton-------------	C/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table
		Ft						Ft	Ft	
219A:										
Millbrook----------	B	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
233B:										
Birkbeck-----------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	3.3-5.8	Perched
							May-Dec	>6.0	>6.0	---
234A:										
Sunbury------------	B	---	---	None	---	None	Jan-May	1.0-2.0	3.7-5.4	Perched
							Jun-Dec	>6.0	>6.0	---
234B:										
Sunbury------------	B	---	---	None	---	None	Jan-May	1.0-2.0	3.7-5.4	Perched
							Jun-Dec	>6.0	>6.0	---
236A:										
Sabina-------------	C	---	---	None	---	None	Jan-May	0.5-2.0	3.7-6.0	Perched
							Jun-Dec	>6.0	>6.0	---
242A:										
Kendall------------	B	---	---	None	---	None	Jan-May	0.5-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
244A:										
Hartsburg----------	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
291B:										
Xenia--------------	B	---	---	None	---	None	Jan-May	1.5-2.5	2.5-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
322C2:										
Russell------------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
330A:										
Peotone------------	C/D	0.0-1.0	Brief	Frequent	---	None	Jan-Jun	0.0-1.0	>6.0	Apparent
							Jul-Dec	>6.0	>6.0	---
344B:										
Harvard------------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
348B:										
Wingate------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	1.5-3.0	2.4-4.6	Perched
							May-Dec	>6.0	>6.0	---
353A:										
Toronto------------	C	---	---	None	---	None	Jan-May	0.5-2.0	3.3-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
375A:										
Rutland------------	C	---	---	None	---	None	Jan-May	1.0-2.5	3.3-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
448C3:										
Mona---------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	2.5-4.2	Perched
							May-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table
		Ft						Ft	Ft	
481A:										
Raub---------------	B	---	---	None	---	None	Jan-May	1.0-2.0	3.3-5.8	Perched
							Jun-Dec	>6.0	>6.0	---
496A:										
Fincastle----------	C	---	---	None	---	None	Jan-May	1.0-2.0	3.3-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
533.										
Urban land										
554A:										
Kernan-------------	C	---	---	None	---	None	Jan-May	0.5-2.0	3.3-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
554B:										
Kernan-------------	C	---	---	None	---	None	Jan-May	0.5-2.0	3.3-5.0	Perched
							Jun-Dec	>6.0	>6.0	---
570B:										
Martinsville-------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
570C2:										
Martinsville-------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
570D2:										
Martinsville-------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
618C2:										
Senachwine---------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
618D2:										
Senachwine---------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
618F:										
Senachwine---------	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
656C2:										
Octagon------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	1.5-4.0	>6.0	Apparent
							May-Dec	>6.0	>6.0	---
663B:										
Clare--------------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	>6.0	Apparent
							May-Dec	>6.0	>6.0	---
679B:										
Blackberry---------	B	---	---	None	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	2.0-3.5	>6.0	Apparent
							May-Dec	>6.0	>6.0	---
722A:										
Drummer------------	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
Milford------------	C/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind of water table
		Ft						Ft	Ft	
747A:										
Milford, undrained	D	0.0-1.0	Very long	Frequent	---	None	Jan-Dec	0.0-0.5	>6.0	Apparent
Milford, drained---	C	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
802D:										
Orthents, loamy----	B	---	---	---	---	None	Jan	>6.0	>6.0	---
							Feb-Apr	3.3-6.0	>6.0	Apparent
							May-Dec	>6.0	>6.0	---
809F:										
Orthents, loamy-skeletal----------	B	---	---	---	---	None	Jan-Dec	>6.0	>6.0	---
864, 865.										
Pits										
1107A:										
Sawmill, undrained--	D	0.0-0.5	Long	Frequent	Long	Frequent	Jan-Jun	0.0-0.5	>6.0	Apparent
							Jul-Oct	3.5-5.0	>6.0	Apparent
							Nov-Dec	0.0-0.5	>6.0	Apparent
3107A:										
Sawmill-----------	B/D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
3183A:										
Shaffton----------	B	---	---	None	Brief	Frequent	Jan-May	1.0-2.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
3405A:										
Zook--------------	C/D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	>6.0	Apparent
							Jun-Dec	>6.0	>6.0	---
8682A:										
Medway------------	B	---	---	None	Brief	Occasional	Jan	>6.0	>6.0	---
							Feb-Apr	1.5-2.0	>6.0	Apparent
							May-Dec	>6.0	>6.0	---

Table 22.--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				
56B:						
Dana	---	---	---	High	High	Moderate
67A:						
Harpster	---	---	---	High	High	Low
69A:						
Milford	---	---	---	High	High	Low
132A:						
Starks	---	---	---	High	High	High
134B:						
Camden	---	---	---	High	Moderate	Moderate
136A:						
Brooklyn	Dense material	60-100	Noncemented	High	High	High
148B:						
Proctor	---	---	---	High	Moderate	Moderate
149A:						
Brenton	---	---	---	High	High	Moderate
152A:						
Drummer	---	---	---	High	High	Low
154A:						
Flanagan	---	---	---	High	High	Moderate
171B:						
Catlin	---	---	---	High	High	Low
198A:						
Elburn	---	---	---	High	High	Moderate
199B:						
Plano	---	---	---	High	Moderate	Moderate
208A:						
Sexton	---	---	---	High	High	High
219A:						
Millbrook	---	---	---	High	High	Moderate
233B:						
Birkbeck	---	---	---	High	High	High
234A:						
Sunbury	---	---	---	High	High	Moderate
234B:						
Sunbury	---	---	---	High	High	Moderate
236A:						
Sabina	Dense material	48-80	Noncemented	High	High	High

Table 22.--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				
242A:						
Kendall	---	---	---	High	High	High
244A:						
Hartsburg	---	---	---	High	High	Low
291B:						
Xenia	Dense material	40-60	Noncemented	High	High	Moderate
322C2:						
Russell	Dense material	40-60	Noncemented	High	Moderate	Moderate
330A:						
Peotone	---	---	---	High	High	Moderate
344B:						
Harvard	---	---	---	High	High	Moderate
348B:						
Wingate	---	---	---	High	High	Moderate
353A:						
Toronto	---	---	---	High	High	Moderate
375A:						
Rutland	Dense material	40-60	Noncemented	Moderate	High	Low
448C3:						
Mona	Dense material	30-54	Noncemented	Moderate	High	Low
481A:						
Raub	---	---	---	High	High	Moderate
496A:						
Fincastle	Dense material	40-70	Noncemented	High	High	Moderate
533.						
Urban land						
554A:						
Kernan	Dense material	40-60	Noncemented	High	High	Moderate
554B:						
Kernan	Dense material	40-60	Noncemented	High	High	Moderate
570B:						
Martinsville	---	---	---	Moderate	Moderate	Moderate
570C2:						
Martinsville	---	---	---	Moderate	Moderate	Moderate
570D2:						
Martinsville	---	---	---	Moderate	Moderate	Moderate
618C2:						
Senachwine	---	---	---	Moderate	Moderate	Moderate
618D2:						
Senachwine	---	---	---	Moderate	Moderate	Moderate
618F:						
Senachwine	---	---	---	Moderate	Moderate	Moderate

Table 22.--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				
656C2:						
Octagon	Dense material	30-60	Noncemented	Moderate	High	Moderate
663B:						
Clare	---	---	---	High	High	Moderate
679B:						
Blackberry	---	---	---	High	High	Moderate
722A:						
Drummer	---	---	---	High	High	Moderate
Milford	---	---	---	High	High	Low
747A:						
Milford, undrained	Dense material	40-80	Noncemented	High	High	Low
Milford, drained	---	---	---	High	High	Low
802D:						
Orthents, loamy	---	---	---	Moderate	High	Moderate
809F:						
Orthents, loamy-skeletal	---	---	---	Moderate	High	High
864, 865.						
Pits						
1107A:						
Sawmill, undrained	---	---	---	High	High	Low
3107A:						
Sawmill	---	---	---	High	High	Low
3183A:						
Shaffton	---	---	---	Moderate	High	Low
3405A:						
Zook	---	---	---	High	High	Low
8682A:						
Medway	---	---	---	Moderate	Moderate	Low

Table 23.--Engineering Index Test Data

(MAX means maximum dry density; OPT, optimum moisture; LL, liquid limit; PI, plasticity index; and UN, Unified)

Soil name and location	Horizon	Depth	Moisture density		Percentage passing sieve--*				LL	PI	Classification	
			MAX	OPT	No. 4	No. 10	No. 40	No. 200			AASHTO	UN
Milford silty clay loam, wet NW1/4,NW1/4,NE1/4 sec. 26, T. 15 N., R. 9 E.	A1	7-15	101	18	100	100	98	86	43	22	A-7-6	CL
	B22g (Btg2)	23-30	105	19	100	100	99	89	45	23	A-7-6	CL
	2C1	43-52	113	16	100	100	95	82	34	15	A-6	CL

* Analysis according to AASHTO designation T88. Results by this procedure frequently differ somewhat from those obtained by the soil survey procedure of the Natural Resources Conservation Service (NRCS).

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